ABSTRACT

FAHRNEY, KRISTINE MARIE. Sociological Explorations of the Marital Wage Premium. (Under the direction of Theodore N. Greenstein.)

One of the most robust findings within the literature on wages is that married men have been found to have higher personal wages than unmarried men—a phenomenon called the *marital wage premium.* Although the literature documenting the marital wage premium is extensive, an examination of this literature through a sociological lens reveals three key unexplored issues. First, one theoretical explanation of the marital wage premium is that being married involves more responsible decisionmaking and lifestyle changes that help men be more productive. The literature also shows a connection between marriage and mental and physical health, both of which are shown to be related to worker productivity. Numerous studies have been published on the effects of marriage on alcohol and drug use and criminal behavior, physical and mental health, and other health behaviors; however, within the marital wage premium literature, little, if any, empirical attention has been directed at these potential explanations of the marital wage premium. Second, much of the sociological literature on the benefits of marriage in terms of child academic and emotional well-being and adult physical and psychological well-being has suggested the importance not just of marital status, but of marital quality; however, considerations of marital quality have been almost entirely absent from the marital wage premium literature. Third, the extent to which the marital wage premium can be generalized across race/ethnicity groups is not clear. In fact, most empirical marital wage premium studies have excluded people of color. In response to these identified gaps in the marital wage premium literature, I conduct three distinct studies using the Survey of Americans' Changing Lives (ACL).

Overall, the results did not support the research hypotheses. Lifestyle did not mediate the marital wage premium. Although being divorced or never having been married was associated with

an increased number of chronic and debilitating health conditions, these variables did not mediate the marital wage premium. In addition, marital quality was not found to be relevant to the marital wage premium. Wages did not differ significantly for men in either high- or low-quality marriages, relative to men from a marriage of average quality. Finally, lifestyle, physical health variables, and marital quality did not account for the difference in magnitude in the marital wage premium for White and Black men. However, marriage was shown to decrease depression, but only for White men, and depression was shown to decrease wages—but, again, only for White men. Still, depression accounts for less than 5 percent of the wage premium for White males. Although it was not possible to directly test with the ACL data, the collective results from the present research and a review of adjacent literature suggest that it may be employer discrimination, rather than some productivity-enhancing dynamic occurring within marriage, that accounts for the marital wage premium.

Sociological Explorations of the Marital Wage Premium

by
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BIOGRAPHY

Kristine Fahrney was born and raised in Mason City Iowa. She obtained a B.A. in Psychology and Criminology from the University of Northern Iowa. She later obtained a M.Sc. in Applied Social Research from the University of Stirling in Stirling, Scottland while there as part of a Rotary International Ambassadorial Scholarship. Since 1999 she has worked at RTI International leading data collection tasks and directing projects in the Survey Research Division.

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CHAPTER 1: INTRODUCTION

Introduction

The *marital wage premium*—that married men tend to earn more than other men—is one of the most consistent findings within the literature on wages. This wage premium is one of a host of potentially interconnected benefits to being married that also include health and well-being advantages. Given the context of debates in the United States over programs that promote marriage, identifying relevant causal mechanisms between marital status, men's earnings, and other indicators of well-being is an important and policy-relevant analytic goal.

The literature documenting the marital wage premium is fairly extensive. Evidence of the marital wage premium has been found as early as the 1800s (Goldin 1990) and in 14 different countries (Schoeni 1995). Estimates of the premium range from 5 percent to 30 percent and are evidenced by both an intercept shift and a steeper wage growth trajectory for married men than for single men. The premium persists, net of education, work experience, and union membership, industry, and occupation (Korenman and Neumark 1991). The wage advantage increases as a function of the length of time spent married, although the length of first marriage appears to be more important than time spent in any subsequent marriages (Korenman and Neumark 1991). Divorce brings a wage penalty, but divorced men still earn more than those who were never married (Cohen 1999; Cornwell and Rupert 1997; Gray and Vanderhart 2000). Cohabitation also brings a wage premium that is smaller than the marital wage premium (Cohen 1999, 2002; Stratton 2002; Light 2004). With the exception of long-term cohabiting unions, cohabitation effects are largely accounted for by selection rather than

differences in wage trajectories over time (Stratton 2002). Also, the benefits of cohabitation are only experienced while in the union—that is, married men who first cohabited receive no additional wage premium beyond married men who did not first cohabit (Loh 1996).

Three theories are typically invoked within discussions of the marital wage premium, none of which have received much empirical support. One explanation for the marital wage premium is that men with higher earnings or higher earnings potential are more likely to select into marriage. Indeed, cross-sectional estimates of the marriage premium are higher than estimates from longitudinal fixed-effects models, indicating that some selection effects are in play. However, Korenman and Neumark (1991) and Hersch and Stratton (2000) both use fixed-effects models to conclude that selection effects explain less than 20 percent of the premium. In a creative approach, Ginther and Zavodny (2001) examine the selection hypothesis by focusing on shotgun weddings (i.e., those in which a first marriage is soon followed by a birth). They found that the marital wage premium differs little between men in shotgun marriages and other marriages. Thus, they suggest that, at most, 10 percent of the marriage premium is due to selection.

Another explanation is that marriage leads men to be more productive at work. The variant of this theory most commonly invoked within the marital wage premium literature is that marriage allows men to specialize in market work to the extent that their wives specialize in nonmarket work (Becker 1991). Although Korenman and Neumark (1991) find that married men receive higher performance ratings and are, therefore, more likely to get promoted, Loh's (1996) and Hersch and Stratton's (2000) findings failed to support a specialization/productivity thesis (see Chapter 2 for a more detailed review of this literature).

The third theory, another variant of productivity theory, typically employed by marriage and family sociologists who contribute to the benefits-of-marriage debate, is that being married involves more responsible decisionmaking and lifestyle changes (i.e., fewer late nights, less drinking) that help men be more productive (Ribar 2004; Waite and Gallagher 2000). This more sociological explanation has not received any empirical attention from those who contribute to the marital wage premium literature.

Although a significant amount of documentation exists on the marital wage premium, there are some limitations to this work as a body of literature. As noted, there is limited empirical support for any of the theoretical explanations of the marital wage premium. In addition, much of the research on the marital wage premium has been conducted from an economic perspective. While this economic research is generally methodologically rigorous, an examination of the literature through a sociological lens reveals three important issues that warrant further exploration.

First, as previously mentioned, one variant of the productivity theory commonly found within the family sociology literature is that being married involves more responsible decisionmaking and lifestyle changes that help men be more productive (Ribar 2004; Waite and Gallagher 2000). Although numerous sociological studies have been published on the effects of marriage on criminal behavior, physical and mental health, alcohol and drug use, and other health behaviors, interestingly, within the marital wage premium literature, little, if any, empirical attention has been directed at these potential explanations for the higher wages and steeper wage trajectories of married men relative to other men. Thus, the first avenue for

sociological exploration will be to explore the extent to which lifestyle and health differences between married and unmarried men mediate differences in wages between these groups.

Second, much of the sociological literature on the benefits of marriage in terms of child well-being and physical and psychological well-being for adults has suggested the importance not just of marital status, but also of marital quality. Yet, as Ribar (2004) notes, considerations of marital quality have been almost entirely absent from the literature on earnings. There is reason to believe this is an important oversight. In particular, findings from the literature on family-work spillover are suggestive that the emotional climate in the household affects worker productivity (Bolger et al. 1989; Chan and Margolin 1994; Crouter 1984; Dillworth 2004; Forthofer et al. 1996). Thus, the second avenue for sociological exploration will be to determine if relationship quality and satisfaction affect the extent to which marriage has beneficial effects on wages.

Third, the extent to which the marital wage premium can be generalized across race/ethnicity groups is not clear. In fact, most empirical studies on the marriage wage premium have excluded people of color (e.g., Ginther and Zavodny 2001; Gray and Vanderhart 2000; Korenman and Neumark 1991, 1992; Loh, 1996; Stratton 2002). However, given racial differences in marriage, divorce, and cohabitation patterns (Manning and Smock 1995; Moffitt 2000); marriage satisfaction (Dillaway and Broman 2001; Blackman et al. 2005); health and psychological benefits to marriage (Blackman et al. 2005); division of labor in the home (Dillaway and Broman 2001); and labor force participation (Taniguchi and Rosenfeld 2002), one might expect to see racial differences in the marital wage premium. Moreover, exploring possible mediators of racial differences in the marital wage premium

has potential utility for teaching us about the causal mechanisms of the marital wage premium (Cohen 2002) and teaches us about the conditions under which the proposition that marriage is good for people does or does not hold (Huston and Melz 2004). Accordingly, the third avenue for sociological exploration will be to determine what accounts for racial differences in the marital wage premium and contribute directly to the debate on the relative merits of marriage promotion.

Collectively, these unexplored issues form the impetus for the present research. In the remaining chapters of this work, I will outline and address a series of research questions and, in doing so, provide a sociological extension to a largely economic literature.

Theoretical Orientation

To date, the vast majority of the marital wage premium literature has drawn either explicitly or, more commonly, implicitly on Gary Becker's theoretical analyses of household production, human capital, and earnings (Becker 1962, 1973). At its most basic level, human capital theory suggests that people, both individually and collectively as parts of households, make investments in themselves. These investments include such diverse things as the purchase of health care; fitness/wellness goods and services; education; and training for jobs. Such investments may also involve relocating geographically to take advantage of better employment opportunities or accepting jobs with low pay but high learning potential instead of high-pay, dead-end jobs. The common thread among these investments is that all are made with an eye toward *future returns*, both nonpecuniary and pecuniary. According to Becker, personal earnings would rise with additional investments in things like health and wellness, education, and training because these things enhance worker productivity.

In addressing the relationship between marriage and wages, most researchers rely on Becker's (1973) well-known specialization theory. Becker argues that the division of labor is efficient within a household, just as it is within a factory. People learn fewer specialized tasks better than they can learn many general tasks, and the division of labor takes advantage of different comparative advantages. Becker invokes a combination of biology, socialization, and employment discrimination to explain that at the start of a marriage, relative to women, men have a small comparative disadvantage in childrearing and housework and a small comparative advantage in paid labor. Thus, having a wife who specializes in childrearing and housework increases household efficiency by allowing members to focus on their own comparative advantages. Over time, this division of labor allows the men to increase their focus on paid labor, so that what started as a small advantage at the start of a marriage becomes a large advantage with the passing of years. Although frequently invoked, this theory has met with much criticism (see England and Budig 1998) and has little empirical support within the marital wage premium literature (see Lincoln 2008; Loh 1996; Hersch and Stratton 2000).

Marriage and Health

One relevant aspect of Becker's discussion on human capital and wages has been virtually ignored in the marital wage premium literature. Becker (1962) notes that one way in which to invest in future wages is to improve emotional and physical health. Elsewhere, Becker notes that marriage occurs if a man and woman decide their marriage will increase their *utility,* defined as the commodities that will be produced by their household. Becker describes household-produced commodities as including not only such things as the quality

and quantity of children, prestige, recreation, and love but also human capital products relevant to performance in the labor market, such as emotional and physical health status (Becker 1973).

While basically ignored within the marital wage premium literature, this aspect of Becker's theory has been more influential within the literature on the benefits of marriage on adult health and well-being, which draws on a model of demand for health capital (Grossman 1972). Grossman argues that the commodity of good health can be viewed as a form of human capital. While there is a consumptive aspect to health (good health is enjoyable, in itself), as an investment commodity, good health is also demanded by consumers because it determines the total amount of time available for market and nonmarket activities. Grossman's model suggests that household-production functions produce well-being outcomes with inputs of goods—such as medicines, nutritious foods, housing, and physician services—and inputs of time spent exercising, monitoring symptoms, or visiting health care professionals. Because purchased goods and services contribute to the production of health, the combined incomes of married couples and the increased likelihood that at least one adult in the household has access to a job with health insurance puts them at an advantage relative to single adults. Also, the efficiencies associated with living in a partnership would allow for greater time investments in health.

Other researchers acknowledge that marriage could have other nonpecuniary impacts on health. For example, there is some evidence that society stigmatizes single people (Etaugh and Malstrom 1981; DePaulo and Morris 2005; Ganong et al. 1990). As such, those who remain single may be disposed to psychological problems as a consequence of being

treated as being either unwilling or unable to conform to societal norms and achieve the prized status of spouse, while those who enter into marriage signal adherence to cultural norms and gain increased social acceptance (Pearlin and Johnson 1977).

In addition, the presence of a spouse in the household reduces a sense of social isolation associated with living alone (Ross 1995) and provides a sense of stability and of the availability of emotional support (Ross 1995; Waite and Gallagher 2000). Indeed, married individuals are more likely to report higher levels of social support than unmarried individuals (Thoits 1984), and having a confidant has been shown to reduce significantly the effects of stress on physical and psychological well-being (Cohen and Willis 1985). This may be due to spouses providing suggestions for coping strategies (Thoits 1995) as well as feedback and encouragement that engenders feelings of mastery and competence, both important coping resources (see Kessler and Essex 1982).

In an extensive theoretical analysis of the relationship between marriage and personal well-being, Gove et al. (1990) explain that our society has evolved in a manner that makes the individual highly aware of his or her uniqueness but does not provide the primary interaction necessary for an individual to establish a clear identity and to demonstrate to others, and thus oneself, that one is a person of worth. In most cases, social interactions are so segmented and compartmentalized that coworkers and friends with whom one interacts know an individual only in a particular context and have limited firsthand knowledge of how well that individual performs other roles in other contexts. In contrast, the marital relationship is a place where one's roles are brought together and decisions are made about how to perform and manage these various roles. In addition, within the context of marriage,

because matrimony is a very private relationship, couples can develop a social system with its own norms that reflects their values and interests. Thus, marriage provides a setting in which one receives the necessary primary interaction to develop a stable self, but it is also the main environment in which one can construct the individual that one wants to be.

Marital Quality and Health

Gove et al.'s (1990) analysis also points to the importance of marital quality. As they state, because most marital interactions are positive most of the time, these attributes of marriage explain the link between marital status and well-being and illustrate why the loss of a marital relationship through divorce or the death of a spouse is so devastating. However, these attributes of marriage also illustrate the potential of a marriage that is high in negative interactions to have harmful effects on psychological well-being. Consistent with this notion, remaining unhappily married is associated with significantly lower levels of self-esteem, life satisfaction, overall happiness, and overall health and with elevated levels of psychological distress, compared with remaining in a happy marriage (Hawkins and Booth 2005). Marital strain has also been found to accelerate the decline of self-rated health over time (Umberson et al. 1996). Kiecolt-Glaser and Newton (2001) conclude that marital strain indirectly influences health through depression and health habits and also has direct influences on cardiovascular, endocrine, immune, neurosensory, and other physiological mechanisms. Ross (1995) concludes that, overall, unhappy relationships are worse than none at all.

Marriage and Social Control

Also relevant to the relationships between marriage and health and between marriage and wages is the concept of social control. As noted earlier, one variant of the productivity

theory commonly found within the family sociology literature is that being married involves more responsible decisionmaking and lifestyle changes that help men be more productive (Ribar 2004; Waite and Gallagher 2000). Numerous studies have demonstrated a relationship between marriage and desistence from criminal behavior (e.g., Farrington and West 1995; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Laub and Sampson 2003; Sampson, Laub, and Wimer 2006; Sampson and Laub 1993) and from alcohol and drug use (e.g., Duncan, Wilkerson, and England 2006; Miller-Tutzauer, Leonard, and Windle 1991; Umberson 1987; Yamaguchi and Kandel 1985). Marriage has also been linked to an increase in healthy behaviors (i.e., dietary and sleeping habits) and a decrease in risk-taking (Umberson 1987).

Some theorists argue that marriage leads to a sense of meaning, importance, and purpose that reduces self-destructive acts (Durkheim 1951; Gove 1973) indirectly by affecting the internalization of norms for healthful behavior, leading to self-enforcement of healthy behavior (Umberson 1987). Direct social control occurs when a spouse provides regulation, sanctions, and physical interventions for behaving in ways that are not healthy. Examples of direct social control include reminding a spouse to take his or her medicine or use less salt, controlling the type and amount of food available to a spouse, and threatening to leave a spouse because of self-destructive behaviors (Umberson 1987). The utility of direct social control is demonstrated by Umberson (1992), who showed that men and women who reported being nagged by their spouses during an early interview reported less cigarette smoking, more sleep, and more physical activity at a follow-up interview 3 years later.

Marital Quality and Social Control

Sampson and Laub (1993) argue that the effect of marriage on responsible decisionmaking is contingent on marital quality. They suggest that marriage leads individuals to make responsible decisions only to the extent that they have developed attachment to and strong emotional ties with a spouse. Such attachment and strong emotional ties lead to interdependence and systems of obligation and restraint between spouses that increase social control and lower destructive behaviors. In other words, higher quality marriage is more effective in inspiring an internal sense of social control within its members. Thus, marital quality is argued not only to have a direct effect on health (as discussed in the previous pages) but also an indirect effect, by increasing social control.

Health and Wages

Finally, physical health and mental health are linked to wages. Fundamentally, an individual's wage rate measures the rate at which he or she can convert hours of work into monetary earnings (Grossman 1972, p. 241). This rate is in part determined by health, because emotionally and physically healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Hendrix et al. 1987). The impact of health on worker performance varies by medical condition. Depression is associated with particularly high worker absenteeism rates (Goetzel et al. 2003) and decreases worker productivity not only in terms of increased absenteeism and short-term disability but also suboptimal performance at work (Goetzel et al. 2002). Chronic physical health conditions, most notably hypertension, are also associated with high levels of worker absenteeism (Goetzel et al. 2003). Consequently, among the employed, the hourly wages of permanently unhealthy American males are approximately 6.4 percent, lower than those of their more

healthy counterparts. This effect peaks for males who are between the ages of 40 and 49 years at the onset of illness; men in this category receive hourly wages approximately 12 percent lower than healthy working males. In addition, total annual hours worked is 6.3 percent less for permanently unhealthy working males than healthy working males; of course, permanently unhealthy males are also much less likely than healthy males to be working at all (Pelkowski and Berger 2004).

Summary of Conceptual Framework

In summary, a review of adjacent sociological literatures suggests that a marital union, particularly one high in satisfaction and low in marital problems, enhances physical and emotional health directly and indirectly, through the enhancement of social control. Emotionally and physically healthy workers are more productive in the labor force, leading to higher wages (see Figure 1.1). Chapters 2–4 of this document explore nuances around these general theoretical pathways.

While evidence for any of these pathways would indicate support for productivity as an explanation of the marital wage premium, if the results from this dissertation fail to find any support for this model, this may be suggestive of other processes, such as discrimination based on marital status, and would signal a need to borrow methodologies from the literatures on wage inequalities by gender and race to investigate how processes of discrimination within the workplace operate with regard to marital status.

Structure of Dissertation

Chapter 1 has provided an introduction, including a brief review of three gaps within the literature on the marital wage premium, and an overview of the theoretical context of the

present research. Chapters 2–4 comprise three distinct studies, each addressing one of the aforementioned gaps within the marital wage premium literature: Chapter 2 looks at the extent to which lifestyle and health mediate wage differences between married and unmarried men, Chapter 3 addresses the question of whether marital quality or only marital status affects wages, and Chapter 4 explores the extent to which racial differences in marital dynamics mediate the racial differences in the marital wage premium. Within each of these three chapters, the relevant literature is reviewed, methods are presented, and findings and conclusions are discussed. In Chapter 5, I summarize my central findings, present concluding remarks, discuss the limitations of the research, and offer suggested directions for further research.

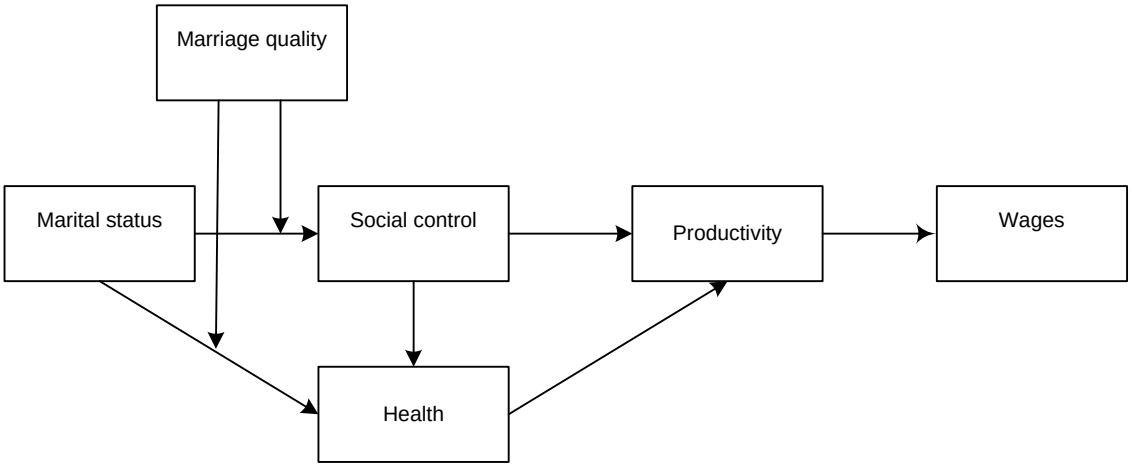


Figure 1.1. Theoretical model

CHAPTER 2: LIFESTYLE, HEALTH, AND THE MARITAL WAGE PREMIUM (STUDY 1)

Introduction

One of the most robust findings within the literature on wages is that married men have been found to have higher personal wages than unmarried men—a phenomenon called the *marital wage premium* (Gray and Vanderhart 2000). Estimates of the premium range from 5 percent to 30 percent and are evidenced by both an intercept shift and a steeper wage growth trajectory for married men than for single men. The wage advantage increases as a function of the length of time spent married, although the length of first marriage appears to be more important than time spent in any subsequent marriages (Korenman and Neumark 1991). Divorced and cohabiting men also earn more than other single men, but less than married men (Cohen 1999, 2002; Light 2004; Stratton 2002).

