NONMARITAL COHABITATION AND HEALTH

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ABSTRACT

A considerable amount of research has established that the married live longer, healthier lives than the previously- and never-married. Similar research on the health benefits of cohabitation is sparse. Using longitudinal data from Add Health (1995-2001/2002) and generalized linear model techniques we investigate the impact of nonmarital cohabitation on a range of physical and mental health indicators and health behaviors. We also consider the mechanisms through which cohabitation affects health (i.e., selection and protection) and contrast the health effects of cohabitation with those reported for marriage. Results indicate that cohabitors report lower physical health than married or single individuals, but that cohabiting males receive some mental health benefits relative to singles. Cohabiting men and women also engage in some better health behaviors than singles. There also appears to be some selection into cohabitation by individuals with relatively poor mental health and health behaviors that may contribute to the observed health differentials. The health benefits of marriage were also weaker than expected, but broader than those for cohabitation.

NONMARITAL COHABITATION AND HEALTH

Nonmarital cohabitation has become an integral part of conjugal life in America, as it has in other Western countries. There has been an eight-fold increase in the number of cohabiting households since 1970, the growth of which has been accelerating (Seltzer 2004: 922). By 1995, half of women in their 30s had cohabited outside of marriage, and 25% of unmarried women ages 25-29 were currently in a cohabitation (Bumpass and Lu 2000). About forty percent of all children will spend some time in a cohabiting family household, either by being born to a cohabiting couple or by the mother's entrance into a cohabiting union (Bumpass and Lu 2000). More recent information, taken from the 2001/2002 National Longitudinal Study of Adolescent Health (Add Health) indicates that by age 27, nearly 60% of men, and more than 60% of women had already cohabited outside of marriage (Pollard and Harris, 2003).

Family has a strong influence on health beliefs and behaviors, and is the primary social agent in the promotion of health and well-being. Our earliest and most powerful messages concerning healthy behaviors and risk reduction, such as alcohol consumption and diet, come from the family. Further, one family member's emotional health often has an influence on all members of the family (Booth and Johnson 1994; Hafstrom and Schram 1984).

Recent demographic trends point to an increasing diversity of family structures (Bumpass and Sweet 1989; Raley 2000; Teachman, Tedrow, and Crowder 2000). The rapid increase in cohabitation raises important concerns about its consequences for the institution of marriage and the lives of individuals involved in this family form. Although the prevalence and patterns of cohabitation have been well documented (e.g., Bumpass, Sweet, and Cherlin 1991; Seltzer 2004), we know very little about the outcomes of nonmarital cohabitation. While there is little dispute about the positive impact of marriage on physical and psychological health (see, e.g.,

Waite and Gallagher 2000), there is a dearth of research about whether cohabitation provides similar health benefits.

This study addresses this increasingly important gap in our knowledge of the significance of contemporary unions. We examine in detail several broad health outcomes stemming from cohabitation: physical health, mental well-being, and healthy behaviors. In particular, we address the following questions:

(1) Does cohabitation affect health, and if so, in what way?

(2) If cohabitation affects health, what are the mechanisms through which it does so?

(3) How do the health effects of cohabitation (if any) compare to the health effects reported for marriage?

UNION STATUS AND HEALTH

Over the past few decades, a considerable amount of research attention has been directed towards understanding the relationships between union status and health. Consequently, an extensive body of literature now confirms that married people, particularly men, live longer and healthier lives than those who are single, separated or divorced, or widowed. Such conclusions hold for many countries and across many time periods (e.g., Hu and Goldman 1990). Furthermore, research suggests that simply sharing living space with another person does not confer the same health benefits as living with a spouse (Hughes and Gove 1981).

Although differences in mortality rates between the married and unmarried populations were first to be noted, research continues to indicate that, after controlling for age, married people are at lower risk of dying than never-married or formerly married people (Gove 1973; Lillard and Waite 1995; Murray 2000). Important gender differences in the effects of marriage on mortality are also recurrent in the literature. Men appear to reduce their mortality risk more

than women through marriage (Hu and Goldman 1990). This "excess mortality" of unmarried individuals has been increasing over time, particularly for divorced men (Hu and Goldman 1990).

Marriage and Health

The last few decades have seen increasingly detailed investigations of marriage and health. The focus has widened to include an examination of the physical health benefits associated with marriage. Married people (especially men) have fewer health problems, both acute and chronic, than their unmarried counterparts (Gove 1973; Kiecolt-Glaser and Newton 2001; Verbrugge 1979; Waldron, Hughes, and Brooks 1996; Waldron, Weiss, and Hughes 1997; Wyke and Ford 1992). Additionally, self-evaluated health status, which is strongly associated with perceived quality of life (George and Landerman 1984; Okun et al. 1984), is highest among the married population (Idler and Angel 1990; Idler and Kasl 1991; Kaplan, Barell, and Lusky 1988; Mossey and Shapiro 1982).

There is evidence that married people are better off psychologically as well (Gove 1973; Gurin, Veroff, and Feld 1960; Gove, Hughes, and Style 1983; Ross 1995). Studies of mental health, particularly depression, have shown that married people, especially men, enjoy better mental health than those who are not married (Aneshensel, Frerichs, and Clark 1981; Gore and Mangione 1983; Gove and Shin 1989; Radloff 1975; Rosenfeld 1980).

Health behaviors are also related to marital status. For example, research provides evidence of less alcoholism and problem drinking among married men than unmarried men (Horwitz and White 1991; Joung et al. 1995; Layne and Whitehead 1985). Research on obesity also finds that married people have more appropriate body weights than others (Joung et al.

1995), although findings in this area are not as consistent as in the others mentioned
(Rauschenbach, Sobal, and Frongillo 1995).

Cohabitation and Health

Studies of cohabitation and health are scarce. The few studies of which we are aware all
suffer from limited health measures, area samples, and/or small sample sizes.

Research in Europe, where cohabitation has a longer history, suggests that the self-
reported health of cohabitors tends to fall between that of married and single persons, with
singles reporting the lowest health (Joung et al. 1995; Mastekaasa 1994). A similar pattern
emerges for the presence of chronic conditions (Joung et al. 1995). In terms of mental well-
being, MacDonald, Peacock, and Anderson (1992) reported that cohabitor's average depression
scores fell between those of married and single women.

Research on North American cohabitors is less consistent. Research on physical health
suggests that the self-reported health of American cohabitors falls between that of married and
single persons (Ren 1997), and that a variety of physical health measures for Canadian
cohabitors are improved equally to marriage over singlehood (Wu, Penning, Pollard and Hart
2003), or are unaffected by entry into cohabitation (Wu and Hart 2002). Mental health is either
not associated with cohabitation (Horwitz and White 1998; Kim and McKenry 2002; Lamb, Lee
and DeMaris 2003), is equal within cohabitation and marriage (Ross 1995) or is associated with
greater depression than marriage (Brown 2000) in the United States; Canadian data suggests no
distinction between the mental health benefits of cohabitors or marrieds relative to singles (Wu,
Penning, Pollard and Hart), but also that as the duration of cohabiting and marital unions
increases, so does depression (Wu and Hart 2002). Finally, with regard to health risk factors,

cohabiting women reported more alcohol consumption problems than married women (Horwitz and White 1998).