One possible explanation for the marital wage premium is that being married involves more responsible decisionmaking and lifestyle changes that help men be more productive (Ribar 2004; Waite and Gallagher 2000). Although numerous sociological studies have been published on the effects of marriage on criminal behavior, physical and mental health, alcohol and drug use, and other health behaviors, little, if any, empirical attention has been directed at the relevance of health and lifestyle for the higher wages and steeper wage trajectories of married men relative to other men. Thus, exploring these potential relationships will be the focus of this chapter.

Theory and Literature Review

There have been numerous theoretical explanations for the marital wage premium, none of which accounts for much of the effect when tested empirically. One explanation is

that men with higher earnings or higher earnings potential are more likely to select into marriage because earnings potential influences how women evaluate them as potential mates. However, this explanation has been found to explain less than 20 percent of the marital wage premium (see Hersch and Stratton 2000; Korenman and Neumark 1991).

Another explanation is that marriage leads men to be more productive at work. There are at least two variants of this theory. The more popular variant of the productivity thesis is that marriage allows men to specialize in market work to the extent that their wives specialize in nonmarket work (Becker 1991); mixed support has been found for this explanation. Korenman and Neumark (1991) use data from one company's personnel files to determine that although there are no differences in wages between men within the same salary grade, married men receive higher performance ratings than single men; therefore, they are more likely to be promoted than are single men. Once performance ratings are controlled, married men are no more likely to be promoted than are single men.

The findings of Loh (1996) and of Hersch and Stratton (2000) failed to support a specialization/productivity thesis. Loh found that, contrary to the prediction of the specialization model, married men with wives who devote more time to the labor market receive a higher marital wage premium than those whose wives specialize in nonmarket labor. In addition, the marital wage premium increased as a function of the wife's education, net of her labor market participation. Loh also found that the marital wage premium does not extend to self-employed men; rather, married self-employed men earn less than single self-employed men. Hersch and Stratton (2000) used measures of men's time spent doing housework as a more direct indicator for specialization. They found that housework was not

strongly associated with wages and that controlling for this variable did not diminish estimates of the marital wage premium.

Another variant of the productivity theory, and one key focus of this chapter, is that being married involves more responsible behavior, such as improved decisionmaking and positive lifestyle choices (e.g., fewer late nights, less drinking, less troublemaking, more attention to personal health) that help men lead more productive lives (Wood, Goesling, and Avellar 2007).

Several potential causal mechanisms may be involved (see Ribar 2004; Waite and Gallagher 2000). First, married men may value their discretionary time more because they share a home with someone. They may also feel a sense of responsibility for their family's well-being, leading them to be more considerate of the influence that their actions have on others. In addition, because it entails a lifelong commitment, marriage may modify men's productivity and work behaviors by making them more future oriented and sensitive to the long-term consequences of their actions.

The criminology literature offers a similar explanation for the civilizing effects of marriage. Sampson and Laub (1993) argue that the formation of a happy marriage creates interdependent systems of obligation and restraint that impose significant costs for translating criminal propensities into action; thus, they argue that marriage increases informal social control. These assertions appear to be supported empirically; numerous studies have demonstrated a relationship between marriage and desistence from criminal behavior (e.g., Farrington and West 1995; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Laub and Sampson 2003; Sampson, Laub, and Wimer 2006; Sampson and

Laub 1993) and alcohol and drug use (e.g., Duncan, Wilkerson, and England 2006; Miller-Tutzauer, Leonard, and Windle 1991; Yamaguchi and Kandel 1985) for men and, to a lesser extent, for women. Marriage has also been linked to an increase in healthy behaviors (i.e., dietary and sleeping habits) and a decrease in risk-taking (Umberson 1987, 1992).

Similar to Sampson and Laub (1993), Ribar (2004) and Waite and Gallagher (2000) also acknowledge that the civilizing effect of marriage may reflect increased scrutiny, monitoring, and corrective feedback regarding husbands' behavior by wives. Umberson (1992) lends support for this by finding that men and women who reported during an early interview being nagged by their spouses reported less cigarette smoking, more sleep, and more physical activity at a follow-up interview 3 years later.

Umberson's finding suggests an additional possibility (and the second key focus of this chapter): marriage may increase productivity indirectly through improved physical and mental health, most commonly attributed to the increased emotional support and economic well-being provided by marriage (see Ross, Mirowsky, and Goldsteen 1990). More specifically, Grossman (1972) suggested that household-production functions convert inputs of goods (e.g., medicines, nutritious foods, and physician services) and inputs of time (e.g., spent exercising, monitoring symptoms, or visiting health care professionals) into health outcomes. The combined incomes of married couples and the increased likelihood that at least one adult in the household has access to a job with health insurance allows them more power to purchase health care than the average single adult. Also, the time efficiencies associated with running a household in partnership allow for married individuals to make greater time investments in health.

The literature points to ways in which marriage could have other nonpecuniary impacts on health. For example, there is some evidence that society stigmatizes single people (Etaugh and Malstrom 1981; DePaulo and Morris 2005; Ganong et al. 1990). As such, those who remain single may be disposed to psychological problems as a consequence of being treated as being either unwilling or unable to conform to societal norms and achieve the prized status of spouse, while those who enter into marriage signal adherence to cultural norms and gain increased social acceptance (Pearlin and Johnson 1977).

Having a spouse in the household also reduces a sense of social isolation associated with living alone (Ross 1995) and provides for stability and availability of emotional support (Ross 1995; Waite and Gallagher 2000). Consistent with this, research has found that married individuals are more likely to report higher levels of social support than unmarried individuals (Thoits 1984), and having a confidant has been shown to significantly reduce the effects of stress on physical and psychological well-being (Cohen and Willis 1985). This may occur as a consequence of spouses suggesting coping strategies (Thoits 1995) and providing feedback and encouragement, which engender feelings of mastery and competence, both important coping resources (see Kessler and Essex 1982).

Numerous studies have linked marriage to improved physical health. For example, using longitudinal data from the Americans' Changing Lives (ACL) survey, Williams and Umberson (2004) found that for both older and younger men, the chances of reporting very good or excellent health improve significantly with the transition into a first marriage. This effect persists through at least the first 5 years of marriage. In addition, the strains and stresses associated with marital dissolution had a significant negative effect on physical

health for men over the age of 50 years. Prigerson, Maciejewski, and Rosencheck (2000), also using longitudinal data from the ACL study, found that transitioning out of marriage is associated with an increase in chronic health conditions and a decrease in functional health (e.g., difficulty walking, using stairs, or bathing oneself). Similarly, using the Health and Retirement Survey, Pienta, Hayward, and Jenkins (2000) found that married persons have the lowest rates of morbidity for disease, impairments, functioning problems, and disabilities, compared with unmarried individuals.

Other studies have focused on documenting the connection between marriage and mental health. A series of studies using the National Survey of Families and Households has revealed that marital entry decreases depressive symptoms; marital dissolution increases depressive symptoms; and those who remain stably unmarried experience larger increases in depressive symptoms than do those who remain stably married (Kim and McKenry 2002; Marks and Lambert 1998; Simon 2002).

Because emotionally and physically healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Hendrix, Steel, and Schultz 1987), an individual's health status may influence productivity. And because marriage is linked to health and health is, in turn, linked to productivity, the health benefits to marriage may be at least partially responsible for the marital wage premium.

Despite numerous studies that have been published on the effects of marriage on alcohol and drug use and criminal behavior; physical and mental health; and other health behaviors, such as sleep and use of preventative health care (for a review of each, see Wood, Goesling, and Avellar 2007), within the marital wage premium literature, little, if any,

empirical attention has been directed at these potential explanations for the higher wages and steeper wage trajectories of married men relative to other men.

Hypotheses

As discussed, the analyses for this chapter draw partially on a theory typically used to explain crime and desistance (Sampson and Laub 1993). This theory suggests that because marriage creates a sense of interdependence, obligation, and restraint, being married involves more responsible decisionmaking and lifestyle choices. These lifestyle choices, in turn, enhance men's ability to be more productive in the labor market (Ribar 2004; Waite and Gallagher 2000).

This chapter also draws on Grossman's (1972) theory of demand for health and on adjacent literatures that focus on relationships between marriage and mental and physical health, both of which are shown to be related to worker productivity.

So, as illustrated in Figure 2.1, this chapter focuses on a possible path leading, directly and indirectly, from marital status to enhanced physical and emotional health through the enhancement of social control. Emotionally and physically healthy workers are more productive in the labor force, leading to higher wages.

The study will test three hypotheses using data from ACL, a longitudinal survey of U.S. adults that measures various health and workforce indicators. The first hypothesis addresses the yet-untested assertion that the marital wage premium reflects, at least in part, a maturing or settling down on the part of men after marriage (Ribar 2004; Waite and Gallagher 2000):

> **Hypothesis 1:** *The effect of marital status on wages will be partially mediated by alcohol use.*

This hypothesis stems from literature that links marriage to a reduction in detrimental behaviors, such as heavy use of alcohol and involvement in criminal activity that might reasonably be expected to interfere with excelling in the labor market. Previous research has demonstrated a relationship between men being marriage and their desistance from criminal behavior (e.g., Farrington and West 1995; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Laub and Sampson 2003; Sampson, Laub, and Wimer 2006; Sampson and Laub 1993) and from alcohol and drug use (e.g., Duncan, Wilkerson, and England 2006; Miller-Tutzauer, Leonard, and Windle 1991; Yamaguchi and Kandel 1985). As noted earlier, this is thought to be because marriage not only increases external social control between spouses (Umberson 1987, 1992) but also because marriage creates interdependent systems of obligation and restraint (internal social control), making men more future oriented and sensitive to the long-term consequences of their actions (Ribar 2004; Sampson and Laub 1993; Waite and Gallagher 2000).

The remaining two hypotheses explore a slightly different path from marriage to wages and address the possibility that the effect of marriage on wages may operate in part through health:

> **Hypothesis 2:** *The effect of marital status on wages will be partially mediated by the inclusion of variables measuring physical health.*
>
> **Hypothesis 3:** *The effect of marital status on wages will be partially mediated by the inclusion of a variable measuring mental health.*

As previously noted, the links between marriage and health have been attributed to improved economic well-being associated with combined incomes and economies of scale,

allowing for greater access to goods and services that benefit health (Grossman 1972); increased monitoring and feedback from spouses (Umberson 1992); stresses and strains associated with adjusting to marital dissolution (Williams and Umberson 2004; Prigerson, Maciejewski, and Rosencheck 2000); and availability of emotional support and the sense of stability provided by the presence of a spouse (Kim and McKenry 2002; Marks and Lambert 1998; Simon 2002; Waite and Gallagher 2000).

Research also demonstrates a link between health and wages. Emotionally and physically, healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Hendrix et al. 1987), although this varies by medical condition. Depression is associated with particularly high worker absenteeism rates (Goetzel et al. 2003) and suboptimal performance at work (Goetzel et al. 2002). Chronic physical health conditions also lead to high levels of worker absenteeism (Goetzel et al. 2003). Among the employed, the hourly wages of permanently unhealthy American males are approximately 6.4 percent, lower than wages for other American males.

Because marriage is linked to emotional and physical health, and because emotionally and physically healthy workers are less likely to take sick days and are more likely to be on task when at work, increases in mental and physical health may be at least partially responsible for the marital wage premium.

Methods

Data

Because the present analysis includes not only variables that can be used to estimate wage equations but also variables measuring physical and mental health and lifestyle choices,

the data used here come from Waves I through IV of ACL (House 2006). The sampling universe for the study included the continental United States' household population, aged 25 years or older. The Wave I sample design included a multistage stratified area probability sample, with oversampling of Blacks and those aged 60 years or older. In-person interviews were conducted for Waves I, II, III, and IV in 1986, 1989, 1994, and 2006, respectively. Wave I included 3,617 participants. Of those, 2,867 participated in Wave II; 2,562 participated in Wave III (including 164 proxy interviews); and 1,692 participated in Wave IV (including 94 proxy interviews). Oversampling of Americans aged 60 years of age or older in Wave I led to high attrition due to mortality: 178 respondents were deceased by the end of Wave II; 544 were deceased by the end of Wave III; and 1,184 were deceased by the end of Wave IV. The present analysis will focus on the approximately 800 Black and White males who were between the ages of 25 and 59 years during Wave I.

To accommodate longitudinal analysis, the data was converted from a flat file to a person-period data set. Between one and four records were created for each respondent, one for each wave in which the respondent participated. Each of these records contains both fixed covariates and time-varying covariates measured at the time of each annual interview (e.g., marital status, hourly wages for the current job and its natural log, weeks and hours per week worked during the previous calendar year, physical health).

Records for years in which any respondent was unemployed or greater than 59 years of age were excluded from the person-period data set. In addition, all records with missing data for any of the analysis variables were excluded from the data set. Thus, the present analysis includes 1,889 records for 688 adult men.

Measurements: Fixed Covariates

Fixed covariates are attributes of the sample member that do not change over time. The models in this study include age at the time of Wave I and four additional fixed covariates, each measured using dummy variables: (1) race (Black or White), (2) region of residence in Wave I (west, northeast, or north central, with the south as the comparison group), (3) urbanicity of residence (urban or rural) at Wave I, and (4) level of education (completed high school, completed a college degree, and attended graduate school, with less than a high school education as the comparison variable).

Although some of the variables that are included as fixed covariates could change over time (e.g., region and urbanicity of residence, or education), these variables are only available for Wave I. Because all Wave I respondents were at least 25 years of age, it is likely that these respondents had already completed their education.

Time-Varying Covariates

Variables that have the potential to vary from wave to wave in the data collection are known as time-varying covariates and are included in the models as array variables to reflect accurately such variance over time.

Wages. Hourly wage for current job is the dependent variable. Outliers of less than $1 per hour or greater than $100 per hour were reset to missing. This is consistent with the approach of Loh (1996) and Maasoumi et al. (2009). However, Hersh and Stratton (2000) and Stratton (2002) use $2.50 as the lower limit, and Budig and England (2001) use $200 as an upper limit. Many other authors do not specify whether outliers are excluded. The value for wages was also set to missing for respondents who reported not being employed during the reference period. This variable was log-transformed to normalize the distribution.

Time. Years since the Wave I interview is used as the measure of time, or the slope. Note that another option would have been to use age as the slope; however, this approach is consistent with other frequently cited marital wage premium studies (e.g., Budig and England 2001; Ginther and Zavodny 2001; Korenman and Neumark 1991). Time is included in the models as a continuous variable; at the extreme ends, zero represents 1986, and 17 represents 2003.

Marital status. Marital status was coded into four dummy variables: married, formerly married, currently cohabiting, and never married/not cohabiting. Note that formerly married individuals who are currently cohabiting are counted as cohabiters, not as formerly married (see Cohen 1999).

Because the dependent variable is logged, the parameter estimate for the married variable can be understood to be approximately the percentage difference between the initial statuses of the log of hourly wage for individuals who are married, as compared with their single counterparts (see Wooldridge 2005). Likewise, the cohabiting parameter estimate can be understood to be the percentage difference between the log of hourly wages for individuals who are currently cohabiting, as compared with individuals who have never married and are not currently cohabiting.

Binge drinking. Respondents were asked how many days they drank in the previous month and how many drinks they consumed on the days that they drank. For all respondents who reported that a usual day of drinking involved consuming five or more drinks, binge drinking was calculated as the number of days that they drank in the previous month.

Respondents who reported that drinking usually involved less than five drinks and respondents who reported not drinking at all received a value of zero for this variable.

Physical health. Two measures of health are included in the models. The first is the total number of self-reported chronic conditions experienced over the past 12 months, including arthritis, lung disease, hypertension, heart attack, diabetes, cancer, stroke, and incontinence. The second health measure is the total number of debilitating chronic conditions experienced over the past 12 months, including arthritis, hypertension, foot problems, broken bones, and incontinence.

Depression. Depression is measured using the ACL-calculated standardized index of the Center for Epidemiological Studies Depression Scale (CES-D 11). Respondents were asked 11 questions using a 1 to 3 scale, where 1 = *hardly ever* and 3 = *most of the time*. Questions included, "(In the past week) I felt depressed," "I felt that everything I did was an effort," "My sleep was restless," "I felt happy," "I felt lonely," "People were unfriendly," "I enjoyed life," "I did not feel like eating," "My appetite was poor," "I felt sad," "I felt that people disliked me," and "I could not 'get going.'"

Time-varying control variables. Other control variables in the models include "Continuous employment," a time-varying dummy variable that indicates whether or not an individual worked at least 48 weeks during the past 12 months, and "Full time," a time-varying dummy variable that indicates whether or not individuals work at least 35 hours per week at their current job.

Table 2.1 includes descriptive statistics from the person-period data set, including means (and standard deviations) for continuous variables and percentages for dummy

variables. The average hourly wage was $18.28, which is equal to an average log of hourly wage of 2.65. Across all records in the person-period data set, just over 70 percent represent an individual who was married at the time of the survey; over one-half represent an individual with a high school education. Most records (87.19%) indicated respondents who had been continuously employed in the previous year and who were currently working full-time hours in their current job (92.96%). The average number of chronic conditions and debilitating conditions reported was 0.49 and 0.40, respectively. The average score on the depression index was −0.22, and the average incidence of binge drinking was 1.32 times over the past month.

Analysis

The present research involves the estimation of mixed models. Mixed models contain both fixed effects and random effects. Fixed-effects models and random-effects models have complementary strengths and weaknesses. For example, as a consequence of their exclusive focus on within-person change, one virtue of the fixed-effects model is that it controls for all measured and unmeasured stable characteristics of the individuals in the study, thereby eliminating one important class of biases. However, although bias is reduced, there is often an increase in sampling variability, resulting in higher standard errors because the independent variable often varies more *between* persons than *within* persons. In contrast, random-effects models do not control for unmeasured time-invariant characteristics of study participants; however, because random-effects models utilize variation both within and between individuals, these models typically have less sampling variability (and lower standard errors) than fixed-effects models. A further limitation of the fixed-effects model is

that while it does control for all time-invariant characteristics of the individual (whether or not these characteristics have been measured), the fixed-effect model cannot *estimate coefficients* for time-invariant characteristics of study participants. In contrast, the random-effects model can only control for participant characteristics *that are measured and included in the model*, but it is able to estimate coefficients for both time-varying and time-invariant variables.

Mixed models combine some of the virtues of both fixed-effects and random-effects models. Thus, with the use of a mixed model, it is possible to (1) get estimates for both within-person and between-person effects, (2) estimate coefficients for any measured predictors, including both time-varying and time-invariant variables, and (3) control for unmeasured time-invariant characteristics of study participants. (For an extended discussion of the relative merits of fixed-effects, random-effects, and mixed models for longitudinal analysis, see Allison 2005).

Mixed models are specified at two levels. The level-1 component of the model describes how each person in the sample changes over time (within-person analysis) and the level-2 component of the model describes how these changes differ across people (between-person analysis) (Singer and Willett 2003).

Mixed models are and well suited to the characteristics of the ACL data, which include both variably spaced waves of data collection and high attrition, due to respondent mortality. Because mixed models have no requirement for consistent intervals of time between the waves, this approach does not require all respondents to have the same number of waves of data (Singer and Willett 2003).

Although mixed models can be used to estimate trajectories over time, that is not the focus of this analysis. The primary purpose for using this approach is that the model allows the researcher to control for omitted, time-invariant, unmeasured characteristics that are correlated with both a predictor variable and the dependent variable. This technique will allow for estimates of the extent to which lifestyle and health measures mediate the effect of marital status on wages, net of unmeasured time-invariant characteristics that cause individuals to select into both marriage and higher wages.

The limitation to this model is that if there are unmeasured time-varying characteristics that affect marriage and interact with another variable in affecting wages, the models will not eliminate bias. However, analyses involving fixed effects are a vast improvement over ordinary least squares models because such analyses remove certain classes of bias that arise from omitted variables (Budig and England 2001).