The generalizability of all of the previous research suffers from limited (often single) health indicators and controls, and small or area samples. The Canadian studies rely on the 1994-95 National Population Health Survey (NPHS), either cross-sectionally (Wu, Penning, Pollard and Hart) or longitudinally with the 2-year follow-up (Wu and Hart 2002). Although the NPHS contains detailed health information on a nationally representative sample, there is no information on union history, and thus relationship duration and sequencing is unavailable; many unions are likely remarriages or post-divorce cohabitations, both of which complicate the interpretation of results. With the exception of Ren's (1997) study of subjective health (a single measure) and Horwitz and White's (1998) New Jersey area study of depression and alcohol problems among 1,220 young adults, all the studies pertaining to cohabitation and health in the United States are based on the National Survey of Families and Households (NSFH) data from 1987/88 or longitudinally with the addition of the 1992/94 wave. The NSFH contains information on fewer than 700 cohabitors at all ages in Wave 1, and only 131 longitudinally (Brown 2000). Information on first cohabitations and marriages is substantially more scarce, with only 60 cohabitations and 261 marriages to young people ages 18-35 in the first wave (Lamb, Lee and DeMaris 2003).

The use of such limited samples or arrays of health outcomes severely affects the generalizability of these studies, particularly among the young population where cohabitation is the most common exit from singlehood. Further, the health trajectories established in early adulthood have strong implications for health in later life, particularly with regard to health risk behaviors. The present study addresses many of these limitations: the National Longitudinal

Study of Adolescent Health provides a wealth of current (2001/02) information regarding romantic unions and health on a very large, nationally representative sample of young adults.

Theoretical Frameworks

Although there is a long, clear record of better health among married people compared to the unmarried population, the explanation of how and why this is so is still widely debated and researched (see, e.g., Waite 1995; Wyke and Ford 1992). One issue central to the debate considers the causal ordering of the relationship: does health determine marital status, or does marital status determine health? In the first instance, marriage *selection* accounts for the observed differences in health, while in the latter, marriage *protection* contributes to the health differences.

The explanation of why married people enjoy better mental and physical health may be as simple as the notion that healthy people are more likely to marry and remain married. For example, those who are healthier are more likely to be able to participate in social life, including opportunities for courtship. The possibility of selection into marriage has been considered since the mid-1800s, when Farr (1858) first noted the relationship between mortality and marriage in France. He argued that "the children of families which have been afflicted with lunacy are not probably sought in marriage to so great an extent as others....The beautiful, the good, and the healthy are mutually attractive; and their unions are promoted by the parents in France" (p. 509). Since Farr's time, the idea that mentally and physically healthy people are more likely to marry than those who are not has been invoked by a multitude of studies (e.g., Carter and Glick 1976; Goldman 1993, 1994; Retherford 1975).

The second position -- marriage protection -- states that the actual process of living with a spouse confers benefits to both partners; the married state involves environmental, social, and

psychological factors that make it a healthier state than an unmarried one. This position can be traced to Emile Durkheim's (1951[1897]) classic study of suicide, in which marriage is thought to exert a positive influence on the individual through role specifications, obligations, and responsibilities to family members. Social isolation has been identified as a major risk factor for morbidity and mortality, with statistical effects comparable to those such as smoking, blood pressure, and obesity (House, Landis and Umberson 1988). Marriage and the family are a primary source of social integration that subsequently provide benefits to the participant at both the individual and societal level; in addition to spousal support, marriage also ties people to other individuals (e.g., spouse's friends), social groups (e.g., in-laws), and institutions (Stolzenberg, Blair-Loy and Waite 1995; Waite 1995) which all expand the individual's social networks and contribute to embeddedness that provides individuals with a sense of order that is important for well-being..

The health benefits of marriage can be traced back to three main sources: social support, social control, and increased material well-being. Extensive research has indicated that social support helps promote mental (e.g., Brown et al. 1986; Cohen and Wills 1985; Aneshensel and Frerichs 1982) and physical health (e.g., Blazer 1982; Broadhead et al. 1983). Quite simply, marriage provides one of the most important sources of social support -- a spouse (Beggs, Haines, and Hurlbert 1996; Johnson 1983), from whom emotional and instrumental support may be readily obtained (Pearlin and Johnson 1977; Ross, Mirowsky, and Goldsteen 1991; Wyke and Ford 1992). In addition to benefits based on proximity, research indicates that spouses have a substantial degree of overlap in their respective social support networks, thus increasing available support sources (Veiel et al. 1991).

The second type of marriage protection stems from social control. Family ties involve elements of meaning and obligation that contribute to social control, which encourages self and

external (spousal) regulation of healthy behaviors on the part of both partners (Gove 1972, 1973; Gove, Hughes, and Style 1990; Joung et al. 1995; Ross 1995; Umberson 1992). Marriage can be likened to a long-term investment that may be compromised if partners behave in ways that are inconsistent with that commitment (Becker 1960). Research indicates that this appears to be the case, as married people are less likely to engage in negative health behaviors (such as drinking excessively or eating poor diets) than others (Ross, Mirowsky, and Goldsteen 1991; Umberson 1987; Waite 1995), and are most likely to visit the doctor (Verbrugge 1979).

There are clear relationships between socioeconomic status and health (Feinstein 1993; Kuh and Wadsworth 1993; Strauss et al. 1993). Thus, the third protective function of marriage is the increased material well-being derived from the economy of scale and specialization that may occur (Becker 1981), as well as their greater combined wealth and assets (Lupton and Smith 2003). Research also indicates that married men receive higher wages than unmarried men, further increasing marital material well-being (Daniel 1995; Gray and Vanderhart 2000; Korenman and Neumark 1991). Consequently, married people may be able to afford healthier diets and safer surroundings (Pearlin and Johnson 1977; Trovato and Lauris 1989; Waite 1995).

Marriage selection and marriage protection do not necessarily conflict with each other. Most researchers seem to assume that both contribute to health differences between marital statuses. While most studies accept that selectivity may be a factor in the better health of married people, the studies that have empirically tested the assumption (Brown 2000; Hu and Goldman 1990; Kisker and Goldman 1987; Lamb, Lee and Demaris 2003Lillard and Panis 1996; Livi-Bacci 1984; Mastekaasa 1992; Simon 2002; Wu and Hart 2002; Wu, Penning, Pollard and Hart 2003) suggest that selection into marriage does account at best for some, but not all, of the relationship between marriage and health.

Despite the wealth of research on marriage and health, apart from the few studies noted above, there has been virtually no research on cohabitation and health, particularly with regard to physical well-being. It is to this gap in our knowledge that the current study is addressed.

It has been argued that the theoretical frameworks surrounding the marriage process can also be applied to the cohabitation process (Landale and Forste 1991). The two processes probably have more commonalties than any other demographic processes. Marriage and cohabitation both involve an intimate (sexual) relationship, sharing the same living quarters, and at least some level of economic consolidation (Davis 1985). Both can occur to people throughout their adult life. Most importantly, both provide a family environment where children are born and raised.

Based on the similarities between marriage and cohabitation, we expect that both union forms will provide similar benefits to their respective participants. However, it is necessary to examine this assumption, as there are also several important differences in the two union forms. While it has been suggested that cohabitation attracts different types of couples than does marriage (Axinn and Thornton 1992; DeMaris and MacDonald 1993; Thompson and Colella 1992; Wu, 1999), more than half of cohabitations eventually end in marriage (Bumpass and Lu 2000), and more than 60% of young people ages 20-29 indicate that "living together with someone before marriage is a good way to avoid eventual divorce" (Whitehead and Popenoe 2001: 13). Thus we can not simply draw firm distinctions between union form participants. Further, marriage has undergone a process of deinstitutionalization, with an associated weakening of the social norms defining behavior within marriage (Cherlin 2004). Participants may be similar, while potential benefits gained from each union form may not.

The role of selection into cohabitation and its effect on subsequent health differences has been examined by very few studies, but those that do indicate selection accounts for only a small

degree of difference, if any (Brown 2000; Kim and McKenry 2002; Lamb, Lee and DeMaris 2003; Wu, Penning, Pollard and Hart 2003).