The analysis for this study was generated using SAS software, Version 9.1 of the SAS System for Windows, Copyright © 2002–2003 SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

The analysis begins in Table 2.2 by estimating the effects of marriage on the health and lifestyle variables that will later be used to attempt to mediate the relationship between marriage and wages. The Table 2.2 analysis reflects two submodels. The level-1 submodel represents the within-person change during the time period under study and thus, includes the time-varying independent variables.

The level-1 submodel is as follows:

$$Y_{ij} = \pi_{0i} + \gamma_{1}\text{mar}_{ij} + \gamma_2\text{formar}_{ij} + \gamma_3\text{cohab}_{ij} + \gamma_{4–5}\text{time-varying controls}_{ij} + \pi_{01}\text{time}_{ij} + \varepsilon_{ij}.$$

The level-2 submodel is a submodel for between-person differences in change; thus, the time-invariant controls are included at this level. The level-2 model has two parts: one for true initial status (π_{0i}), and a second for true rate of change (π_{1i}):

$$\pi_{0i} = \gamma_{00} + \gamma_{6–14}\text{time-invariant controls}_i + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{20} + \gamma_{26–34}\text{time-invariant controls}_i + \zeta_{1i}$$

In this part of the submodel, γ_{00} and γ_{20}, the intercepts, represent the average starting wage and rate of change, respectively, across individuals; the time-invariant measures include age, race, high school, college, graduate school, and urban, west, north central and northeast for person *i*'s status at Wave I; ζ_{0i} represents deviations in the initial status around the group average; and ζ_{1i} represents deviations in the rate of change around the group average.

Since there are common terms in the level-1 and level-2 submodels, the composite specification provides a more parsimonious representation of the analysis:

$$Y_{ij} = \gamma_{00} + \gamma_1\text{mar}_{ij} + \gamma_2\text{formar}_{ij} + \gamma_3\text{cohab}_{ij} + \gamma_{4–5}\text{time-varying controls}_{ij} + \gamma_6\text{mediator}_{ij} + \gamma_{7–15}\text{time-invariant controls}_i + \pi_{16}\text{time}_{ij} + (\varepsilon_{ij} + \zeta_{0i} + \zeta_{1i}\text{time}).$$

Similarly, Table 2.3 provides the mixed models for log of hourly wage, testing the six potential mediating variables. These models differ only in that now the dependent variable is wages, and health and lifestyle variables are included in the models as potential mediators. As with Table 2.2, Table 2.3 reflects two submodels. The level-1 submodel for within-person change includes the time-varying independent variables and is stated as follows:

$$Y_{ij} = \pi_{0i} + \gamma_1\text{mar}_{ij} + \gamma_2\text{formar}_{ij} + \gamma_3\text{cohab}_{ij} + \gamma_{4–5}\text{time-varying controls}_{ij}$$

$+ \gamma_6 \text{mediator}_{ij} + \pi_{01}\text{time}_{ij} + \varepsilon_{ij}$.

In this model, Y_{ij} is the natural logarithm of income for individual i; π_{01i} represents individual i's true initial status; mar, formar, and cohab are time-varying dummy variables indicating whether person i is married, formerly married, or cohabiting (with never married as the omitted category); and the time-varying controls are dummy variables: one for employed full time, and a second for continuously employed in the previous year for person i at time j. One of four different mediator variables measuring lifestyle or health is present in models 2 through 7 in Table 2.3. Thus, the mediator variable represents binge drinking, chronic conditions, debilitating conditions, or depression, respectively, for person i at time j. Changes in each of the π_{01i} represent individual i's true rate of change during the reference period, and ε_{ij} represents that portion of individual i's outcome that is unpredicted on occasion j.

The level-2 submodel for between-person differences in change includes the time-invariant controls and has two parts: initial status (π_{0i}) and true rate of change (π_{01i}):

$$\pi_{0i} = \gamma_{00} + \gamma_{7-15}\text{time-invariant controls}_i + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{20} + \gamma_{27-35}\text{time-invariant controls}_i + \zeta_{1i}$$

In this part of the submodel, γ_{00} and γ_{20}, the intercepts, represent the average starting wage and rate of change, respectively, across individuals; the time-invariant measures include age, race, high school, college, graduate school, and urban, west, north central and northeast for person i's status at Wave I; ζ_{0i} represents deviations in the initial status around the group average; and ζ_{1i} represents deviations in the rate of change around the group average.

The composite specification is:

$$Y_{ij} = \gamma_{00} + \gamma_1 \text{mar}_{ij} + \gamma_{2i} \text{former}_j + \gamma_3 \text{cohab}_{ij} \gamma_{4-5} \text{time-varying controls}_{ij} + \gamma_6 \text{mediator}_{ij} + \gamma_{7-15} \text{time-invariant controls}_i + \pi_{16} \text{time}_{ij} + (\varepsilon_{ij} + \zeta_{0i} + \zeta_{1i} \text{time}).$$

As written, the model allows log-income paths to vary in level and in slope.

Results

The present analysis focuses on lifestyle and health variables as mediators of the relationship between marriage and wages. This is based on previous research that has demonstrated correlations between health and marriage and between lifestyle and marriage. Accordingly, Table 2.2 presents the analysis by estimating the effect of marital status on lifestyle and health.

In model 1, the coefficients for being married and cohabiting are not statistically significant, but the coefficient for being formerly married is statistically significant and positive. This indicates that neither married individuals nor cohabiting individuals engage in more or less binge drinking than those who have never married; however, formerly married individual do engage in binge drinking more frequently than those who have never married. This later finding is consistent with Eng et al. (2007), who found that marital dissemination has an adverse effect on health behaviors relating to alcohol consumption and diet.

In terms of physical health, the coefficients for being married and cohabiting are not statistically significant in the models for chronic conditions and debilitating conditions. Thus, in this sample, neither being married nor cohabiting appears to lead to better physical health outcomes relative to remaining unmarried and not cohabiting. However, being divorced does influence physical health. The coefficients for the divorced dummy variable are positive and statistically significant, meaning that being divorced is associated with a

higher number of both chronic and debilitating conditions. This is consistent with Williams and Umberson (2004), who, using data from the same survey, concluded that marital status differences in health reflect the strains of marital dissolution more than the protective influences of marriage.

Unlike models 1 through 3, in model 4 the coefficient for marriage is positive and statistically significant, while the coefficients for formerly married and cohabiting are not statistically significant. This indicates that being married is associated with less depression than never having been married.

Model 1 in Table 2.3 depicts the marital wage premium, net of the control variables. Men who are currently married earn 18 percent more than their never-married counterparts, closely followed by formerly married men and cohabiting men, who earn 16 percent and 15 percent more, respectively, than those who have never married. The coefficients for the control variables are all statistically significant, except for the dummy variable indicating residence in an urban area at Wave I. Collectively, the coefficients for the control variables indicate that wages increase with age and education. Wages are higher for White men than for Black men and are higher in the west, north central, and northeastern regions than in the southern region. Men with a full-time job earn more; curiously, however, men who worked at least 48 weeks in the previous year earn less per hour than men who worked for a shorter time.

Models 2 through 7 test for mediating effects through the inclusion of the lifestyle, physical health, and mental health variables.

Lifestyle. In model 2, the coefficient for binge drinking was not statistically significant, indicating that binge drinking does not affect wages, net of the other variables in the model. Thus, hypotheses 1 is not supported.

Physical health. In models 3 and 4, the coefficients for chronic conditions and debilitating conditions are statistically significant and negative. Thus, the models are consistent in showing that, net of other variables in the models, wages are higher for people who are in good health. The addition of these variables had little effect on the coefficient for marriage, but the coefficients for formerly married and cohabiting were actually slightly increased, bringing those coefficients closer to the coefficient for marriage. Thus, hypothesis 2 is not supported

Mental health. In model 5, the coefficient for depression is statistically significant and negative, indicating that, net of other variables in the model, those with lower levels of depression have higher wages. In support of hypothesis 3, the inclusion of depression reduced the effect of marriage on wages from 18 percent in model 1 to 17 percent.

Discussion

Despite extensive literature linking marriage to lifestyle decisions and health outcomes, and despite the suggestion in various texts that lifestyle differences can partially account for the differences in wages between married and nonmarried individuals, the present analysis failed to support the assertion that either lifestyle or health variables account for a substantial portion of the link between marriage and wages. The present analyses used longitudinal data from ACL to test four hypotheses.

Based on extensive literature linking marriage to reductions in alcohol and drug use, the first hypothesis predicted that binge drinking would partially mediate the marital wage premium. However, the analyses in Table 2.2 and Table 2.3 failed to demonstrate a connection between marital status, binge drinking, and wages. Thus, this hypothesis was not supported.

The second and third hypotheses concerned the effect of physical and mental health on the marital wage premium. The link between marital status, health outcomes, and wages is a well-established one. Previous work has shown that the enhanced financial resources associated with marriage (due to pooling incomes, economies of scale, availability of a spouse's health insurance, etc.) lead to better health outcomes (Wood, Goesling, and Avellar 2007). The present research, however, attempted to discern if the relationships among marriage, wages, and health also went in the other direction—that is, if marriage leads to higher wages by creating healthier workers who would be more successful in the labor market. Evidence of this pathway was limited.

First, although marital dissolution was shown to have an adverse effect on health, the analysis failed to demonstrate a protective influence of marriage on health. Second, the two physical health measures included in the analysis (number of chronic conditions, and number of debilitating conditions) were positively associated with wages but failed to partially mediate the marital wage premium.

Only hypothesis three (that mental health differences partially account for the marital wage premium) received even limited support. The first set of regressions showed that being married did lead to lower levels of depression. In the wage models, the inclusion of

depression did partially mediate the effect of both marriage and cohabitation on wages. That reduced depression is associated with marriage and cohabitation and not divorce is consistent with literature that having a partner in the household provides a protective effect on mental health due to the reduction of isolation and to the provision of stability and emotional support (Ross 1995; Thoits 1984, 1995; Wait and Gallagher 2000). Still, the inclusion of the depression indicator accounted for less than 5 percent of the marital wage premium observed in the ACL data, suggesting that mental health is only a very minor contributor in the earnings advantage for married men.

The inability of the lifestyle measure to partially mediate the marital wage premium is somewhat surprising, given the vast literature that demonstrates a direct link between marriage and lifestyle choices (see Duncan, Wilkerson, and England 2006; Farrington and West 1995; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Laub and Sampson 2003; Miller-Tutzauer, Leonard, and Windle 1991; Sampson, Laub, and Wimer 2006; Sampson and Laub 1993; Yamaguchi and Kandel 1985). However, the lack of support for this theoretical explanation may be due to the limitations of this study.

One limitation of the study is that only limited information was available for testing the hypothesis that the marital wage premium is due to men settling down and reducing destructive behaviors. Respondents were asked how many days they consumed alcohol in the previous month and how much they consumed on the average day. The only variable that touched on criminal activity was one measure that asked respondents if they had legal problems in the past 3 years, but so few people had a positive response to this variable that it was not feasible to include it in the analysis. The study was also limited in its measures of

physical health. Whereas measures of the presence or absence of various chronic and debilitating conditions were utilized, these measures say little about the frequency, duration, and severity of illness. Because it is likely that a serious or prolonged illness is required to influence wages, it is possible that the present study underestimated the relationship between marital status, health, and wages.

A further limitation of the study was that the sample size was small and yet included a wide age range of men and wide variations in the length of time since the married men in the sample had been single. It may be that the effect of marriage on lifestyle is more salient for young men in the early years of their marriage.

The diversity of ages also meant that age and length of marriage were strongly correlated and, thus, could not both be simultaneously included in the model. This limited the focus of the study to mean differences in wages by marital status rather than also including analysis on the relationships between time spent in marriage, health and lifestyle, and wages.

A more effective test of this theory would require longitudinal data spanning 30 to 40 years collected on a sample of men who were in their mid-twenties at the start of the sample, including more extensive measures on drug and alcohol use, addiction severity, and criminal behaviors within the previous year. Unfortunately, a longitudinal data set that includes this sort of sample—coupled with extensive measures on substance use, legal behaviors, *and* sufficient marriage, wage, and labor data—is not currently available. Until such data are available, our ability to effectively estimate the effects of lifestyle and health measures on the

marital wage premium is limited. However, the current study suggests that lifestyle and health are unlikely to account for a large portion of the marital wage premium.

If lifestyle and health do not account for a large portion of the marital wage premium, then it is possible that the wage premium is better explained by discrimination rather than real differences in productivity between married and unmarried men. Discrimination theory suggests that, in the absence of actual sufficient performance metrics, employers make hiring and salary decisions based on stereotypes related to personal characteristics, such as age, gender, race, or marital status (see Tomaskovic-Devey 1993).

One way to test the discrimination explanation of the marital wage premium would be to test whether *any* marriage is associated with higher wages or if this the case only for those marriages that would be expected to contribute to (or, at least, not interfere with) productivity in the workplace, such as marriages where spouses report high levels of support and low levels of conflict. Findings from the literature on family-work spillover are suggestive that the emotional climate in the household affects worker productivity (Bolger et al. 1989; Chan and Margolin 1994; Crouter 1984; Dillworth 2004; Forthofer et al. 1996). Therefore, we could reasonably expect that relationship quality and satisfaction would influence the extent to which marriage has beneficial effects on wages. However, if findings suggest that marital status is more important than the quality of the marriage, this would lend further support to the idea that the marital wage premium is more about employer discrimination than it is about real differences in productivity between married and unmarried men. This is a potentially fruitful extension of the present analysis.

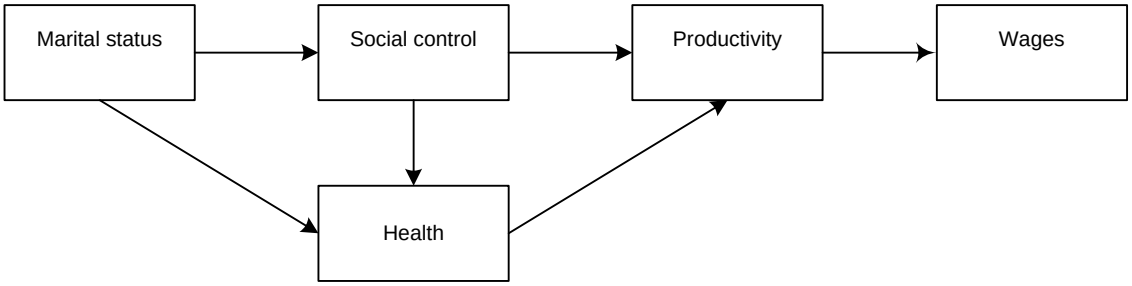


Figure 2.1 Theoretical model

Table 2.1 Descriptive statistics from the person-period data set (n = 1,888)

Variable	Mean (and Standard Deviation) or Percentage
Hourly wage	$18.28 ($14.73)
Log of hourly wage	$2.65 ($0.71)
Independent variables	
Currently married	70.07%
Was married	12.45%
Currently cohabiting	5.14%
Time-invariant control variables	
Age at Wave I	38 (9.02)
White	74.42%
High school	57.36%
College degree	14.88%
Graduate school	12.39%
Urban	75.58%
West	18.64%
North central	24.41%
Northeast	17.00%
Time-varying control variables	
Continuously employed	87.18%
Employed full time	92.96%
Mediating variables	
Binge drinking	1.32 (4.98)
Chronic conditions	0.49 (0.78)
Debilitating conditions	0.40 (0.61)
Depression	−0.22 (0.87)

Table entries are means with standard deviations in parentheses or percentages. * = $p < .05$.

Table 2.2. Effects of marriage on lifestyle and health

	1. Binge drinking	2. Chronic conditions	3. Debil. conditions	4. Depression
Intercept	2.19*	−0.37*	−0.20	0.93*
	(1.07)	(0.15)	(0.12)	(0.18)
Time (Slope)	−0.03	0.03*	0.02*	−0.01*
	0.02	(0.00)	(0.00)	(0.00)
Independent variables				
Currently	0.56	0.10	0.09	−0.25*
married	(0.44)	(0.06)	(0.05)	(0.07)
Was	1.08*	0.23*	0.17*	−0.06
married	(0.53)	(0.07)	(0.06)	(0.09)
Currently	0.77	0.12	0.08	−0.16
cohabiting	(0.61)	(0.08)	(0.07)	(0.10)
Control variables				
Log of hourly	−0.15	−0.10*	−0.08*	−0.11*
wage	(0.21)	(0.03)	(0.02)	(0.04)
Age at Wave I	−0.01	0.03*	0.02*	−0.00
	(0.02)	(0.00)	(0.00)	(0.00)
White	0.42	−0.02	−0.05	−0.25*
	(0.38)	(0.05)	(0.04)	(0.07)
High school	−0.60	−0.10	−0.06	−0.12
	(0.45)	0.06	(0.05)	(0.08)
College degree	−1.34*	−0.15	−0.12	−0.11
	(0.61)	0.08	(0.07)	(0.10)
Graduate school	−1.19	−0.24*	−0.17*	−0.18
	(0.63)	(0.09)	(0.07)	(0.11)
Urban	0.88*	−0.00	−0.04b	−0.05
	(0.38)	(0.06)	(0.04)	(0.07)
West	0.14	0.14*	0.14*	0.01
	(0.46)	(0.07)	(0.05)	(0.08)
North central	−0.17	0.04	0.02	0.17*
	(0.41)	(0.06)	(0.05)	(0.07)
Northeast	−0.19	0.07	0.08	0.08
	(0.46)	(0.07)	(0.05)	(0.08)
Continuously	−0.25	−0.05	−0.02	0.00
employed	(0.33)	(0.04)	(0.04)	(0.05)
Employed full	−0.53	−0.06	−0.01	−0.16*
time	(0.44)	(0.06)	(0.05)	(0.07)
−2 Res Log likelihood	11171.0	3767.9	2976.5	4448.3

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

Table 2.3 Estimates of hourly wage testing seven potential mediators

	1. Basic model	2. Binge drinking	3. Chronic conditions	4. Debil. conditions	5. Depression
Intercept	1.19*	1.1922*	1.1590*	1.1718*	1.2206*
	(0.12)	(0.1241)	(0.1246)	(0.1240)	(0.1238)
Time (Slope)	0.05*	0.0378*	0.0490*	0.0488*	0.0466*
	(0.00)	(0.0029)	(0.0022)	(0.0021)	(0.0021)
Indep. variables					
Currently	0.18*	0.18*	0.18*	0.18*	0.17*
married	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Was	0.16*	0.16*	0.17*	0.17*	0.16*
married	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Currently	0.15*	0.15*	0.15*	0.15*	0.14*
cohabiting	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Control variables					
Age at	0.01*	0.01*	0.01*	0.01*	0.01*
Wave I	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
White	0.14*	0.14*	0.14*	0.14*	0.14*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
High school	0.38*	0.38*	0.37*	0.37*	0.37*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
College	0.79*	0.79*	0.78*	0.77*	0.78*
degree	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Graduate	0.82*	0.82*	0.80*	0.80*	0.82*
school	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Urban	0.01	0.02	0.02	0.01	0.01
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
West	0.27*	0.27*	0.29*	0.28*	0.27*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
North central	0.13*	0.13*	0.14*	0.13*	0.14*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Northeast	0.22*	0.22*	0.23*	0.23*	0.23*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Continuously	−0.08*	−0.08*	−0.07*	−0.08*	−0.07*
employed	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Employed full	0.09*	0.09*	0.08*	0.09*	0.09
time	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)
Mediating variables					
Binge		−0.00			
drinking		(0.00)			
Chronic			−0.06*		
conditions			(0.02)		
Debilitating				−0.07*	
conditions				(0.02)	
Depression					−0.04*
					(0.01)
−2 Res Log likelihood	2781.1	2790.3	2756.2	2776.2	2780.8

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

CHAPTER 3: RELATIONSHIP QUALITY AND WAGE PREMIUMS FOR MEN (STUDY 2)

Introduction

A vast amount of literature exists on the benefits of marriage for children and adults. For children, living with two biological, married parents has associated advantages in terms of improved academic performance, sociability, initiative, reduced school behavioral problems, acting out, anxiety, delinquency, violent behavior, smoking, and attending therapy (Amato 2005; Thomson, Hanson, and McLanahan 1994). Among adults, those who are married have been found to have higher self-rated health status (Hahn 1993; Lillard and Panis 1996); lower rates of chronic disease, impairment, and disability (Pienta, Hayward, and Jenkins 2000); and longer lives (Lillard and Panis 1996; Murray 2000; Smith and Waitzman 1994), as compared with unmarried individuals.

An additional benefit of marriage, and the focus of this study, is that married men have been found to have higher personal wages than unmarried men (a phenomenon called the *marital wage premium*). Estimates of the premium range from 5 percent to 30 percent and are evidenced by both an intercept shift and a steeper wage growth trajectory for married men than for single men. The wage advantage increases as a function of the length of time spent married, although the length of a first marriage appears to be more important than time spent in any subsequent marriages (Korenman and Neumark 1991). Divorced and cohabiting men also earn more than other single men, but less than married men (Cohen 1999, 2002; Light 2004; Stratton 2002). Although there is some debate as to the causal mechanism for the marital wage premium, possible explanations include selection effects (men with higher earnings potential selecting into marriage), favorable discrimination, and real differences in

productivity for married men because of the instrumental and social support they receive from their spouse.