The level of "marriage protection" effects may also differ. Some research indicates that it is not marriage *per se* that affects social support and subsequent health improvements, but the quality of the relationship (Ren 1997). Research has indicated that cohabitors are less happy with their relationships than are married couples (Nock 1995; Pollard and Harris 2003), potentially weakening the social support advantage. Also, while cohabitors may not differ from married couples in their day to day partnership, it is possible that there are substantial differences with respect to long-term union goals (Bumpass et. al 1991; Casper and Sayer 2002). Studies indicate that most cohabitations are temporary and transitory unions (Bumpass and Lu 2000; Bumpass and Sweet 1989). If improved health results from social control, and social control is based on long-term commitment, the impact of social control on cohabitors' health may not be fully realized. Finally, the benefits stemming from increased material well-being may also differ for cohabitors. The wage increase afforded to married men is lower for cohabiting men, while cohabiting women receive no such "wage premium" (Daniel 1995).

The first objective of this study is to examine the question: *does cohabitation affect health, and if so, in what way(s)?* The diversity of measures available through the Add Health study provides a rare opportunity to examine the social determinants of many distinct aspects of health in detail. While we anticipate that the beneficial effects of cohabitation on health will mirror those of marriage, we also recognize that there may be some differences in the magnitude of those advantages resulting from differing union characteristics.

Our second objective follows from our first, seeking to resolve the question*: how does cohabitation affect health?* Here we are interested in whether the (anticipated) observed differences in health benefits among marital groups may be explained by marriage (cohabitation)

selection effects, through other social determinants, or whether there are in fact additional health benefits derived from protection effects based on union type. Because respondents are relatively young at Wave 3, physical health differences may be minor, and may not have had time to manifest themselves significantly; we believe that the examination of health behaviors will be particularly relevant because they are more amenable to quicker changes, have greater variance at these younger ages, and are key predictors of future health status as their effects on health compound over time.

Finally, our third objective is *to assess cohabitation health benefits separately for men and women.* It has been repeatedly observed that men gain greater health benefits from marriage than women do (e.g., Cotton 1999; Gove 1972; Gove et al. 1983; Gurin, Veroff, and Feld 1960; Hu and Goldman 1990; Joung et al. 1995), although these findings have more recently been debated with regard to gender differences in mental health (Simon 2002; Waite and Gallagher 2000). Both marriage selection and marriage protection effects may contribute to these gender differences in health. For example, it can be argued that the selection process into marriage may be such that physically- or mentally-ill men may have greater difficulty than similarly afflicted women in getting married, based on traditional courtship roles. As well, the social support and control provided according to the marriage protection hypothesis may be the prime source of men's health benefits from marriage, as women are more likely to assume responsibility for the health of household members (Depner and Ingersoll-Dayton 1985). This may also explain why divorced or widowed men appear to have worse health than divorced or widowed women (Gove 1973; Hu and Goldman 1990). Conversely, women's prime source of health benefits from marriage may be from increased material well-being (Lillard and Waite 1995; Ross 1991; Waldron et al. 1996). In light of women's increased labor force participation and economic independence (Oppenheimer 1994), this may contribute to an explanation of why women's health

advantage derived from marriage has attenuated over time, while men's has not (Hu and Goldman 1990). Based on prior studies on marriage and health, we expect that men may benefit more from cohabitation than women.

DATA AND METHODS

Data

Data come from Waves 1 and 3 of the National Longitudinal Study of Adolescent Health. Add Health is a nationally representative study of adolescents in grades 7 through 12 in the United States in 1995 who have been followed with multiple interview waves into young adulthood. The sampling frame included all high schools in the United States. A stratified, random sample from 80 clusters of schools was selected from this group. Over 90,000 students completed the in-school survey in 1994. Of those, a baseline sample of 20,745 adolescents aged 12-19 was interviewed at home between April and December 1995, between April and August 1996, and again between August 2001 and April 2002. The overall sample is representative of United States schools with respect to region of the country, urbanicity, school type (e.g., public, parochial, private non-religious, military, etc.), ethnicity, and school size.

By Wave III Add Health respondents lived in all 50 states and were engaged in the various domains of late adolescence and young adult life including post-secondary education, the workforce, community and civic involvement, romantic relationships, and parenthood. The Wave III interview was designed to collect data on attitudes, behaviors and outcomes in these domains, with particularly rich and detailed data on romantic relationships, and union and family formation behaviors. Over 15,000 Add Health respondents were re-interviewed at Wave III with longitudinal data over the various waves of interviews. See Harris, Florey, Tabor and Udry (2003) for more details on the Add Health design and longitudinal data.

Study Design

To examine the influence of union status on individual health, we will investigate (the change in) a variety of health indicators from Wave 1 to Wave 3. Our study sample excludes respondents who were already married or cohabiting at Wave 1. With this restriction, the final study sample includes 13,159 respondents aged 18-26 at Wave 3 in all union statuses (6,944 women and 6,215 men).

One of several approaches Add Health Wave 3 used to collect marital and cohabiting union information is the traditional approach of asking respondents for a history of all marriage and "marriage-like" relationships, which involves reporting dates of relationship beginning and ending for each type of relationship, and if the relationship ended, how it ended.[1] It is important to note that cohabitations ("marriage-like" relationships) were asked to be reported if they lasted for one month or more. We use this information to identify current cohabiting and marital relationships, and whether marriages were preceded by cohabitation with the spouse. We also are able to use the retrospective data to identify whether or not the respondent was currently in a cohabiting or marital relationship at the time of the Wave 1 interview; respondents who were already in a relationship at that time are excluded from the analysis to clarify causal effects.

We are also able to assess the health outcome indicators described below at both Waves 1 and 3, and can thus estimate the effects of *change* in union status on change in these health measures; as noted above, studies of cohabitation and health in North America have been limited to cross-sectional data, or longitudinal data from the NSFH which provides very small numbers

of cohabitors which may make it difficult to assess modest effects on health. The much larger

number of cohabitors included in the Canadian NPHS is only available longitudinally over a 1-

year span, which also severely limits the ability to assess change in health due to the relationship.

We are able to address many of these shortcomings using the Add Health data. An additional

opportunity provided by Add Health stems from the relatively young age of respondents (18-26

in Wave 3) – a time when romantic relationships are particularly salient in young people's lives

and tend to become more serious and intimate as they take on adult roles and responsibilities. It

is during these early experiences that the blueprint for future (health) behaviors are established,

and health trajectories are launched.

Measures

Health Outcomes

Detailed variable descriptions (dependent and independent) are presented in Appendix A.

We consider seven health indicators, measuring a person's general physical health, mental health,

and health risk behaviors. Physical health is assessed by respondent's self-rated health, an

ordinal scale ranging from 1 (poor) to 5 (excellent).   The respondent's mental health is assessed

using the 10 CES-D items measured by Add Health.[2] Here we refer to the measure of mental

health as more generally assessing "depressed affect" rather than clinical depression.

In addition to physical and mental health, we assess a variety of health risk behaviors.

The first set of health behavior includes whether or not the respondent had a physical exam

within the past year, the frequency of binge drinking[3] (defined as 5 or more drinks at once)

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[1] To aid in the recollection of information on the start/end dates of relationships and other events, the Add Health survey included a timeline calendar of world and pop culture events that were salient to adolescents.
[2] Add Health includes a 19-item version of the CES-D in its first two waves, but only 10 are retained in Wave 3. Refer to Appendix B for complete details of the scale.
[3] Recent research suggests that moderate levels of drinking are predictive of better health, with extreme levels a risk for morbidity and mortality (House et al. 1994).

during the previous year (an ordinal scale from 1=never to 7=almost/every day), and the number of days in the previous month the respondent smoked and/or chewed tobacco. The second set of health risk behaviors refer generally to body maintenance, and include a measure of exercise/physical activity frequency during the previous week (ordinal scale, 0 – 9) and the (absolute value of the) deviation of body mass index (BMI) outside the "normal healthy" range.[4]