One key difference between literature on the marital wage premium and literature on the other benefits of marriage has been the extent to which the quality of the marital union and the level of marital satisfaction have been taken into consideration. Much of the literature on the benefits of marriage has acknowledged that it is not just marital status, but also marital quality, that affects outcomes for adults and children. For example, within the literature on the health benefits of marriage, results indicate that conflict between spouses leads to higher blood pressure and heart rates and has other adverse physiological outcomes associated with health issues, such as cardiovascular disease, immune function, and wound healing (Kiecolt-Glaser and Newton 2001). Similarly, marital strain has been found to accelerate the typical decline in self-rated health that occurs over time (Umberson et al. 2006; Umberson and Williams 2005). Marital problems have also been linked to mental health problems (Beach and Epstein 1990; Coie et al. 1993; Williams 2003), and remaining in a long-term unhappy marriage is associated with significantly lower levels of overall happiness, life satisfaction, self-esteem, and overall health and higher levels of psychological distress, compared with those remaining continuously happily married and those who divorce and remain unmarried (Hawkins and Booth 2005).

Furthermore, in the literature on marriage and child well-being, numerous studies indicate that frequent exposure to marital hostility is associated with behavioral and emotional problems in children (e.g., Buehler et al. 1997; Davies et al. 2002; Harold et al. 1997).

Despite clear links between marital quality and outcomes in these adjacent literatures, considerations of marital quality have been almost entirely absent from the literature on marriage and personal earnings (Ribar 2004). However, a review of the literature suggests that marital quality and satisfaction could be relevant. Studying the extent to which marital quality influences the marital wage premium will be the focus of this chapter.

Theory

One of the predominant theoretical explanations of the marital wage premium is that married men are more productive than single men. Two variations on this explanation are worth noting.

The economic version of this productivity theory is that marriage allows men to specialize in market work to the extent that their wives specialize in nonmarket work (Becker 1991); however, this specialization theory has not been well supported in the literature. Loh (1996) found that, contrary to the prediction of the specialization model, married men with wives who devote more time to the labor market receive a higher marital wage premium than those whose wives specialize in nonmarket labor. Further, the marital wage premium increased as a function of a wife's education, net of her labor market participation. Hersch and Stratton (2000) used measures of men's time spent doing housework as a more direct indicator for specialization. They found that housework was not strongly associated with wages, and controlling for this variable did not diminish estimates of the marital wage premium.

A second, and yet untested, sociological variant on productivity theory (and the focus of this chapter) also focuses on processes and interactions that occur between spouses.

Specifically, the argument is that marriage has the potential to improve the health and lifestyle choices of its members, leading them to be more productive at work.

Becker (1962, 1973) argued that people make investments in themselves (i.e., health care, fitness/wellness goods and services, education, and training and information about jobs) with an eye toward future returns. Personal earnings rise with these investments because they enhance worker productivity.

Becker (1962) noted that one way to invest in future personal earnings is to improve physical and mental health, and he further acknowledged that these are among the commodities produced in the household (Becker 1973). Similarly, Grossman (1972) argues that household-production functions produce well-being outcomes with inputs of goods (i.e., nutritious foods, medicine, and medical services) and inputs of time spent participating in healthy behaviors (i.e., exercising, monitoring symptoms, or visiting health care professionals). The combined incomes of married couples and the increased likelihood that at least one adult in the household has access to a job with health insurance puts them at an advantage relative to single adults; plus, the time efficiencies associated with living in a partnership would allow for greater time investments in healthy behaviors.

The potential of marriage to increase the health and earnings potential of its members is likely to be contingent on the quality of the marriage. First, the presence of an emotionally supportive spouse might directly benefit adults' emotional well-being, thus allowing them to bring more energy and focus to their work in the labor market; an instrumentally supportive spouse might also provide advice regarding career decisions and managing professional

relationships (Waite and Gallagher 2000). On the other hand, the presence of marital conflict or low satisfaction with the relationship may lead to distraction at work.

The literature on marital conflict also points to the negative effects of interpersonal conflict on physical health. Kiecolt-Glaser and Newton (2001) conclude that negative dimensions of marital functioning have indirect influences on health outcomes, through depression and health habits, and direct influences on cardiovascular, endocrine, immune, neurosensory, and other physiological mechanisms. Thus, a marriage that is high in stress and conflict may lead to health issues that increase absence from work. The literature reviewed later in this chapter lends support to this explanation.

Being married can also lead to more responsible behavior, such as improved decisionmaking and positive lifestyle choices—for example, fewer late nights, less drinking, less troublemaking, more attention to personal health (Wood, Goesling, and Avellar 2007; Umberson 1987)—that help men to be more productive while at work. Sampson and Laub (1993) argue that the formation of a *happy* marriage creates interdependent systems of obligation and restraint that impose significant costs for translating criminal propensities into action; thus, they argue that marriage increases informal social control to the extent that spouses have developed an attachment to and strong emotional ties with their partners.

A common thread between both the economic and the more sociological-based productivity explanations discussed in this section is that productivity is enhanced due to *processes and interactions* that occur within the context of marriage that are not part of the single man's daily life. A key assumption of productivity theory, then, is that the size of the marital wage premium will vary between married men *to the extent that marital processes*

and interactions vary between couples. Given the lack of support for the economic version of productivity theory (specialization theory), this chapter will focus on the relevance of marriage quality to the marital wage premium. The central question is whether the size of the marital wage premium is affected by variation in marital quality.

The theoretical model is presented in Figure 3.1. Two arrows extend down from marital quality to illustrate that marital quality has a moderating effect on the relationship between marital status and health and a direct effect on social control, so that men with higher marital quality will have higher wages than unmarried men and men with lower marital quality because those with higher marital quality will have increased health and social control.

Literature Review

Although no empirical studies have directly tested whether the marital wage premium varies as a function of marital satisfaction or quality, findings from the literature on family-work spillover suggest that the emotional climate in the household does affect productivity at work. Three early qualitative studies examined contagion of home stress to work stress. Crouter (1984) interviewed 55 male and female employees at a manufacturing plant and found that most employees recognized that their family lives influenced them at work. Although some referenced positive effects, such having a supportive spouse or learning a personal skill at home that could be used at work, others emphasized how times of crisis and stress at home affected their energy and mood at work. A few years later, using diary methods with a sample of 166 dual-earner couples, Bolger et al. (1989) found that arguments with spouses at home led to increased arguments at work for male workers, but not female

workers. Finally, Chan and Margolin (1994) utilized diary methods and a daily mood checklist to determine that positive affect at home was associated with positive work mood on the following day for husbands and with engagement at work on the following day for wives. In addition, husbands' negative home affect is associated with higher levels of negative mood and with lower levels of positive mood experienced by wives the following day at work, whereas wives' positive home affect was associated with husbands' engagement at work the following day.

Survey data has lent additional support for the importance of the emotional climate in the home in regard to worker performance. Dillworth (2004) found that family satisfaction was associated with a decreased frequency of family keeping them from getting work done on time, taking on extra work, doing a good job at work, concentrating on work, or feeling drained of energy needed for work. Likewise, Stevens et al. (2007) found that relationship satisfaction and family cohesion were associated with increased self-reports of family positively affecting work in a variety of ways and decreased self-reports of family causing a variety of distractions at work. Finally, in a more direct study of the effects of marital distress and worker productivity, Forthofer et al. (1996) found that marital satisfaction, marital quality, spousal bad behavior (e.g., drinking or using drugs, wasting money, coming home late, and having temper tantrums), positive interaction, and negative interaction were all correlated with loss in productivity while at work for men who have been married 10 years or less.

While the studies reviewed in this section have all focused on marital strain as a distraction while on the job, marital strain may also increase health-related work

absenteeism. In a review of 64 studies published during the 1990s that examined the links between marital interactions and health, Kiecolt-Glaser and Newton (2001) found that objective health status indicators revealed a causal link between marital interactions and a number of biological systems (e.g., immunological, cardiovascular, neurophysiological) at distinct points in the disease trajectory, including possible etiology, symptom exacerbation, prognosis, and recovery following a life-threatening medical event. Other studies that involved having couples discuss a contentious topic also demonstrated that conflict heightened stress—as measured by blood pressure, heart rates, and other physiological responses—particularly when the conflict was marked by a high level of hostility. The authors concluded that these experimentally observed physiological responses were large enough to affect outcomes such as cardiovascular disease, immune function, and wound healing, all of which are sensitive to stress. Similarly, marital strain has been found to accelerate the typical decline in self-rated health that occurs over time (Umberson et al. 2006; Umberson and Williams 2005). Marital problems have also been linked to mental health problems (Beach and Epstein 1990; Coie et al. 1993; Williams 2003), and remaining in a long-term unhappy marriage is associated with significantly lower levels of overall happiness, life satisfaction, self-esteem, and overall health and higher levels of psychological distress, compared with those remaining continuously happily married and those who divorce and remain unmarried (Hawkins and Booth 2005).

Emotionally and physically healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Hendrix et al. 1987). This effect varies by specific medical condition. Depression is associated with particularly high worker

absenteeism rates (Goetzel et al. 2003) and with suboptimal performance while at work (Goetzel et al. 2002). Chronic physical health conditions, most notably hypertension, are also associated with high levels of worker absenteeism (Goetzel et al. 2003). Consequently, Pelkowski and Berger (2004) estimate that hourly wages of permanently unhealthy American males are approximately 6.4 percent lower than their more healthy counterparts.

Hypotheses

Taken as a whole, the literature reviewed in this chapter suggests that, among married individuals, marital processes affect marital satisfaction and relationship quality, which, in turn, affect worker performance. To the extent that performance at work affects personal wages, we would expect that, among married men, men with higher marital satisfaction and relationship quality would have higher wages than men who are not married and also than men who are in marriages that are only of average quality. The proposed analyses will be the first empirical test of this particular theory to date. Four hypotheses will be tested.

> **Hypothesis 1:** *Married men's earnings are negatively related to marital stress; men in high-stress marriages will have lower earnings than men in marriages that are average in stress.*

Studies have demonstrated a direct link between stress in the home and performance at work. Specifically, following a stressful encounter at home, workers are likely to be distracted (Chan and Margolin 1994; Crouter 1984; Dillworth 2004; and Stevens et al. 2007) and are less likely to communicate effectively with other colleagues (Bolger et al. 1989). Due to the effects of stress on physical health, employees with stressful home lives are more likely to be absent from work, as demonstrated by (Forthofer et al. 1996).

Hypothesis 2: *Married men's earnings are positively related to marital support; men in marriages with high support will have higher earnings than men in marriages that are average in support.*

A supportive spouse may help her husband be more successful in many ways. First, simply by being a sounding board for her husband after a difficult day at work may allow him to be more effective in managing work-related stress. A supportive spouse may provide suggestions for coping strategies (Thoits 1995), feedback, and encouragement, all of which can increase feelings of mastery and competence, both important coping resources (see Kessler and Essex 1982). A supportive spouse may also gather or analyze information that may help her husband at work, help him make better work and career decisions, and offer input on how to manage professional relationships (Waite and Gallagher 2000).

Hypothesis 3: *Married men's earnings are positively related to marriage satisfaction; men in marriages with high satisfaction will have higher earnings than men in marriages that are average in satisfaction.*

Marriage has been documented to have a civilizing effect on its members (Nock 2005). Married individuals are more likely to settle down in a way that may make them more productive at work (i.e., fewer late nights, less drinking, less criminal involvement, etc.). However, Sampson and Laub (1993) argue that it is not the institution of marriage, per se, that has the effect of making its members more law-abiding and productive members of society. They argue that it is the presence of a strong attachment to a spouse, combined with close emotional ties, that creates a social bond or interdependence between two individuals. This inspires an internal sense of social control that leads individuals to reduce involvement with criminal and substance abuse behaviors that would interfere with men becoming and being recognized as productive workers.

Hypothesis 4: *Based on the well-established link between marital status and earnings for males, it is hypothesized that men who are not married will have lower earnings than men who are in a marriage that is average in terms of stress, support, or satisfaction.*

The final hypothesis is based on a large volume of research that documents a wage advantage to being married. This hypothesis is included merely to round out the other hypotheses. If any or all of hypotheses 1 through 3 are supported, this will demonstrate the importance of marital quality relative to marital status. If only hypothesis 4 is supported, this will mean that the marital wage premium is based only on marital status and not on marital quality.

Methods

Data

Because of the availability of marital status and quality variables and of variables that are necessary for estimating wage models, Waves I through IV of the Survey of Americans' Changing Lives (ACL; see House 2006), a study primarily concerned with comparing the experiences of Black and White Americans in middle and late life, are used for the present analysis. With a sampling universe that included the continental United States' household population, aged 25 years or older, in-person interviews were conducted for Waves I, II, III, and IV in 1986, 1989, 1994, and 2006, respectively. For Wave I, a multistage stratified area probability sample with oversampling of African Americans and those aged 60 years or older was used. Of the original 3,617 Wave I respondents, 2,867 participated in Wave II; 2,562 participated in Wave III (including 164 interviews done by proxy respondents); and 1,692 participated in Wave IV (including 94 interviews done by proxy respondents). Attrition due to mortality was high on account of the oversampling of Americans aged 60 years or older in

Wave 1. Specifically, 178 respondents were deceased by the end of Wave II; 544 were deceased by the end of Wave III; and 1,184 were deceased by the end of Wave IV. The focus for the present analysis is on the approximately 800 African American and Caucasian males who were between the ages of 25 years and 59 years during Wave I.

To accommodate longitudinal analysis, the data was converted from a flat file to a person-period data set. Up to four records were created for each respondent, one for each wave in which the respondent participated. Each of these records contains fixed covariates—variables that do not change over time—plus additional time-varying covariates measured at the time of each annual interview (e.g., hourly wages for the current job and its natural log; weeks and hours per week worked during the previous calendar year;).

Consistent with other marital wage premium studies, records for years in which any respondent was unemployed were excluded from the person-period data set. Due to the large number of retirees in the sample, records for years in which the respondent was aged 59 years or higher were also excluded from the analysis. Finally, all records with missing data for any of the analysis variables were excluded from the data set. Following these deletions, the analysis data set comprised 1,889 records for 688 adult men.

Measurements: Fixed Covariates

Fixed covariates are variables that do not change over time. Fixed covariates included in the present analysis include age at the time of Wave I and four additional fixed covariates, each measured using dummy variables: (1) race (African American or Caucasian), (2) region of residence in Wave I (west, northeast, or north central, with the south as the comparison group), (3) urbanicity of residence (urban or rural) at Wave I, and

(4) level of education (completed high school, completed a college degree, and attended graduate school, with less than a high school education as the comparison variable).

Although region and urbanicity of residence, and also education, could change over time, these variables are only available for Wave I. Note that all Wave I respondents were aged at least 25 years and, thus, were likely to have completed their education.

Time-Varying Covariates

The term *time-varying covariates* means that the covariates have at least the potential to vary from wave to wave in the data collection. These variables are included in the models as array variables to accurately reflect such variance over time.

Wages. The dependent variable is the hourly wage for the current job. For respondents who did not work during the reference period, this variable was set to missing. Consistent with the approach of Loh (1996) and Maasoumi et al. (2009), outliers of less than $1 per hour or greater than $100 per hour will be reset to missing. (Note that Budig and England [2001] use $200 as an upper limit. Many other authors do not specify whether outliers are excluded.) This variable was then log-transformed to normalize the distribution.

Time. The survey year is used as the measure of time, or the slope. Note that another option would have been to use age as the slope; however, because the focus of the analysis is to mediate the often documented marital wage premium, it is important to be consistent with previous research (e.g., Budig and England 2001; Ginther and Zavodny 2001; Korenman and Neumark 1991). Time is included as a continuous variable, with zero representing 1986 and 17 representing 2003.

Marital stress. Marital stress is measured using the ACL-standardized index constructed from three survey questions. The first item consists of a 1 to 7 scale, where 1 = *daily or almost daily* and 7 = *never*. Respondents were asked, "How often do the two of you typically have unpleasant disagreements or conflict?" The second item utilized a 1 to 5 scale, where 1 = *almost always* and 5 = *never*. Respondents were asked, "Taking everything into consideration, how often were you bothered or upset by your marriage/relationship?" The third item used a 1 to 5 scale, where 1 = *completely satisfied* and 5 = *not at all satisfied*. Respondents were asked, "Taking all things together, how satisfied are you with your relationship?" Three dummy variables were created: high stress (those with a score of 3 or higher), low stress (those with a score less than 2), and average stress. Average stress is excluded from the model as a comparison group.

Positive support from spouse. Positive support from spouse is measured using the ACL-standardized index constructed from two survey questions. These items use a 1 to 5 scale, where 1 = *a great deal* and 5 = *not at all*. Respondents were asked, "How much does your partner make you feel loved and cared for?" and "How much is your partner willing to listen when you need to talk about your worries or problems?" Three dummy variables were created: high support (those with a score of 0.5 or higher), low support (those with a score of less than 0), and average support. Average support is excluded from the model as a comparison group.

Marriage satisfaction. Marriage satisfaction was measured through one survey item that was consistently asked to married individuals at each wave. On a 1 to 5 scale, where 1 = *completely* and 5 = *not at all*, respondents were asked, "Taking all things together, how

satisfied are you with your relationship?" Three dummy variables were created: high satisfaction (those with a score of 5 or higher), low satisfaction (those with a score of 3 or lower), and average satisfaction. Average satisfaction is excluded from the model as a comparison group.

Not married. A dummy variable was created to identify those individuals who are not currently married. In addition, these individuals will have a value of zero for the dummy variables that represent high or low levels of marital stress, marriage satisfaction, and support from a spouse. Because the dependent variable is logged, the parameter estimate for the "not married" variable can be understood to be approximately the percentage difference between the initial status of the log of hourly wage for individuals who are not currently married, as compared with their counterparts in the "average marriage" condition that is excluded from the model as the comparison group (see Wooldridge 2005).

Time-varying control variables. "Continuous employment" is a dummy variable that indicates whether or not an individual worked at least 48 weeks during the past 12 months. "Full time" is a dummy variable that indicates whether or not individuals work at least 35 hours per work at their current job. As previously noted, race, region of residence, urbanicity of residence, and level of education are included as time-invariant controls because these variables are only available for Wave I.

Table 3.1 includes descriptive statistics (means and standard deviations) for continuous variables and percentages for dummy variables from the person-period data set. The average hourly wage was $18.28, translating to a log of hourly wage of 2.65. Roughly one-third of the records (29.30%) represent men who were not married at the time of the

survey; 23.61 percent were in a high-stress marriage; 26.20 percent were in an average stress marriage; 20.28 percent were in a low-stress marriage; 31.66 percent were in a high-support marriage; 23.34 percent were in a low-support marriage; 29.17 percent were in a high-satisfaction marriage; and 10.85 percent were in a low-satisfaction marriage. Across all records in the person-period data set, nearly three-quarters (74.43%) represent a White man, and over one-half represent men with a high school education. Most records (87.19%) indicated respondents who had been continuously employed in the previous year and who were currently working full-time hours in their current job (90.91%).

Analysis

The research hypotheses are tested using mixed models, containing both fixed effects and random effects. This approach draws on the complementary strengths of fixed-effects and random-effects models. One strength of the fixed-effects model is that it controls for all measured and unmeasured stable characteristics of the individuals in the study, thereby eliminating one important class of biases. However, although bias is reduced, because the independent variable often varies more *between* persons than *within* persons, there is often an increase in sampling variability resulting in higher standard errors. In contrast, although random-effects models do not control for unmeasured time-invariant characteristics of study participants, because random-effects models utilize variation both within and between individuals, these models have the advantage of having less sampling variability (and lower standard errors) than fixed-effects models.

Although fixed-effects models offer the advantage of controlling for all time-invariant characteristics of the individual (whether or not these characteristics have been measured),

these models cannot *estimate coefficients* for time-invariant characteristics of study participants. The opposite is true of random-effects models; random-effects models cannot control for unmeasured participant characteristics, but they can estimate coefficients for both time-varying and time-invariant variables.

Mixed models combine some of the virtues of both fixed effects and random effects models. Specifically, mixed models (1) produce estimates for both within-person and between-person effects, (2) estimate coefficients for any measured predictors, including both time-varying and time-invariant predictors, and (3) control for unmeasured time-varying characteristics of study participants (Allison 2005).

Mixed models are specified at two levels. The level-1 component of the model describes how each person in the sample changes over time, and the level-2 component of the model describes how these changes differ between persons (Singer and Willett 2003).

Because mixed models have no requirement for consistent intervals of time between the waves, this approach does not require all respondents to have the same number of waves of data (Singer and Willett 2003). Thus, mixed models are particularly appropriate for the ACL data, which include both variably spaced waves of data collection and high attrition due to respondent mortality.

Mixed models can be used to estimate trajectories over time, but that is not the focus of this analysis. The primary purpose for using this approach is that the model allows the researcher to estimate coefficients for both time-invariant and time-varying variables in the model, while also controlling for omitted time-invariant characteristics that are correlated with both a predictor variable and the dependent variable. This technique will allow for

estimates of the influence of marital quality on wages, net of unmeasured time-invariant characteristics that cause individuals to select into both a higher quality marriage and higher wages.

The limitation to this model is that if there are unmeasured time-varying characteristics that affect marriage or marriage quality and interact with another variable in affecting wages, the models will not eliminate bias. Still, analyses involving fixed effects are a vast improvement over ordinary least squares models because such analyses remove certain classes of bias that arise from omitted variables (Budig and England 2001).

Table 3.2 includes the wage equations, testing the six potential mediating variables. Table 3.2 reflects two submodels. The level-1 submodel represents the within-person change during the time period under study. The time-varying independent variables are included at this level.

The level-1 submodel is as follows:

$$Y_{ij} = \gamma_{00} + \gamma_1 \text{notmar}_{ij} + \gamma_2 \text{high}_{ij} + \gamma_3 \text{low}_{ij} + \gamma_{4-5} \text{time-varying controls}_{ij} + \pi_{01} \text{time}_{ij} + \varepsilon_{ij}.$$

In this model, Y_{ij} is the natural logarithm of income for individual i; γ_{00} is the average starting wage across individuals; and notmar, high, and low are all dummy variables indicating person i's marital status at time j. The notmar, high, and low dummy variables indicate whether person i is not married or in a marriage that is above average or below average on the dimension being tested in the model (three separate models will look at stress, support, and satisfaction) or if the person i is not in a marriage at time j. Never married is the omitted category associated with these three dummy variables. The time-varying controls are dummy variables: one for employed full time and a second for continuously employed in

the previous year for person *i* at time *j*; π_{01i} represents individual *i*'s true rate of change during the reference period; and ε_{ij} represents that portion of individual *i*'s outcome that is unpredicted on occasion *j*.

The level-2 submodel is a submodel for interindividual differences in change. The level-2 model has two parts, one for true initial status (π_{0i}), and a second for true rate of change (π_{1i}):

$$\pi_{0i} = \gamma_{00} + \gamma_{6-14}\text{time-invariant controls}_i + \zeta_{0i},$$

$$\pi_{1i} = \gamma_{20} + \gamma_{26-34}\text{time-invariant controls}_i + \zeta_{1i}.$$

In this part of the submodel, γ_{00} and γ_{20}, the intercepts, represent the average starting wage and rate of change, respectively, across individuals; the time-invariant measures include age, race, high school, college, grad school, urban, west, north central and northeast for person *i*'s status at Wave I; ζ_{0i} represents deviations in the initial status around the group average; and ζ_{1i} represents deviations in the rate of change around the group average.

Since there are common terms in the level-1 and level-2 submodels, the composite specification provides a more parsimonious representation of the analysis:

$$Y_{ij} = \gamma_{00} + \gamma_1\text{notmar}_{ij} + \gamma_2\text{high}_{ij} + \gamma_3\text{low}_{ij} + \gamma_{4-5}\text{time-varying controls}_{ij} + \gamma_{6-14}\text{time-invariant controls}_i + \pi_{15}\text{time}_{ij} + (\varepsilon_{ij} + \zeta_{01} + \zeta_{1i}\text{time}).$$

The analysis for this study was generated using SAS software, Version 9.1 of the SAS System for Windows, Copyright © 2002–2003 SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

Results

Table 3.2 presents the wage analyses. Separate models are run to look at how variations on marital stress, spousal support, and marital satisfaction do or do not affect wages. In each of the models, the control variables demonstrate the expected relationships. Wages increase over time and are higher for older individuals and those who have more education. Wages are higher for White men than for Black men and are higher in the western, north central, and northeastern regions than in the southern region. Hourly wages are higher for men who are employed full time; curiously, however, men who worked 48 weeks or more in the previous year earned less than those who worked for fewer weeks.

Marital stress. Model 1 shows that men who are not currently married earn approximately 9 percent less than men who are in a marriage with average stress. The coefficients for high and low marital stress are not statistically significant, indicating that wages for men who are in marriages that are either high or low in marital stress are not statistically different than men who are in an average marriage.

Marital support. The results found in model 2 are similar to those for model 1. Model 2 shows that men who are not currently married make approximately 9 percent less than men who are in a marriage with average support. The coefficients for high and low marital support are not statistically significant, indicating that wages for men who are in marriages that are either high or low in marital support are not statistically different than men who are in an average marriage.

Marital satisfaction. Model 3 shows that men who are not currently married earn approximately 8 percent less than men who are in a marriage with average marital satisfaction. The coefficients for high and low marital satisfaction are not significant,

indicating that wages for men who are in marriages that are either high or low in marital satisfaction are not statistically different than men who are in an average marriage.

Discussion

Despite clear links between marital quality and outcomes in the adjacent literatures that look at marriage and physical, mental, and emotional well-being outcomes in adults and children, considerations of marital quality have been almost entirely absent from the literature on marriage and personal earnings. Given the evidence of spillover from home life to productivity at work, this seems like an important oversight. The present analyses attempted to fill that gap using data from ACL.

Contrary to hypotheses 1, 2, and 3, men with very high or very low levels of stress, support, and satisfaction did not have wages that were significantly different than the wages of men in an average marriage. Only hypothesis 4 received support; together, models 1, 2, and 3 show that men who are not currently married earn less than men who are in a marriage that is average in stress, support, and satisfaction.

Collectively, the four analyses would suggest that it is marital status, rather than marital quality, that is the key in determining wages. Although it was not possible to directly test with the ACL data, this finding may suggest that it is employer discrimination, rather than some productivity-enhancing dynamic that occurs between spouses, that accounts for the marital wage premium. Studies of racial and sexual discrimination rely on theory that suggests that, in the absence of complete information about current and future employees, employers make decisions based on assumptions about the productivity levels of particular groups (see Tomaskovic-Devey 1993).

Several limitations occur within the present research. First, there was no time lag in the collection of the dependent variable and the independent variables. Given the failure to establish a statistically significant link between marital quality and the marital wage premium, the possibility of reverse causality is a nonissue. However, given that marital dynamics and satisfaction are fluid, it may actually be that the concurrent measure of marital dynamics and wages would lead to an underestimate of the relationship.

Perhaps a more important limitation is that, for each of the three indicators of marital quality, only between one and three variables were available at each wave. A more detailed index of questions might have been better suited to detect differences. For example, the indicators of spousal support referred to feeling cared for and to a partner's willingness to listen to the respondent talk about problems. Perhaps a longer list of questions asking more specifically about spousal emotional and instrumental support for the respondent's career would have yielded different findings. When studying the marital wage premium, it is important to utilize panel data to control for time-invariant characteristics that may lead men to differentially select into both marriage and higher paying jobs. Unfortunately, there currently are no other panel data sets that have extensive marital quality measures (available in more than one wave) and the necessary wage and labor measures necessary to do this sort of analysis. These measures would be worthwhile measures to include in future waves of ongoing national panel studies such as the Adolescent Health Survey or the 1997 National Longitudinal Survey of Youth.

This study adds to a small existing literature in which hypotheses derived from productivity theory are tested and, mostly, rejected. Loh (1996) found that the marital wage

premium does not extend to men who are self-employed, suggesting that the marital wage premium has more to do with the presence of an employer than the presence of a spouse. Later, Ahituv and Lerman (2007) found that while married men did substantially and quickly increase their hours at work after entering marriage, the effect of marriage on wages took place slowly as men remained in marriage; ultimately, the increase in hours only accounted for one-third to one-half of the marital wage premium in the data they analyzed. Chapter 2 of this dissertation demonstrated that the marital wage premium is not explained by health and lifestyle indicators that are known to be associated with worker productivity. This chapter has demonstrated that marital processes associated with emotional support were not associated with higher wages; marital status rather than marital quality was the key in determining wages. Further research is needed to continue examining hypotheses that derive from productivity and discrimination theories.

While this study has demonstrated that low-quality marriages offer the same wage advantage (over not being married) as average and high-quality marriage, this is not to argue that just *any* marriage is beneficial to its members. While it is true that this study adds to a growing literature showing that marriage is associated with higher earnings, and while other studies have pointed to other financial benefits of marriage (the opportunity to pool resources, to benefit from economies of scale, to gain access to a spouse's medical insurance, etc.; see Waite and Gallagher 2000), numerous other studies have shown that an unhappy marriage is associated with lower levels of overall happiness, life satisfaction, self-esteem, and overall health and with higher levels of psychological distress. Thus, we must not jump

to the conclusion that promoting marriage is an effective way to ensure well-being across the board.

Furthermore, while it appears that a marriage of any quality does improve wages for men, there is more to learn about the extent to which the marital wage premium holds across groups. It is important to analyze the extent to which the marital wage premium holds between different racial or socioeconomic groups before we conclude that *any* marriage is associated with higher wages. Identifying between-group variation in the marital wage premium may help shed further light on the causal mechanisms involved in the marital wage premium (Cohen 2002). This could be a potentially fruitful topic for further research.

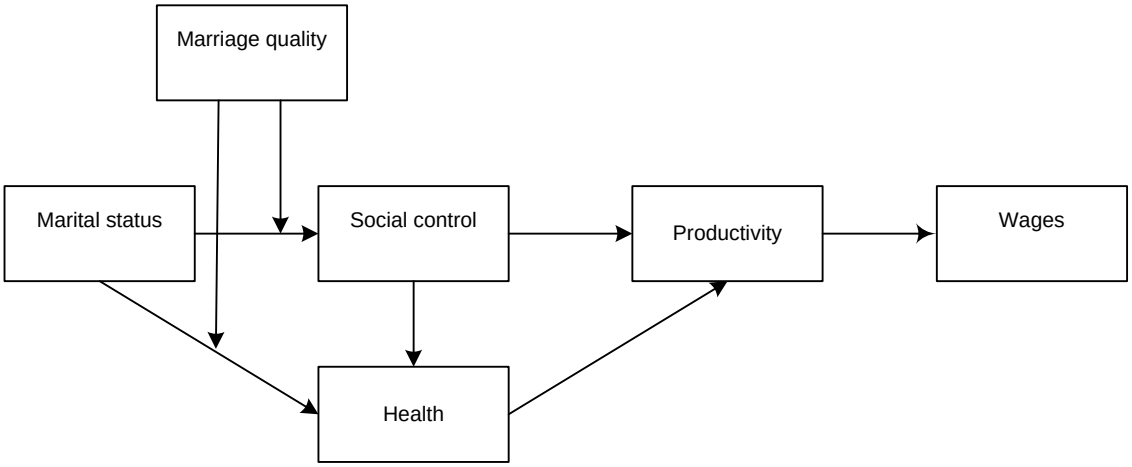


Figure 3.1 Theoretical model

Table 3.1 Descriptive statistics from the person-period data set (n = 1,889)

Variable	Mean (and Standard Deviation) or Percentage
Hourly wage	$18.28 ($14.73)
Log of hourly wage	$2.65 ($0.71)
Independent variables	
Not currently married	29.91%
High-stress marriage	23.61%
Average-stress marriage	26.20%
Low-stress marriage	20.28%
High-support marriage	31.66%
Average-support marriage	15.09%
Low-support marriage	23.34%
High-satisfaction marriage	29.17%
Average-satisfaction marriage	30.07%
Low-satisfaction marriage	10.85%
Time-invariant control variables	
Age at Wave I	38 (9.02)
Caucasian	74.43%
High school	57.38%
College degree	14.88%
Graduate school	12.38%
Urban	75.60%
West	18.63%
North central	24.40%
Northeast	17.05%
Time-varying control variables	
Continuously employed	87.19%
Employed full time	92.91%

Table entries are means with standard deviations in parentheses or percentages. * = $p < .05$.

Table 3.2 Wage equations

	1. Stress	2. Support	3. Satisfaction
Intercept	1.29*	1.29*	1.27*
	(0.13)	(0.13)	(0.13)
Time (Slope)	0.05*	0.05*	0.05*
	(0.00)	(0.00)	(0.00)
Independent variables			
Not currently married	−0.09*	−0.09*	−0.08*
	(0.04)	(0.04)	(0.03)
High-stress relationship	−0.04		
	(0.03)		
Low-stress relationship	−0.02		
	(0.03)		
High support from partner		−0.05	
		(0.03)	
Low support from partner		−0.00	
		(0.04)	
High-satisfaction relationship			−0.01
			(0.03)
Low-satisfaction relationship			−0.03
			(0.04)
Control variables			
Age at Wave I	0.01*	0.01*	0.01*
	(0.00)	(0.00)	(0.00)
Caucasian	0.14*	0.14*	0.14*
	(0.05)	(0.05)	(0.05)
High school	0.37*	0.37*	0.37*
	(0.05)	(0.05)	(0.05)
College degree	0.77*	0.77*	0.77*
	(0.07)	(0.07)	(0.07)
Graduate school	0.81*	0.81*	0.81*
	(0.08)	(0.08)	(0.05)
Urban	0.02	0.02	0.02
	(0.05)	(0.05)	(0.05)
West	0.27*	0.27*	0.27*
	(0.06)	(0.06)	(0.06)
North central	0.14*	0.14*	0.14*
	(0.05)	(0.05)	(0.05)
Northeast	0.23*	0.22*	0.23*
	(0.06)	(0.06)	(0.06)
Continuously employed	−0.08*	−0.08*	−0.08*
	(0.03)	(0.03)	(0.03)
Employed full time	0.00*	0.00*	0.00*
	(0.00)	(0.00)	(0.00)
−2 Res Log likelihood	2790.5	2790.0	2791.4

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

CHAPTER 4: RACIAL DIFFERENCES IN THE MARITAL WAGE PREMIUM (STUDY 3)

Introduction

A long history of research shows that married people are generally better off than their unmarried counterparts (Nock 2005). Married people have been found to have higher self-rated health status (Hahn 1993; Lillard and Panis 1996); to have lower rates of chronic disease, impairment, and disability (Pienta, Hayward, and Jenkins 2000); and to live longer lives (Lillard and Panis 1996; Murray 2000; Smith and Waitzman 1994). Married couples are also wealthier than unmarried couples (Hao 1996), in part due to higher wages for married men. This phenomenon of higher wages for married men is termed the *marital wage premium.*

These findings, coupled with findings related to the benefits of marriage for child outcomes (for a comprehensive review, see Ribar 2004), have been heralded by those who wish to promote marriage. However, others (e.g., Huston and Melz 2004) provide a voice of caution, noting that it is important to attend to the conditions under which the proposition that marriage is good for people does or does not hold.

Indeed, there are some indications that some stand to gain more from marriage than others. Consider, for example, the debate as to whether "his marriage" is better than "her marriage," as famously suggested by Jessie Bernard (1972). Bernard argued that married women had lower psychological well-being outcomes than did single women. Waite and Gallagher (2000) later countered that these effects are related more to being a mother than to being wife; however, although the research has generally found benefits of marriage for

women, they appear to gain less than men in terms of health (Pienta, Hayward, and Jenkins 2000) and personal wages (Korenman and Neumark 1992; Loughran and Zissimopoulos 2004).

In addition to gender differences, it has also recently been recognized that some benefits of marriage vary by race. For example, in a comprehensive review of the literature, Blackman et al. (2005) find that evidence generally suggests that Black adults derive little benefit from marriage in terms of physical health. In fact, married Black women actually report poorer health than do unmarried Black women. In addition, Blackman and colleagues show that marriage provides fewer psychological benefits to Black persons than it does to White persons, largely due to the lower average quality of Black marriages relative to White marriages. Overall, they find that Black women benefit substantially less from marriage than do White women, Black men, and White men.

Despite the growing evidence that there are racial differences in the extent to which people reap at least some of the benefits of marriage, the extent to which the wage benefits of marriage may differ by race and ethnicity is not clear. Studying how race influences the marital wage premium will be the focus of this chapter.

Literature Review

To date, studies employing samples of White males have consistently found that married White males earn more than divorced, cohabiting, and other never-married White males; yet, to date, there has been little attention paid to the potential for racial differences in the returns to marriage for personal wages (Cohen 1999). In fact, most empirical marital

wage premium studies have excluded people of color (e.g., Gray and Vanderhart 2000; Ginther and Zavodny 2001; Korenman and Neumark 1991, 1992; Loh 1996; Stratton 2002).

There is reason to believe that there could be differences in the marital wage premium by race/ethnicity. For example, because Black individuals experience fewer health and psychological benefits from marriage and because they are generally less satisfied with their marriage and family life than are people who are White (see Blackman et al. 2005) and report more negative spouse behaviors, such as affairs and domestic violence (Broman 2005), they may not experience the same boost in productivity at work. Further, because housework is distributed more equally between husbands and wives in Black households than in White households (Dillaway and Broman 2001), Black married men should have less time and energy to invest in the labor market, and Black married women should have more time and energy to invest in the labor market than would their White counterparts. In addition, the median age of first marriage is several years higher for Black men and women relative to their White and Hispanic counterparts (Simmons and Dye 2004). There is evidence that shows delaying first marriage yields benefits for career development and wages for women, but not for men (Loughran and Zissimopoulos 2004). Thus, we might expect that Black men would experience lower marital wage premiums and that Black women would experience higher marital wage premiums than their White counterparts.

Indeed, there is preliminary evidence of race effects in the marital wage premium. Cohen (1999) finds that Black men and Hispanic men have smaller marital wage premiums but larger cohabitation premiums than White men. The results for women were much more varied. Married, divorced, and cohabiting White women all earn less than their single

counterparts, while the pattern is reversed for Black women. The model shows no statistically significant effects for Hispanic women. Although the findings are intriguing, they are limited by the cross-sectional design of the study. Without controls for selectivity, it is difficult to accurately compare the marital premium between groups.

Fahrney (2007) later constructed a series of multivariate models for change using 12 waves of the 1979 National Longitudinal Survey of Youth (NLSY) data. Her analysis yielded the typical findings for White males: married men earn more than their single counterparts, and this advantage increases with each additional year married; men who are divorced earn more than men who have never married, but to a lesser extent than married men; and men who are cohabiting yield a premium that is in between that of currently married and currently divorced men. Thus, using the interpretive framework provided by Ginther and Zavodny (2001), Fahrney concluded that for White men, marriage leads to both (favorable) discrimination and real differences in productivity. Fahrney found that Black men experience favorable discrimination in starting wages to an even greater extent than do White men, but their earnings do not increase at a faster rate than their never-married counterparts, indicating that marriage does not increase their productivity in the labor market. Fahrney speculated that the reason marriage does not appear to increase productivity for Black men is because Black men experience fewer health and psychological benefits from marriage, are generally less satisfied with their marriage and family life, and engage in a higher proportion of housework. Unfortunately, due to limitations with the NLSY data, these potential explanations could not be tested.

Theory

To date, the vast majority of the marital wage premium literature has drawn either explicitly or, more commonly, implicitly on Gary Becker's theoretical analyses of household production, human capital, and earnings (Becker 1962, 1973). Becker argued that people—both individually and collectively, as part of households—make investments in their own earnings potential (i.e., health care, fitness/wellness goods and services, education, training for and information about jobs) with an eye toward future returns. According to the theory, personal earnings rise with investments to human capital because they enhance worker productivity.

Becker further notes that one way to invest in future earnings is to improve emotional and physical health (Becker 1962), and he acknowledges that emotional and physical health status are among the commodities produced in the household (Becker 1973). Similarly, Grossman's (1972) model of marriage and demand for health suggests that household-production functions produce well-being outcomes with inputs of goods—such as medicines, nutritious foods, physician services—and inputs of time spent exercising, monitoring symptoms, or visiting health care professionals. Because purchased goods and services contribute to the production of health, the combined incomes of married couples and the increased likelihood that at least one adult in the household had access to a job with health insurance put them at an advantage relative to single adults. Also, the efficiencies associated with living in a partnership would allow for greater time investments in health.

Waite and Gallagher (2000) argue that marriage could have other nonpecuniary effects on health. For example, the sense of stability and the availability of emotional

support might directly benefit adults' emotional and physical well-being, *provided that it is a stable and supportive union*.

An additional possibility is that being married can lead to more responsible behavior, such as improved decisionmaking and positive lifestyle choices—for example, fewer late nights, less drinking, less troublemaking, more attention to personal health (Wood, Goesling, and Avellar 2007)—that help men to be more productive while at work. Researchers from the criminology literature explain the causal mechanisms involved. Sampson and Laub (1993) argue that the formation of a *happy* marriage creates interdependent systems of obligation and restraint that impose significant costs for translating criminal propensities into action; therefore, they argue that marriage increases informal social control.

Thus, a possible explanation for the marital wage premium could be that marriage affects wages through two major pathways: one leading from marriage to wages via social control, and the other leading from marriage to wages via health. Both of these pathways potentially may be influenced by marital quality (see Figure 4.1).