Independent Variables

The primary independent variable is current union status at Wave 3. Union status is a categorical variable with four categories: cohabiting (N = 1,081 women, 848 men), married (1,378 women, 857 men), single (out of the parental home) (2,254 women and 2,227 men), and single (living in the parental home), (N=2,231 women, 2,283 men). We use single (out of the parental home) as the reference group in order to compare and contrast groups. Cohabitors are identified by the report that they are currently unmarried but have been "living with someone in a marriage-like relationship" for at least one month. Unlike prior studies, single respondents here are differentiated between living in or outside of the parental home. The Add Health respondents are still relatively young at Wave 3 (18-27), compared to surveys such as the NSFH that have (almost exclusively) been used to examine cohabitation and health in the United States. The presence of parents in the respondent's household should create a very different context than a separate household in terms of all three mechanisms of protection effects: social support, social control, and material well-being. In many respects, living in the parental home may provide the highest levels of each of these among all the groups, and thus it is important to acknowledge parental presence.

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[4] BMI = Weight (kg) / Height^2 (meters). BMI (18.5 – 24.9) is considered normal/healthy (Garrow and Webster 1985).

To control for the confounding effects of other health determinants, we include several observed individual characteristics that are known to be important.   For these reasons, we include three groups of control variables: 1) demographic characteristics, 2) socioeconomic status, and 3) psychological resources. Definitions and information about the coding of these variables are also provided in Appendices A and B. Unless otherwise noted, control variables are measured at Wave 1 (time 1).

Five demographic variables are included in the analysis. Age is measured in years. Race/ethnicity and immigrant status are treated as dummy variables. The number of the respondent's children present in the household (if any) are also included (measured at Wave 3). For respondents in a current marriage or cohabitation, total relationship duration (in months) is also controlled, with an additional interaction for marital duration.[5]

Two indicators of socioeconomic status (SES) are included: parents' highest educational attainment, and an indicator of respondent's income combined with partner's income (if any) to estimate the available economic resources (measured at Wave 3).

We also include three measures of the psychological resources available to respondents: Coping, self esteem, and religiosity. Active coping or problem solving is measured using a scale based on four items. The self-esteem measure reflects the amount of positive feelings an individual holds about his/herself, with higher scores indicating greater self-esteem. Finally, an ordinal measure of participation in religious services/events is included, as a growing literature also links religiosity with health (Ellison and Levin 1998; Hummer et al. 1999; Koenig et al. 2001; Levin 1994; Musick 1996; Sloan, Bagiella and Powell 1999).

Finally, we also control on initial health status from Wave 1 (time 1). Men and women are treated separately in the analysis in order to contrast possible gender differences.

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[5] For marriages preceded by cohabitation with the same partner, duration refers to the entire relationship.

METHODS

The analysis proceeds in two stages. First we make a series of comparisons to contrast health across union statuses (single living in the parental home, single living outside the parental home, cohabiting, married) to provide an overall qualitative assessment of the differences (Panel A in the tables). We then add other potentially relevant explanatory factors to study the net impact of cohabitation. Panel B in the tables controls only on respondent age and health condition at Wave 1. Panel C in the tables adds controls for relationship duration (with an additional interaction for marital duration), and Panel D controls on all factors detailed above.

Because the dependent variables are either dichotomous, ordinal, or continuous, we employ generalized linear models (GLM). For the dichotomous and ordinal response variables (self-rated health, binge drinking, physical in last year, and exercise frequency), the response distribution is assumed to be binomial, and the link functions to be logit. For the continuous response variables (depressed affect, tobacco use, and BMI deviation), the response distribution is assumed to be normal, and the link function to be identity.

The generalized linear model is specified as:

$$\eta = \Sigma \; \beta_\kappa X_\kappa \qquad\qquad\qquad (1)$$

The identity link function substitutes ($\eta = \mu$) into (1), while the logit link function substitutes ($\eta = \log_e[\mu \, / \, (1 - \mu) \,]$).