Chapters 2 and 3 examined aspects of these pathways as potential explanations for the phenomenon of the marital wage premium. This chapter includes analyses to determine whether this same theoretical model could be used to examine *differences in the magnitude of the marital wage premium by group* and, more specifically, *by racial group.*

As Figure 4.1 illustrates, theory suggests that the marital wage premium may be at least in part a function of marital quality, health, and social control. As discussed in the preceding literature review, previous research points to three key racial differences with regard to relationship quality and the accumulation of health, social, and human capital

within marriage. These racial differences in both marriage quality and the effect of marriage on health may account for racial differences in the marital wage premium.

First, relative to White men, Black men are generally less satisfied with their marriage and family life and report more problematic spouse behaviors, such as substance abuse, infidelity, and domestic violence (Broman 2005). Marital quality is relevant to worker productivity because an employee in a marriage high in instrumental and emotional support would have more time and energy to devote to the labor market, while an individual in a marriage high in stress and conflict is more likely to be prone to illness (Kiecolt-Glaser and Newton 2001), leading to worker absenteeism (Goetzel et al. 2002, 2003) or be distracted at work (Forthofer et al. 1996).

First, perhaps related to differences in marital quality, relative to White men, Black men experience fewer health and psychological benefits from marriage (see Blackman et al. 2005). This suggests that racial differences in the marital wage premium may be, in part, due to racial differences in the effects of marriage on health.

Based on these racial differences in marital quality and the effect of marriage on health, the theoretical model guiding the present analysis (Figure 4.2) represents a refinement of Figure 4.1. As in Figure 4.1, we see that marriage affects wages through two major pathways: one leading from marriage to wages via social control, and the other leading from marriage to wages via health. Again, both of these pathways are potentially influenced by marital quality. Figure 4.2 differs from Figure 4.1 in the addition of the race variable. Race is shown as a moderating variable between marital status and health. Marriage quality is shown as a mediating variable between race and health and social control.

Hypotheses

The present analysis will build on the aforementioned theoretical orientation and previous research to estimate mixed models to determine how race influences the marital wage premium. Because the analysis will be conducted using data from the Americans' Changing Lives (ACL) study, which primarily includes data from White and Black Americans, the analysis will focus only on these two racial groups.

Based on earlier findings by Cohen (1999) and Fahrney (2007), both of which utilize other data sets to document that White men have a larger marital wage premium than Black men, the analysis will begin by determining if the same pattern is found within the ACL data. Thus, the following hypothesis will be tested:

> **Hypothesis 1:** *Married White men will have a larger marital wage premium than Black men.*

While this relationship has been documented previously, potential explanations for this finding have not been empirically tested. If this pattern can be established within the ACL data, the remaining hypotheses will be tested to attempt to determine the reason for the racial differences in the marital wage premium. The literature points to several potential hypotheses.

Based on literature pointing to racial differences in the prevalence of different marital problems and negative spouse behaviors (Broman 2005) and on literature pointing to the link between marital problems and worker productivity (e.g., see Forthofer et al. 1996), the following two hypotheses will be tested:

> **Hypothesis 2:** *Racial differences in marital quality can account for racial differences in the marital wage premium.*

Hypothesis 3: *Racial differences in problem behavior (e.g., binge drinking) can account for racial differences in the marital wage premium.*

Marital quality is relevant to worker productivity because an employee in a marriage high in instrumental and emotional support would have more time and energy to devote to the labor market, while an individual in a marriage high in stress and conflict is more likely to miss work or be distracted at work. Previous research yields support for this relationship between marital quality and worker productivity.

In a series of qualitative interviews, Crouter (1984) found that most employees perceive that family life influenced them at work. Although some respondents referenced positive effects of having a supportive spouse, others emphasized how conflict and stress at home lowered their energy and mood at work. Bolger et al. (1989) found that among males, arguments with spouses at home led to increased arguments at work. Finally, Chan and Margolin (1994) utilized diary methods and a daily mood checklist to determine that positive affect at home was associated with positive work mood on the following day for husbands. In addition, wives' positive home affect was associated with husbands' engagement at work the following day.

Survey data has lent additional support for the importance of marital quality for worker performance. Dillworth (2004) found that family satisfaction was associated with a decreased frequency of the following: family keeping them from getting work done on time, taking on extra work, doing a good job at work, concentrating on work, or feeling drained of energy needed for work. Stevens et al. (2007) found that relationship satisfaction and family cohesion were associated with increased self-reports of family positively affecting work in a variety of ways and with decreased self-reports of family causing a variety of distractions at

work. Finally, Forthofer et al. (1996) found that marital satisfaction, marital quality, spousal bad behavior (e.g., drinking or using drugs, wasting money, coming home late, and having temper tantrums), positive interaction, and negative interaction were all correlated with loss of productivity on the job for men who have been married 10 years or less.

Blackman et al. (2005) point to several explanations for racial differences in marital quality. First, Black individuals are more likely to report problem spouse behaviors (affairs, domestic violence, substance abuse, etc.). Second, due to discrimination, educational differences, and differences in incarceration histories, Black men typically contribute less money to their households than White men, leading both Black men and their wives to be more dissatisfied with his performance as breadwinner.

Next, based on literature suggesting that Black individuals reap fewer physical and mental health benefits from marriage (Blackman et al. 2005) and on literature pointing to the link between health and worker productivity (Clark 1983; Hendrix, Steel, and Schultz 1987), the following two hypotheses will be tested:

> **Hypothesis 4:** *Racial differences in the effect of marriage on physical health can account for racial differences in the marital wage premium.*
>
> **Hypothesis 5:** *Racial differences in the effect of marriage on mental health can account for racial differences in the marital wage premium.*

Links between marriage and health have been attributed to a variety of sources, including improved economic well-being associated with combined incomes and economies of scale (Grossman 1972) and with the availability of emotional support and the sense of stability provided by the presence of a spouse (Kim and McKenry 2002; Marks and Lambert 1998; Simon 2002; Waite and Gallagher 2000).

Because emotionally and physically healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Goetzel et al. 2002, 2003; Hendrix, Steel, and Schultz 1987), an individual's health status may influence productivity. Thus, the links between marriage and health and between health and worker productivity may explain some of the marital wage premium. And, because research indicates that Black individuals gain fewer physical and mental health benefits from marriage, largely attributed to lower marital quality in Black marriages (Blackman et al. 2005), differences in the health gains to marriage could explain why the marital wage premium is lower for Black men than it is for White men.

Methods

Data

The data employed in the present analysis are Waves I through IV of ACL (House 2006), a study primarily concerned with comparing the experiences of Black and White individuals in middle and late life. These data are well suited to the present analysis because of the availability of lifestyle, health, marital status, and marital quality variables, in addition to the variables necessary to estimate wage equations.

The ACL sampling universe comprised the continental United States' household population, aged 25 years or older. A multistage stratified area probability sample with oversampling of Black individuals and those aged 60 years or older was employed for Wave I. Data was collected through in-person interviews that were conducted in 1986, 1989, 1994, and 2006 for Waves I, II, III, and IV, respectively. The number of participating respondents for Wave I was 3,617, and of those respondents, 2,867 participated in Wave II; 2,562

participated in Wave III (including 164 interviews done by proxy respondents); and 1,692 participated in Wave IV (including 94 interviews done by proxy respondents). Due to the oversampling of Americans aged 60 years or older in Wave I, attrition due to mortality was high: 178 respondents were deceased by the end of Wave II, 544 were deceased by the end of Wave III, and 1,184 were deceased by the end of Wave IV. The present analysis focuses on the approximately 700 Black and White males who were between the ages of 25 years and 59 years during Wave I.

The data were converted from a flat file to a person-period data set in preparation for longitudinal analysis. Up to four records were created for each respondent, one for each wave in which the respondent participated. Each of these records contained fixed covariates (date of birth, race, etc.) plus additional time-varying covariates measured at the time of each annual interview (e.g., marital status and quality, hourly wages for the current job and its natural log, weeks and hours per week worked during the previous calendar year, physical health).

As with other marital wage premium studies, records for years in which any respondent was unemployed were excluded from the person-period data set. In addition, due to the large number of retirees in the sample, records for years in which the respondent was aged 59 years or higher were also excluded from the analysis. Records with missing data for any of the analysis variables were excluded from the data set. The resulting analysis file includes 1,889 records for 688 adult men.

Measurements: Fixed Covariates

The analysis includes age at Wave I and four additional fixed covariates, each measured using dummy variables: (1) race (Black or White), (2) region of residence in Wave I (west, northeast, or north central, with the south as the comparison group), (3) urbanicity of residence (urban or rural) at Wave I, and (4) level of education (completed high school, completed a college degree, and attended graduate school, with less than a high school education as the comparison variable).

Although region and urbanicity of residence, and also education, could change over time, these variables were included as fixed covariates because they are only available for Wave I. All Wave I respondents were at least 25 years of age and, thus, are unlikely to have completed additional education after Wave I.

Time-Varying Covariates

Time-varying covariates—variables that are available at each wave and have at least the potential to vary from wave to wave—are included in the models as array variables to accurately reflect such variance over time.

Wages. The dependent variable is the natural log of hourly wage for current job. Because the data includes retired individuals, this variable was set to missing for respondents who did not work during the reference period. Consistent with the approach of Loh (1996) and Maasoumi et al. (2009), outliers of less than $1 per hour or greater than $100 per hour were reset to missing. (Budig and England [2001] use $200 as an upper limit, but most studies do not specify whether or not outliers are excluded.)

Time. Consistent with Budig and England (2001); Ginther and Zavodny (2001); Korenman and Neumark (1991), the survey year is used as the measure of time, or the slope. Time is included as a continuous variable, ranging from zero (1986) to 17 (2003)

Marital status. Marital status is coded into two dummy variables: married and unmarried. Unmarried is the comparison group.

Marital quality. Marital strain is used as a proxy for marital quality. Marital strain is measured using the ACL-standardized index constructed from three survey questions. The first item consists of a 1 to 7 scale, where 1 = *daily or almost daily* and 7 = *never*. Respondents were asked, "How often do the two of you typically have unpleasant disagreements or conflict?" The second item utilized a 1 to 5 scale, where 1 = *almost always* and 5 = *never*. Respondents were asked, "Taking everything into consideration, how often were you bothered or upset by your marriage/relationship?" The third item used a 1 to 5 scale, where 1 = *completely satisfied* and 5 = *not at all satisfied*. Respondents were asked, "Taking all things together, how satisfied are you with your relationship?"

Problem behavior. The problem behavior covariate includes a measure of binge drinking. Respondents were asked how many days they drank in the previous month and how many drinks they consumed on the days that they drank. For all respondents who reported that a usual day of drinking involved consuming five or more drinks, binge drinking was calculated as the number of days that they drank in the previous month. Respondents who reported that drinking usually involved less than five drinks and respondents who reported not drinking at all received a value of zero for this variable.

Health. The concept of health will be represented by a measure of both physical and mental health. A count of chronic conditions experienced over the past 12 months—including arthritis, hypertension, foot problems, broken bones, and incontinence—is included as the measure of physical health. The measure for mental health is the ACL-calculated standardized index of the Center for Epidemiological Studies Depression Scale (CES-D 11). These questions included the following: "(In the past week) I felt depressed," "I felt that everything I did was an effort," "My sleep was restless," "I felt happy," "I felt lonely," "People were unfriendly," "I enjoyed life," "I did not feel like eating," "My appetite was poor," "I felt sad," "I felt that people disliked me," and "I could not 'get going'"; the questions utilized a three-point scale, where 1 = *hardly ever* and 3 = *most of the time*.

Time-varying control variables. The models also include a dummy variable that indicates whether or not an individual worked at least 48 weeks during the past 12 months and a dummy variable that indicates whether or not individuals work at least 35 hours per week at their current job.

Descriptive statistics from the person-period data set are included in Table 4.1. Table entries are means for continuous variables and percentages for dummy variables. The average hourly wage was $18.28, making an average log of hourly wage of 2.65. Just over 70 percent of the records in the person-period data set represent an individual who was married at the time of the survey, and over one-half represent an individual with a high school education. Most records (87.19%) indicated respondents who had been continuously employed in the previous year and who were working full-time hours in their current job (92.96%). Among married men, the average marital strain score was 2.63. Overall, the

average incidence of binge drinking during the past month was 1.32 times. The average number of chronic conditions was 0.49, and the average score on the depression index was −0.22.

Analysis

The analysis for this study was generated using SAS software, Version 9.1 of the SAS System for Windows, Copyright © 2002–2003 SAS Institute Inc. SAS and all other SAS Institute Inc. product or service names are registered trademarks or trademarks of SAS Institute Inc., Cary, NC, USA.

The present analysis includes a series of mixed models that contain both fixed effects and random effects. This approach combines the complementary strengths from both fixed-effects and random-effects models. One strength of the fixed-effects model is that it controls for all measured and unmeasured stable characteristics of the individuals in the study, thereby eliminating one important class of biases. However, although bias is reduced, because variance in the dependent variable is often greater *between* persons than *within* persons, there is often an increase in sampling variability, resulting in higher standard errors. The opposite is true of random-effects models; random-effects models do not control for unmeasured time-invariant characteristics of study participants, but they can estimate coefficients for both time-varying and time-invariant variables.

Secondly, fixed-effects models offer the advantage of controlling for all time-invariant characteristics of the individual (whether or not these characteristics have been measured) but cannot *estimate coefficients* for time-invariant characteristics of study participants. Random-effects models cannot control for unmeasured participant

characteristics, but they can estimate coefficients for both time-varying and time-invariant variables.

By producing estimates for both within-person and between-person effects, estimating coefficients for any measured predictors, including both time-varying and time-invariant variables, and controlling for unmeasured time-varying characteristics of study participants, mixed models offer a helpful combination of strengths from the fixed-effects and random-effects models (Allison 2005).

Mixed models include a level-1 component that describes how each person in the sample changes over time and a level-2 component that describes how these changes differ between persons (Singer and Willett 2003).

Because mixed models have no requirement for consistent intervals of time between the waves, this approach does not require all respondents to have the same number of waves of data (Singer and Willett 2003). This is an important feature when conducting longitudinal analysis with ACL data, which include both variably spaced waves of data collection and high attrition due to respondent mortality.

Mixed models can be used to estimate trajectories over time, but that is not the focus of this analysis. The primary purpose for using this approach is that the model allows the researcher to estimate coefficients for both time-invariant and time-varying variables in the model, while also controlling for unmeasured time-invariant characteristics that are correlated with both a predictor variable and the dependent variable. This technique will allow for estimates of the influence of marriage on wages, net of unmeasured time-invariant characteristics that cause individuals to select into both marriage and higher wages.

A limitation of this model is that it will not eliminate bias associated with unmeasured time-varying characteristics that affect marriage and interact with another variable in affecting wages. Still, analyses involving fixed-effects models are a vast improvement over ordinary least squares models because such analyses remove certain classes of bias that arise from omitted variables (Budig and England 2001).

Table 4.2 compares the effect of marriage on wages for White men and Black men. The analysis in Table 4.2 reflects two submodels.

The level-1 submodel is as follows:

$$Y_{ij} = \pi_{0i} + \gamma_1 \text{mar}_{ij} + \gamma_{2-3}\text{time-varying controls}_{ij} + \pi_{01}\text{time}_{ij} + \varepsilon_{ij}.$$

In this model, Y_{ij} is the natural logarithm of income for individual i; π_{01i} represents individual i's true initial status; mar is a time-varying dummy variable indicating whether person i is married; and the time-varying controls are dummy variables: one for employed full time, and a second for continuously employed in the previous year for person i at time j. Changes in each of the π_{01i} represent individual i's true rate of change during the reference period, and ε_{ij} represents that portion of individual i's outcome that is unpredicted on occasion j.

The level-2 submodel is a submodel for interindividual differences in change. The level-2 model has two parts: one for true initial status (π_{0i}), and a second for true rate of change (π_{01i}):

$$\pi_{0i} = \gamma_{00} + \gamma_{4-11}\text{time-invariant controls}_i + \zeta_{0i},$$

$$\pi_{1i} = \gamma_{20} + \gamma_{24-31}\text{time-invariant controls}_i + \zeta_{1i}.$$

In this part of the submodel, γ_{00} and γ_{20}, the intercepts, represent the average starting wage and rate of change, respectively, across individuals; the time-invariant measures include age at Wave I, and dummy variables representing high school, college, grad school, urban, west, north central and northeast for person *i*'s status at Wave I; ζ_{0i} represents deviations in the initial status around the group average; and ζ_{1i} represents deviations in the rate of change around the group average.

Since there are common terms in the level-1 and level-2 submodels, the composite specification provides a more concise representation of the analysis:

$$Y_{ij} = \gamma_{00} + \gamma_1 \text{mar}_{ij} + \gamma_{2-3}\text{time-varying controls}_{ij} + \gamma_{4-11}\text{time-invariant controls}_i + \pi_{12}\text{time}_{ij} + (\varepsilon_{ij} + \zeta_{0i} + \zeta_{1i}\text{time}).$$

As written, the model allows log-income paths to vary in level and slope.

The models in Tables 4.3 through 4.6 are similar. In those tables, the influence of marriage on behavior and various health measures is estimated using the same formula as above. Each wage equation includes one time-varying independent variable. The composite specification for the wage equations in Tables 4.3 through 4.6 is the following:

$$Y_{ij} = \gamma_{00} + \gamma_1 \text{mar}_{ij} + \gamma_{2-3}\text{time-varying controls}_{ij} + \gamma_{4-11}\text{time-invariant controls}_i + \pi_{12}\text{time}_{ij} + \gamma_{13}\text{time-varying independent variable}_{ij} (\varepsilon_{ij} + \zeta_{0i} + \zeta_{1i}\text{time}).$$

Results

Marital wage premium. Table 4.2 presents the wage equations by race. Model 1 includes the sample of White men, and model 2 includes the sample of Black men. The intercept and slope for both samples are positive, statistically significant, and remarkably

similar to each other, indicating that the time 1 wages for both samples were similar and that wages increase over time at a similar rate, net of other variables in the model. In both models, age is positively and statistically related to wages. Wages increase with education in both samples; however, by summing the coefficients for education, we see that the influence of education on wages is higher for White men (2.23) than it is for Black men (1.55). Region of residence appears to be more important for Black men's wages (0.89) than for white men (0.43). Also, being continuously employed in the previous year was not associated with wages for either sample, but for White men being employed full time is positively associated with wages. Of primary importance to the present chapter, however, is the coefficient for marital status. Because the dependent variable is logged, the parameter estimate for the married variable can be understood to be approximately the percentage difference between the initial statuses of the log of hourly wage for individuals who are married, as compared with their single counterparts (see Wooldridge 2005). For White men, the married coefficient is positive and statistically significant, indicating a 10 percent increase in wages for married men. In sharp contrast, the marital status coefficient for Black men is negative, but it is not statistically significant, indicating that there is no marital wage premium for Black men in the ACL data. This pattern of racial differences in the marital wage premium persists even when all control variables are removed from the model (this analysis is not shown).

Figure 4.3 presents, in graphical form, the mean log of hourly wage by marital status and race, net of the control variables in models 4.2.1 and 4.2.2.

The analysis in Table 4.2 supports hypothesis 1 (that the marital wage premium is higher for White men than for Black men). Separate analyses are run to determine if racial differences in marital strain, or racial differences in the effect of marriage on problem behavior, physical health, and mental health can account for the racial differences in the marital wage premium.

Marital quality. Table 4.3 includes only records for years in which the survey participants were married. In model 1, we see that the coefficient for race is negative and statistically significant, indicating that among married men, marital strain is lower for White males than for Black males; however, models 2 and 3 indicate that marital strain is not associated with wages for either White or Black men. Thus, the present analysis fails to find support for hypothesis 2 (that racial differences in the marital wage premium are due to racial differences in marital quality).

Problem behavior. In Table 4.4 (and all remaining tables), the records for years in which men were not married are included. Models 1 and 2 look at the effect of marriage on problem behavior (e.g., binge drinking). In both models, the coefficients for marital status are not statistically significant for either sample. Furthermore, in models 3 and 4, the coefficient for problem behavior is not statistically significant in either model. Collectively, these results fail to support hypothesis 3 (that racial differences in the effect of marriage on problem behaviors can account for any of the racial differences in the marital wage premium).

Physical health. In Table 4.5, while models 3 and 4 show that health problems decrease wages for both White and Black men, in models 1 and 2 the coefficient for marriage

is not statistically significant, indicating that marriage does not influence physical health for either sample. Overall, while racial differences in health might partially explain racial differences in wages, racial differences in the *effects of marriage on health* cannot explain racial differences in the effects of marriage on wages. Thus, hypothesis 4 is not supported.

Mental health. In models 1 and 2 of Table 4.6, the coefficient for married is negative in both samples but is only statistically significant for the White sample, indicating that marriage decreases depression for White males but not Black males. Likewise, in models 3 and 4, the coefficient for mental health is negative but is statistically significant only for White males, indicating that mental health is related to wages for White males but not for Black males. Thus, hypothesis 5 (differences in the effect of marriage on mental health will account for some of the racial differences in the marital wage premium) is supported.

Discussion

Although the majority of marital wage premium studies have been conducted using samples of White men, a few studies have demonstrated that the size of the marital wage premium varies by race. However, to date, there is a lack of research that seeks to explain the racial differences in the marital wage premium. The present research attempted to fill this gap by replicating, and then attempting to explain, this pattern of findings using data from ACL. The analysis yielded mixed support for the research hypotheses.

Consistent with hypothesis 1 and other studies that focus on race and the marital wage premium (Cohen 1999; Fahrney 2007), the results of the present analysis indicated that White men experience a marital wage premium that is higher than Black men. The

remainder of the analyses focused on attempting to explain why marriage would increase wages for White men but not for Black men.

Theory suggests that the marital wage premium may be a function of marital quality, health, and human capital. Specifically, within the context of a supportive, low-stress marriage, men are able to increase their health and devote more attention to their jobs, leading to higher wages. Hypotheses 2 through 5 were derived from earlier studies that called attention to racial differences in marriage satisfaction (Dillaway and Broman 2001; Blackman et al. 2005); negative spouse behaviors (Broman 2005); and health and psychological benefits to marriage (Blackman et al. 2005). Collectively, these findings suggest that racial differences in the marital wage premium reflect racial differences in marital quality and returns to marriage with regard to health and behaviors that might interfere with productivity. However, contrary to hypotheses 2 through 4, the racial differences in the effect of marriage on wages were not explained by racial differences in marital quality or racial differences in the effect of marriage on problem behaviors or physical health.

Only hypothesis 5 received any support. Consistent with hypothesis 5, marriage lowers depression and depression lowers wages, but only for White men. This suggests that White men receive a larger marital wage premium at least in part because marriage has a more positive impact on their mental health relative to Black men. This is consistent with previous studies that have found that (largely due to racial differences in marital quality) marriage is less likely to reduce a range of emotional problems among Black individuals, compared with White individuals (see review by Blackman 2005). Emotionally healthy

workers are less likely to take sick days and are more likely to be productive when at work (e.g., Clark 1983; Hendrix, Steel, and Schultz 1987). Thus, because marriage is associated with lower rates of depression overall—but to a greater degree with White adults than Black adults—and because depression lowers productivity, then it stands to reason that racial differences in the effect of marriage on mental health may account for part of the racial differences in the effect of marriage on wages.

There are several limitations to the present research. Only limited information was available on the potential mediating variables. Respondents were asked how many days they consumed alcohol in the previous month and how much they consumed on the average day; there were no questions about drug use. Other behaviors associated with marital quality and employee productivity that are known to vary by race, such as domestic violence and infidelity (see Broman 2005), were not present in all waves. In addition, marital stress was measured using only three variables.

A further limitation was the sample. The sample size was small and also included a wide range of ages of men and wide variations in the length of time since the married men in the sample had been single. The size of the marital wage premium might vary by age, cohort, or stage in one's career, yet the sample size was not large enough to analyze this. A more effective test of this theory would require longitudinal data collected on an annual basis on a sample of men in their 20s and 30s, including a broader and more extensive range of measures of problems that might interfere with marital dynamics and might reasonably interfere with productivity at work, such as drug and alcohol use, addiction severity, criminal behaviors within the previous year, gambling, infidelity, domestic violence, and so forth.

Unfortunately, longitudinal data that meet this description are not currently available. Until such data are available, our ability to draw definitive conclusions about the causes of the racial disparity in the marital wage premium is limited. However, it appears that depression accounts for more of the racial disparity in the marital wage premium than marital stress, problem behaviors, or physical health.

This study adds to a small existing literature that examines, and generally fails to find much support for, a productivity theory explanation of the marital wage premium. Authors have used diverse approaches to evaluate the hypothesis that marriage leads men to be more productive at work. Previously, Loh (1996) found that the marital wage premium does not extend to self-employed men; rather, married self-employed men earn less than single self-employed men. Ahituv and Lerman (2007) found that while married men did substantially and quickly increase their work hours after entering marriage, the effect of marriage on wages took place slowly as men remained in marriage; ultimately, the increase in hours only accounted for one-third to one-half of the marital wage premium in the data they analyzed. Korenman and Neumark (1991) found that married men get better performance evaluations; however, they could not rule out discrimination as a possible explanation. This study demonstrated that between-group differences in the size of the marital wage premium were not associated with between-group differences in marital dynamics that might be expected to have consequences for productivity at work.

If variables associated with productivity account for little of the marital wage premium (and little of the between-group differences in the size of the marital wage premium), then it is possible that the marital wage premium may instead be a consequence of

employer discrimination. Studies of racial and sexual discrimination rely on theory that suggests that, in the absence of complete information about current and future employees, employers make decisions based on assumptions of the productivity level of particular groups (see Tomaskovic-Devey 1993). Thus, employers may assume that men who have made a commitment to a marriage may be more steady, stable, and productive on the job. It is also possible that employers may be more likely to ascribe those characteristics to White married men than Black married men; findings from Tomaskovic-Devey, Thomas, and Johnson (2005) lend support to this idea. Tomaskovic-Devey and colleagues find that there are substantial career differences in the earnings of Black and White men. These differences grow across the career and are partially a function of different returns to human capital variables, such as education. Specifically, Tomaskovic-Devey and colleagues conclude that employers tend to overvalue White employees' education or undervalue minority employees' education. Thus, a potential explanation for the findings in the current study may be that employers also differentially value other human capital factors, such as marriage, across racial groups.

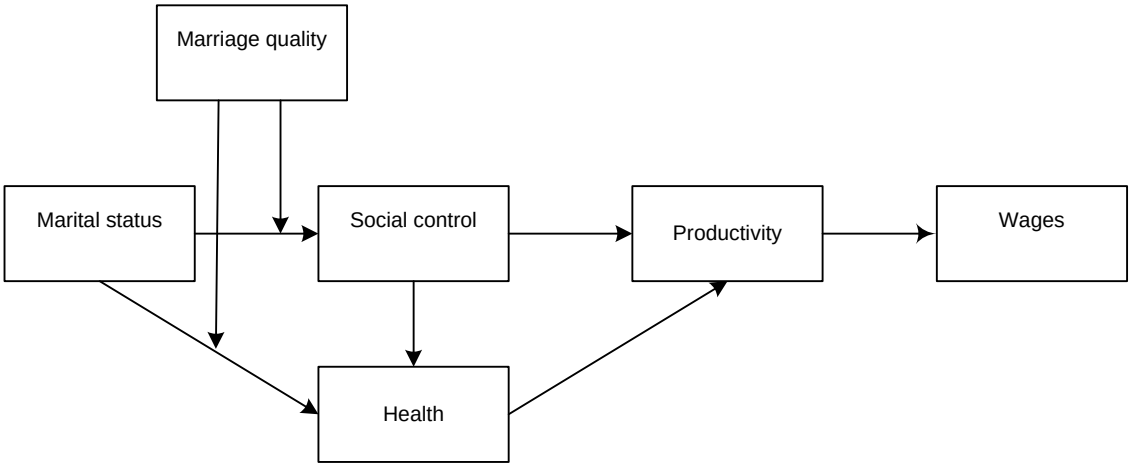
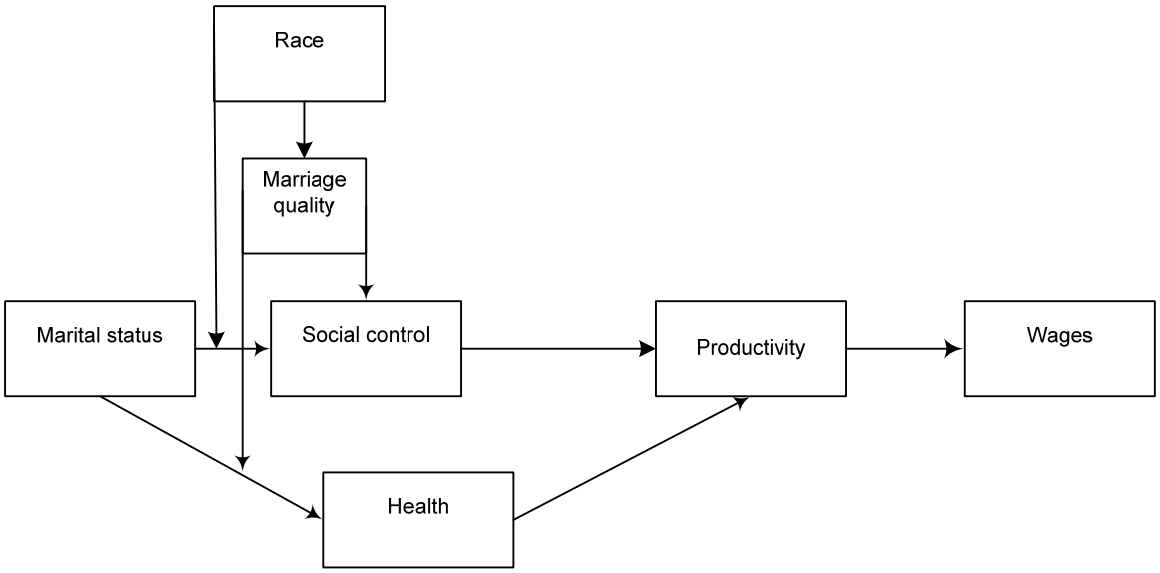


Figure 4.1 Basic theoretical model for the marital wage premium

Figure 4.2 Theoretical model for the marital wage premium, including interaction effect with race



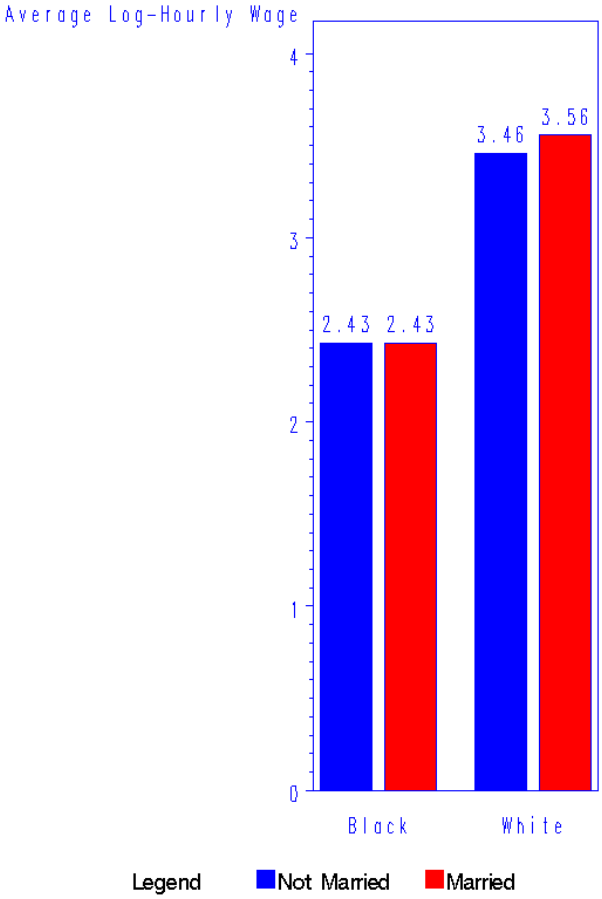


Figure 4.3 Average log of hourly wages by marital status and race

Table 4.1 Descriptive statistics from person-period data set (n = 1,888)

Variables	Mean (and Standard Deviation) or Percentage
Hourly wage	$18.28 ($14.73)
Log of hourly wage	$2.65 ($0.71)
Age at Wave I	38 (9.02)
White	74.42%
Independent variables	
Married	70.09%
White	74.43%
Time-invariant control variables	
High school	57.36%
College degree	14.88%
Graduate school	12.39%
Urban	75.58%
West	18.64%
North central	24.41%
Northeast	17.00%
Time-varying control variables	
Continuously employed	87.18%
Employed full time	92.96%
Mediating variables	
Not currently married	29.91%
Marital strain	2.63 (1.00)
Binge drinking	1.32 (4.98)
Chronic conditions	1.32 (4.98)
Depression	−0.22 (0.87)

Table entries are means with standard deviations in parentheses or percentages. * = $p < .05$.

Table 4.2 Race, marriage, and wages

	1. White	2. Black
Intercept	1.31*	1.35*
	(0.15)	(0.22)
Time (Slope)	0.05*	0.05*
	(0.00)	(0.00)
Independent variable		
Married	0.10*	−0.00
	(0.04)	(0.06)
Control variables		
Age at	0.01*	0.01*
Wave I	(0.00)	(0.00)
High school	0.47*	0.26*
	(0.07)	(0.09)
College	0.84*	0.75*
degree	(0.09)	(0.17)
Graduate	0.92*	0.54*
school	(0.09)	(0.17)
Urban	0.01	0.05
	(0.05)	(0.12)
West	0.23*	0.44*
	(0.06)	(0.15)
North central	0.09	0.22*
	(0.06)	(0.10)
Northeast	0.20*	0.23*
	(0.07)	(0.10)
Continuously	−0.06	−0.10
employed	(0.04)	(0.07)
Employed	0.16*	−0.04
full time	(0.05)	(0.08)
−2 Res Log likelihood	2057.3	739.7

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

Table 4.3 Race, marital strain, and wages[†]

	Effect of race on marital strain	Effect of marital strain on wages	
	1. All	2. White	3. Black
Intercept	2.93*	1.33*	1.20*
	(0.27)	(0.17)	(0.03)
Time (Slope)	0.00	0.05*	0.05*
	(0.00)	(0.00)	(0.00)
Independent variables			
Race (White)	−0.21*	-	-
	(0.10)		
Marital strain	-	−0.02	−0.00
		(0.02)	(0.03)
Control variables			
Log of hourly wage	−0.03	-	-
	(0.05)		
Age at Wave I	−0.01	0.01*	0.01*
	(0.00)	(0.00)	(0.01)
High school	0.09	0.40*	0.31*
	(0.11)	(0.08)	(0.11)
College degree	0.13	0.85*	0.72*
	(0.15)	(0.10)	(0.20)
Graduate school	0.34*	0.89*	0.34
	(0.16)	(0.10)	(0.23)
Urban	0.07	0.08	0.09
	(0.09)	(0.06)	(0.14)
West	0.16	0.23*	0.33
	(0.12)	(0.07)	(0.18)
North central	0.26*	0.18*	0.26*
	(0.10)	(0.08)	(0.13)
Northeast	0.24*	0.18*	0.17
	(0.11)	(0.08)	(0.12)
Continuously employed	0.09	−0.03	0.03
	(0.07)	(0.04)	(0.09)
Employed full time	−0.15	−0.21*	0.03
	(0.11)	(0.07)	(0.11)
−2 Res Log likelihood	3367.7	1411.4	391.8

[†] The analysis included in Table 4.3 only records for years in which men were married. For White males that included 1,324 records for 513 men. For Black males, 1,033 records for 381 men were included. All other tables also include records for years in which men were not married.

Table entries are unstandardized coefficients, with standard errors in parentheses.

* = $p < .05$.

Table 4.4 Race, marriage, problem behavior, and wages

	Effect of marriage on problem behavior		Effect of problem behavior on wages	
	1. White	2. Black	3. White	4. Black
Intercept	3.38*	0.46	1.30*	1.35*
	(1.26)	(1.30)	(0.15)	(0.22)
Time (Slope)	−0.02	−0.12*	0.05*	0.05*
	(0.02)	(0.04)	(0.00)	(0.00)
Independent variable				
Married	−0.01	0.36	0.10*	−0.00
	(0.35)	(0.34)	(0.04)	(0.06)
Problem behavior	-	-	−0.00	−0.00
			(0.00	(0.00)
Control variables				
Log of hourly	−0.04	(0.06)	-	-
wage	(0.25)	(0.25)		
Age at	−0.03	0.02	0.01*	0.01*
Wave I	(0.02)	(0.02)	(0.00)	(0.00)
High school	−0.14	−0.12	0.47*	0.25*
	(0.60)	(0.42)	(0.07)	(0.09)
College degree	−1.06	0.76	0.84*	0.74*
	(0.73)	(0.65)	(0.09)	(0.17)
Graduate school	−0.86	−0.48	0.92*	0.53*
	(0.76)	(0.73)	(0.09)	(0.17)
Urban	0.80	0.42	0.01	0.06
	(0.42)	(0.50)	(0.05)	(0.12)
West	0.30	−0.77	0.23*	0.43*
	(0.52)	(0.60)	(0.06)	(0.14)
North central	−0.23	−0.11	0.09	0.22*
	(0.48)	(0.44)	(0.06)	(0.10)
Northeast	−0.10	−0.87	0.20*	0.23*
	(0.56)	(0.49)	(0.07)	(0.10)
Continuously	−0.54	0.29	−0.06	−0.09
employed	(0.40)	(0.48)	(0.04)	(0.07)
Employed full	−0.57	−0.13	0.17*	−0.04
time	(0.54)	(0.59)	(0.05)	(0.08)
−2 Res Log likelihood	8361.3	2703.6	2066.1	748.2

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

Table 4.5 Race, marriage, physical health, and wages

	Effect of marriage on physical health		Effect of physical health on wages	
	1. White	2. Black	3. White	4. Black
Intercept	−0.11	−0.83*	1.29*	1.28*
	(0.17)	(0.26)	(0.15)	(0.22)
Time (Slope)	0.03*	0.04*	0.05*	0.05*
	(0.00)	(0.01)	(0.00)	(0.00)
Independent variable				
Married	−0.00	−0.10	0.10*	−0.01
	(0.05)	(0.07)	(0.04)	(0.06)
Physical health	-	-	−0.05*	−0.07*
			(0.02)	(0.04)
Control variables				
Log of hourly	−0.08*	−0.10	-	-
wage	(0.03)	(0.06)		
Age at	0.02*	0.04*	0.01*	0.02*
Wave I	(0.00)	(0.00)	(0.00)	(0.00)
High school	−0.14	0.01	0.46*	0.26*
	(0.08)	(0.10)	(0.07)	(0.09)
College degree	−0.21*	0.00	0.83*	−0.74*
	(0.10)	(0.19)	(0.09)	(0.17)
Graduate school	−0.28*	−0.18	0.90*	0.52*
	(0.11)	(0.19)	(0.09)	(0.17)
Urban	0.02	−0.15	0.01	0.04
	(0.06)	(0.14)	(0.05)	(0.12)
West	0.11	0.12	0.24*	0.44*
	(0.08)	(0.17)	(0.07)	(0.14)
North central	−0.01	0.19	0.09	0.23*
	(0.07)	(0.12)	(0.06)	(0.10)
Northeast	0.02	0.09	0.20*	0.24*
	(0.08)	(0.12)	(0.07)	(0.10)
Continuously	−0.02	−0.17	−0.06	−0.10
employed	(0.05)	(0.09)	(0.04)	(0.07)
Employed full	−0.16*	0.19	0.16*	−0.03
time	(0.07)	(0.11)	(0.05)	(0.08)
−2 Res Log likelihood	2835.5	958.2	2056.5	740.8

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

Table 4.6 Race, marriage, mental health, and wages

	Effect of marriage on mental health		Effect of mental health on wages	
	1. White	2. Black	3. White	4. Black
Intercept	0.51*	1.49*	1.32*	1.41*
	(0.20)	(0.37)	(0.15)	(0.22)
Time (Slope)	−0.02*	−0.01	0.05*	0.05*
	(0.00)	(0.01)	(0.00)	(0.00)
Independent variable				
Married	−0.25*	−0.03	0.09*	0.00
	(0.06)	(0.10)	(0.04)	(0.06)
Mental health	-	-	−0.03*	−0.05
			(0.02)	(0.03)
Control variables				
Log of hourly	−0.10*	−0.17*	-	-
wage	(0.04)	(0.08)		
Age at	0.00	−0.02*	0.01*	0.01*
Wave I	(0.00)	(0.01)	(0.00)	(0.00)
High school	−0.25*	0.04	0.46*	0.26*
	(0.10)	(0.14)	(0.07)	(0.09)
College degree	−0.16	−0.32	0.83*	0.73*
	(0.12)	(0.26)	(0.09)	(0.16)
Graduate school	−0.23	−0.35	0.91*	0.52*
	(0.12)	(0.27)	(0.09)	(0.17)
Urban	−0.06	−0.09	0.01	0.05
	(0.07)	(0.19)	(0.05)	(0.12)
West	−0.02	0.21	0.23*	0.44*
	(0.08)	(0.23)	(0.06)	(0.14)
North central	0.14	0.22	0.10	0.23*
	(0.08)	(0.16)	(0.06)	(0.10)
Northeast	0.04	0.26	0.20*	0.25*
	(0.09)	(0.16)	(0.07)	(0.10)
Continuously	0.03	−0.04	−0.06	−0.10
employed	(0.06)	(0.12)	(0.04)	(0.07)
Employed full	−0.11	−0.31*	0.16*	−0.05
time	(0.08)	(0.15)	(0.05)	(0.08)
−2 Res Log likelihood	3183.9	1257.8	2059.7	741.9

Table entries are unstandardized coefficients, with standard errors in parentheses. * = $p < .05$.

CHAPTER 5: CONCLUSION

Summary of Findings

Although a significant amount of documentation exists on the size and scope of the male marital wage premium, this dissertation has attempted to address a few unanswered questions that become visible when viewing the literature through a sociological lens.

First, do lifestyle and health differences between married and unmarried men account for the marital wage premium? Findings from Chapter 2 suggest that lifestyle and physical health differences do not account for the marital wage premium and that depression accounts for only a small portion of the premium.

In Chapter 2, it was found that there was no relationship between marital status, binge drinking, and wages. This was surprising, given the vast literature that demonstrates a direct link between marriage and reduced substance abuse and criminal behavior (see Duncan, Wilkerson, and England 2006; Farrington and West 1995; King, Massoglia, and Macmillan 2007; Laub, Nagin, and Sampson 1998; Laub and Sampson 2003; Miller-Tutzauer, Leonard, and Windle 1991; Sampson, Laub, and Wimer 2006; Sampson and Laub 1993; Yamaguchi and Kandel 1985). The findings regarding physical health were equally surprising; although being divorced or never having been married was associated with an increased number of chronic and debilitating health conditions, these variables did not mediate the marital wage premium. Depression was the one variable that mediated any portion of the marital wage premium. Specifically, depression mediated roughly 5 percent of the marital wage premium.

This dissertation also considered the question, "Is marital quality an important determinant of the marital wage premium, or is only marital status relevant to the premium?" Chapter 3 demonstrated that marital quality/emotional support (as measured by relationship stress, partner support, and relationship satisfaction) are not relevant to the marital wage premium. Wages did not differ significantly for men in either high- or low-quality marriages, relative to men in an average marriage. However, consistent with the literature, men who were not married earned less than men in average marriages. This pattern of findings was particularly damning to a productivity-based explanation of the marital wage premium because it shows that it is not the processes and interactions that occur within marriage that lead to higher wages but, simply, marital status that leads to higher wages.

Finally, this dissertation addressed the question, "Are racial differences in the size of the marital wage premium associated with racial differences in marital dynamics?" Given the findings from Chapters 2 and 3, perhaps it is not surprising that, in Chapter 3, the lifestyle variable, physical health variables, and marital quality variable did not account for the difference in magnitude in the marital wage premium for White and Black men. However, consistent with Chapter 2, findings from Chapter 4 implicated depression as having a small role in the marital wage premium. Marriage was shown to decrease depression, but only for White men; depression was shown to decrease wages—but, again, only for white men. Thus, we can conclude that the influence of marriage on depression accounts for a small part of the marital wage premium and that between-group variation in the influence of marriage on depression at least partially accounts for between-group variation in the influence of marriage on wages.

In both Chapters 2 and 4, the findings regarding the role of depression within the marital wage premium are consistent with other studies. A series of studies using the National Survey of Families and Households has revealed that marital entry decreases depressive symptoms, that marital dissolution increases depressive symptoms, that those who remain stably unmarried experience larger increases in depressive symptoms than do those who remain stably married (Kim and McKenry 2002; Marks and Lambert 1998; Simon 2002), and that Black adults derive fewer psychological benefits from marriage than White adults (Blackman et al. 2005). Emotionally healthy workers are less likely to take sick days and are more likely to be on task when at work (e.g., Clark 1983; Hendrix, Steel, and Schultz 1987). Thus, if marriage is associated with lower rates of depression overall (but to a greater degree with White adults than African-American adults), and if depression lowers productivity, then it stands to reason that marital differences in depression may account for at least part of the marital wage premium.

Limitations of the Present Research

Several limitations reoccurred in each study. First, there was no time lag in the collection of the dependent variable and the independent variables. However, given the failure to establish a statistically significant link between most of the independent variables (except for depression) and the marital wage premium, the possibility of reverse causality is largely a nonissue.

Of greater concern were limitations associated with the sample and the measures employed in ACL. Only limited information was available on the potential mediating variables. Respondents were asked how many days they consumed alcohol in the previous

month and how much they consumed on the average day; there were no questions about drug use. The only variable that touched on criminal activity was one measure that asked respondents if they had experienced legal problems in the past 3 years, but there was so little variation in this variable that it was not usable. Other behaviors associated with marital quality and employee productivity, such as domestic violence and infidelity (see Broman 2005), were not present in all waves. In addition, marital stress was measured using only three variables.

A further limitation was that the sample size was small and yet included a wide range of ages of men. It may be that the effect of marriage on lifestyle is more salient for young men in the early years of their marriage and that the effect of marriage on physical health is more salient for older men. Due to the small sample, it was not possible to test this. In addition, the diversity of ages in the sample meant that the length of time spent in marriage was highly correlated with age; thus, only one of those variables could be included in the models. This limited the focus of the study to mean differences in wages by marital status, rather than also looking at time spent in marriage. A more effective test of the marital wage premium would require longitudinal data collected on an annual basis from a sample of men in their 20s and 30s, including a broader and more extensive range of measures of problems that might interfere with marital dynamics and might reasonably interfere with productivity at work, such as drug use, addiction severity, criminal behaviors within the previous year, gambling, infidelity, domestic violence, and so forth. Unfortunately, longitudinal data that meet this description are not currently available. Until such data are available, our ability to draw definitive conclusions about the causes of the marital wage premium is limited.

However, it appears that depression accounts for more of the marital wage premium (and the racial disparities in the magnitude of the premium) than marital stress, lifestyle/problem behaviors, or physical health and that employer discrimination may have more significance for the marital wage premium than the potential productivity-enhancing aspects of marriage.

Implications for the Male Marital Wage Premium

This dissertation adds to a small existing literature that examines, and generally fails to find substantial support for, productivity changes as a potential cause of the marital wage premium. The specific hypotheses that have been tested have differed by author. Previously, Loh (1996) found that the marital wage premium does not extend to self-employed men; rather, married self-employed men earn less than single self-employed men. Korenman and Neumark (1991) found that married men receive better performance evaluations; however, the authors could not rule out discrimination as a possible explanation. Similarly, Chapter 2 demonstrated that the marital wage premium is not explained by health and lifestyle indicators that are known to be associated with worker productivity. Particularly damning to the productivity explanation was Chapter 3, which demonstrated that the size of the marital wage premium was not associated with emotional support. Marital status, rather than marital quality, was the key in determining wages. Finally, Chapter 4 demonstrated that between-group differences in the size of the marital wage premium were not associated with between-group differences in marital dynamics, which might have been expected to have consequences for productivity at work.

Although it was not possible to directly test with the ACL data, the collective results from this dissertation suggest that employer discrimination, rather than some productivity-enhancing dynamic occurring within marriage, may account for the marital wage premium.

The literature on workplace discrimination discusses several potential processes that could be in play. Employers may discriminate because they (or their other employees or their clients) have a preference for workers of a particular group (Becker 1957). Based on these preferences, employers may be willing to pay more to have an employee from a particular group (i.e., married males) than they would be willing to pay to have an employee from another group (i.e., unmarried males).

This sort of taste-based discrimination can be driven by a preference for homogeneity, a desire to work with people who are similar to oneself. Kanter (1993) points out why this may be particularly important in selecting candidates for the (higher-paying) managerial jobs within an organization. As Kanter describes, managerial roles are often high-pressure positions, with nonroutinized responsibilities, vague performance criteria, and a high emphasis on being able to communicate quickly, accurately, clearly, and persuasively. This creates a preference for selection of managers who are socially similar because homogenous managers may have more of a basis for understanding each other, and this reduces the uncertainty regarding a manager's ability to work effectively. In contrast, people who do not have the same social characteristics as the homogeneous management team are relegated to positions where there is less uncertainty regarding ability to perform effectively —positions in which work is routinized and regulated by control mechanisms.

Another possibility is that employers' wage decisions are influenced by paternalistic attitudes, which lead them to feel that workers with greater financial responsibilities deserve higher compensation (Hill 1979). This needs-based approach is perhaps most evident within the U.S. military pay structure, which explicitly provides a larger allowance for personnel who have a spouse or a child (U.S. Department of Defense 2009) than for personnel who have no such dependents. Needs-based differentials in pay may also operate in a less institutionalized manner in other industries.

A theory of statistical discrimination (Phelps 1972; Arrow 1973) argues that employers are rational decisionmakers who prefer one group over another because there are *real known differences* between these groups in productivity, job commitment (turnover rates), or absenteeism rates. In the absence of direct information on a particular individual's potential on-the-job productivity, employers rely on what is known about productivity of various groups, potentially considering both average productivity and variance in productivity of different groups, to make decisions about whom to hire and how much to pay a new employee. Logically, this would predict that between-group differences in wages would be highest at the beginning of a career and then decline over time as employers have the opportunity to observe the actual productivity of their staff, a pattern that is not consistent with findings within the male marital wage premium literature.

It is also possible that discrimination results when employers *inaccurately* believe that there are differences in the average productivity of different groups. This is included in some authors' definitions of *statistical discrimination* (see Tomaskovic-Devey 1993), but it is also referred to as *error discrimination* (England 1992) or *status-based discrimination*

(Correll and Benard 2006). Certain groups (i.e., White, married males) may have a high status because of widely held beliefs regarding status worthiness and competence of different groups (Berger et al. 1972). This leads employers to expect more competence from those with the more valued status, so high-status groups are given more opportunities and influence. This bias can also affect the standard that is used to determine whether or not a performance is consistent with a person's assumed ability. Foschi (2000) further argues that low-status employees are not expected to perform well, so their work is scrutinized more carefully and evaluated more critically. When higher-status employees perform at the same level as low-status employees, their performances are judged less strictly.

This theory of status-based discrimination is better equipped than statistical discrimination theory to deal with the persistent finding that the male marital wage premium persists net of experience or tenure (Gray and Vanderhart 1990; Hersch and Stratton 2002; Hewitt et al. 2002; Korenman and Neumark 1991; Stratton 2000) and increases over the career as a function of time spent in marriage (Ginther and Zavodny 2000; Hersch and Stratton 2002; Korenman and Neumark 1991; Loh 1996; Stratton 2000), suggesting that marital status not only influences starting wages but also promotions and raises.

Due to the lack of availability of appropriate data, employer discrimination against unmarried men has not been directly tested within the marital wage premium literature. However, findings that have demonstrated perceptions that married individuals are productive employees (see the meta-analytic review by Ganong, Coleman, and Mapes 1990) and that they are generally viewed as more mature, emotionally stable, and reliable (DePaulo

and Morris 2005) lend further support to a status-based discrimination explanation of the marital wage premium.

If discrimination is the primary cause of the marital wage premium, this would suggest that men who do not have a wedding ring to signal the perceived maturity, stability, and reliability of a married man would be well advised to invest extra time and energy in projecting these traits (by arriving to work early, staying late, dressing conservatively, etc.). Diversity programs targeted at employers may also be helpful in reducing the gap between the wages of single and married men.

Of course, it has also been well documented that men with higher earnings potential are more likely to select into marriage (Hersch and Stratton 2000; Korenman and Neumark 1991). However, among the strengths of this dissertation are that it employed a longitudinal data set and that the analysis was conducted using mixed models. These features facilitated the evaluation of the effects of marriage on wages while controlling for time-invariant characteristics that would cause men to select into both marriage and higher earning jobs. Although these models cannot control unmeasured *time-varying* characteristics that affect marriage and interact with another variable in affecting wages, these models do represent a vast improvement in dealing with selection effects over ordinary least squares models because such analyses remove certain classes of bias that arise from omitted variables (Budig and England 2001).

Family Structure, Wages, and Personal Attributes

Although this dissertation has focused exclusively on wage inequality between married and unmarried men, it is worth noting that there are substantial gender, race, and sexual orientation differences in the effect of family structure on wages.

Being married is associated with a marital wage premium for men, although this premium is typically either smaller or nonexistent for Black men (Cohen 1999; Fahrney 2007; Glauber 2008). When children are controlled for in the male model, the effect is variable. Some researchers have found an additional positive effect of fatherhood on wages (Cohen 1999; Hersch and Stratton 2000). However, Glauber (2008) finds that the fatherhood premium is limited to men who are married and is weaker for Black males than for White and Hispanic males, Cohen (2002) finds that the fatherhood premium holds for White males but not Black males, and Stratton (2002) does not find a fatherhood effect.

For women, the effects of marriage and parenthood are quite different than they are for men; generally, the effect of marital status on wages varies by parental status, and the effect of parental status on wages varies by marital status. Being married has been found either to have no effect on wages (Korenman and Neumark 1992) or to have a small positive effect for White married women with no children (Budig and England 2001; Waldfogel 1997). Children typically bring a wage penalty; Waldfogel (1997) estimates this at 4 percent for one child and 12 percent for two or more children, but Budig and England (2001) find there is no penalty for one or two children and a 7 percent penalty per child for three or more children. Budig and England also found that the per child penalty was slightly larger for married mothers relative to single mothers. Number of breaks from the labor market,

reduced tenure and experience, and working a part-time schedule account for some but not all of the child penalty (Budig and England 2001; Waldfogel 1997).

The effects of marriage and motherhood also vary by race. Waldfogel (1997) found that Black women incur a smaller motherhood penalty than White women and are only penalized when they have two or more children. Similarly, Glauber (2007) found that while all White mothers (both married and unmarried) experience a motherhood penalty, Black women only experience a motherhood penalty when they are married and have more than two children, and Hispanic women do not incur a motherhood penalty.

Finally, while gay men typically have lower wages than heterosexual men, lesbian women typically have higher earnings than heterosexual women, particularly in comparison to single heterosexual women (Baumle, Compton, and Poston 2009), and incur a motherhood *premium* rather than a motherhood *penalty* (Baumle 2009).

The finding that, net of human capital variables, the effect of marital status on wages differs by gender, parental status, sexual orientation, and race lends further support to discrimination as a contributor to both the male marital wage premium and wage inequality, more generally. Being a "family man" is part of the package of masculinity, which also includes being a provider; however, this may be less true for Black men, for whom stereotypes of irresponsible parenthood may undermine their ability to signal stability through parenting (Glauber 2008). At the same time, there is evidence that, rather than signaling stability, being a "family woman" signals absenteeism and turnover for White heterosexual women, who are assumed to have the support of male breadwinner, but not for Black women, who are perceived as single mothers (Kennelly 1999). Finally, wage

differentials between lesbians and heterosexuals may stem from employer perceptions that lesbians are less likely to become mothers, less likely to take leaves of absence associated with motherhood, and generally more likely to assume work and family roles that more closely mimic those of men and childless women (Baumle 2009).

Conclusion and Future Directions

In conclusion, over 10 years ago, Cornwell and Rupert (1997) noted that while evidence for the marital wage premium is compelling, the source of the premium remains unclear. Unfortunately, as with other research over the past decade, the present research did not lay this question to rest. All hypotheses in the present work were framed within a productivity perspective. Together, the three studies in this dissertation analyzed whether increased wages for men reflected beneficial effects of marriage on health and behavior, leading to increased productivity. While it is disappointing that this dissertation does not reveal a variable or set of variables that can account for a large portion of the variance in the marital wage premium, casting this work in the company of virtually all other male marital wage premium studies, it is still too early to conclusively dismiss productivity theory as a potential contributor to the marital wage premium. Rather, one challenge is to bring new approaches to testing hypotheses derived from this theory. For example, although numerous authors have demonstrated that the marital wage premium persists, net of controls for industry and occupation, no one has yet published research that documents whether or not there is variability in the marital wage premium by industry or occupation. If industries or occupations that better lend themselves to objective measures of productivity have a lower marital wage premium than other industries and occupations, then this may be consistent

with the assertion that employers make decisions based on assumptions of the productivity level of particular demographic groups when objective information is not available (Tomaskovic-Devey 1993).

Perhaps a more direct approach would be to compare the effect of marital status on wages for men whose compensation is output based (by the piece) with men whose compensation is based on supervisor evaluations. This approach has been successfully utilized with National Longitudinal Survey of Youth data within the literature on race discrimination (Heywood and O'Halloran 2005).

Another approach to testing productivity theory would be to use historical time-series data to compare the correlation between the marriage rate and the national measure of output per labor hour, the U.S. Bureau of Labor Statistics' (BLS's) traditional measure of workforce productivity for the major sectors of business, nonfarm business, and nonfinancial corporations and for the subsectors of total, durable, and nondurable manufacturing (U.S. Bureau of Labor Statistics 2010). If the marital wage premium is due to increased productivity of married men, then the BLS measures of labor productivity should be higher in years where a greater proportion of men are married.

A second challenge for advancing the marital wage premium literature is to test discrimination theories more directly. While survey data (DePaulo and Morris 2005) and laboratory experiments (see the meta-analytic review by Ganong et al. 1990) have used either written summaries, job applications, or videotaped interviews to determine that research subjects (typically college students) hold negative stereotypes about single people's personalities and competence as workers, we need to move beyond measuring students'

attitudes and start researching employers and employees in the workplace. As a first step, we might borrow an approach from others who have attempted to measure discrimination in the housing and labor markets: *audit studies*. Correll, Benard, and Paik's (2007) work is an example of this approach. Using an experimental design in a real-life setting, Correll's team created fictitious, equally qualified resumes and cover letters and used them to apply for entry-level and mid-level marketing and business job openings for a period of 18 months to determine if gender and parental status would impact the odds that an employer will call back an applicant. To signal parental status, the cover letter either stated an intention to "move to the area" or to "move to the area *with his or her family*" (Correll, Benard, and Paik 2007, p 1329 [emphasis added]). By submitting 1,276 resumes and cover letters to 638 employers, Correll, Benard, and Paik were able to determine that employers discriminate against mothers, but not against fathers. This same approach could be used to determine if marital status influences an employer's odds of calling an applicant.

If audit research indicates employers are more interested in job applications from married employees, this bias would be indicative of either statistical discrimination or status-based discrimination. To determine which type of discrimination is more central to the marital wage premium, we need more information on actual productivity differences between groups. Korenman and Neumark (1991) found that married men receive higher wages than nonmarried men because they have higher performance ratings and took this as evidence that married men are more productive than nonmarried men. However, this inference was not supported by any objective employee productivity data. Within the literature on race bias on performance evaluations, Elivra and Town (2001) also found that race differences in wages

disappeared once studies controlled for job titles and subjective performance ratings. However, after comparing subjective ratings to objective performance metrics, they found evidence of racial bias in the subjective ratings. As such, it is possible that within the Korenman and Neumark (1991) data, married men received higher performance ratings than nonmarried men because cultural biases lead married men to be evaluated less critically than single men (Foschi 2000). To test for these types of bias, employee productivity must be objectively measured by a neutral third party and then correlated with marital status, performance reviews, wages, and promotions.

Conducting an external review of employee productivity poses methodological challenges. However, within the literature on race bias and performance evaluations, Elvira and Town (2001) reviewed personnel records from a large U.S. corporation to compare subjective evaluations of performance (which were the basis for wage increases) with objective measures of performance (in this case, percentage of sales goal achieved). Another option for measuring productivity among office workers is to use existing technology that can capture screenshots of workers' computers every 10 minutes, measuring how often the native window belongs to the program they are supposed to be using (Datta 2007).

Despite the challenges to and historical lack of success in empirically resolving the question of the cause of the marital wage premium, the subject continues to be worthy of further investigation for several reasons. First, because both adults and children are spending an increasingly large portion of their life living in households that are headed by a single person (Kreider 2005), wage differentials by marital status affect an increasing proportion of the U.S. population.

Second, understanding the mechanisms of the marital wage premium contributes to our understanding of wage determination more generally. Because women and Black men do not incur the same wage advantage from marriage as White men, the marital wage premium for White men is responsible for some of the wage inequality between Black and White men and between men and women. Moreover, inequalities in the workplace affect inequalities in other spheres. For example, for married women, lower earnings may affect their bargaining power with their husbands; for single women, the motherhood penalty contributes to the gap in poverty rates between households headed by a single mother and households that include an adult male (Budig and England 2001, p. 205).

Finally, understanding the causal mechanisms behind the marital wage premium is important in a culture that is so keen on heralding the benefits of marriage (and the counterfactual disadvantages of living as a single person or single parent). Research demonstrating the benefits of marriage has been frequently invoked by those wishing to demonstrate that the answer to various social problems is to promote the formation and continuation of marital unions and to discourage other lifestyles. Ironically, Black men have been the focus of many of these efforts; however, for a variety of reasons (discrimination, educational differences, and even differences in the wage returns to marriage), there are constraints on their ability to contribute financially to their families. These constraints serve to undermine both marriage formation and marriage stability (Huston and Meltz 2004). Furthermore, much of the difference in poverty by family structure can be attributed to factors other than marital status (Sigle-Rushton and McLanahan 2002). Thus, a more appropriate goal than promoting marriage would perhaps be to find ways to reduce

inequalities between those living within the context of a marriage and those who are cohabiting, single, or part of a single-parent household. Understanding the mechanisms through which family structure intersects with gender, race, and sexual orientation to influence inequality in wages would be an important step in that direction.

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