The parameters were estimated by the maximum likelihood (ML) method using the Newton-Raphson algorithm (McCullagh & Nelder, 1989).

RESULTS

Selection into Cohabitation and Marriage

Before we examine differences in health between union status groups we need to address the issue of selection into cohabitation and marriage as a potential contributing factor in these differences. We briefly summarize the results of a set of multinomial logit models of entry into cohabitation or marriage (vs. remaining single), as well as contrasting entry to cohabitation vs. marriage for those who do enter a coresidential relationship. Here we explicitly consider observed variables at Wave 1 only. The complete results are presented in Appendix Table C and are summarized below.

First, the selection of women into cohabitation based on health status does not appear to be substantial; the only significant selection factors indicate that women who consume tobacco more frequently are more likely to enter a cohabitation than remain single or marry, and there is a suggestion that women with less appropriate BMIs are less likely to cohabit than remain single. Similarly, selection of women into marriage based on health status is also apparently minor; women with less appropriate BMIs are significantly less likely to marry than remain single, and higher levels of depressed affect appear to select women into marriage.

The selection of men into cohabitation or marriage based on health status is similarly minor. Higher tobacco consumption appears to select men into cohabitation versus remaining single (as with women), but also selects men into marriage. Again following the pattern observed for women, men with less appropriate BMIs are significantly less likely to marry than remain single.

Additional selection into coresidential relationships based on the observed background sociodemographic factors described above is identified, and generally follows the well-observed trends in union formation. Black women (relative to white women) are less likely to cohabit than remain single, and even less likely to marry. Immigrant women are less likely to cohabit. Women with highly educated parents are less likely to enter either a cohabitation or marriage than remain single. Stronger religious participation selects women out of cohabitation and into marriage. Finally, non-white women are less likely to marry than remain single, and more likely cohabit if they do enter a union. Results for men are substantively the same as for women, except that the only race/ethnic difference observed is that black men are significantly less likely (than whites) to marry than to remain single, and if they do enter a union it is more likely to be a nonmarital cohabitation.[6]

This simple investigation into selection effects suggests that there may be some minor selection into coresidential relationships based on health, but not in the way initially hypothesized: if anything, less generally healthy individuals appear to be selected into cohabitation and/or marriage. Particularly salient here is potential selection based on poor healthy behaviors; these may suggest some unobserved underlying behaviors or traits that relate more broadly to poor health and poor health practices that could have an impact on our subsequent analyses.

Effects of Union Status on Health Outcomes

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[6] These results are based on simultaneously considering all health measures and sociodemographic factors. When we examine each health measure individually (with all sociodemographic factors), there are some slight differences. Women in worse mental health and with lower levels of physical activity appear to be selected into unions (either marriage or cohabitation), while both women and men with poor health behaviors (tobacco consumption and binge drinking), and men with higher levels of depressed affect appear to be particularly selected into cohabitation.

Our analysis begins with a descriptive account of health status differences between union status groups. Our primary concern is the relative health of cohabitors on each of our seven health indicators. Panel A in Table 1A presents a summary of the generalized linear models of the impact of union status on the two general health measures (self-rated health and depressed affect) for women, without controls, in order to indicate qualitative differences between union status groups. The coefficients shown reflect comparisons between each union status group and the single – outside of parental home group, and provide a baseline comparison. The significance of any health differences between the married group and the cohabiting union group is also presented in the Tables. Panel B in Table 1A presents the same information after controlling for respondent age and prior health status (at Wave 1) to assess whether observed differences across union statuses in Panel A are due to age or initial health differences. Panel C adds additional controls on details of the unions: duration and presence of children. Cohabiting unions are likely to be of shorter durations than marital unions, and children may be more likely within marriage than within cohabitation; both relationship duration and presence of children have implications for health outcomes. Finally, Panel D adds the complete set of controls.[7]

General Health Indicators

Turning first to women's health, Panel A of Table 1A indicates that there are significant physical and mental health differences among several of the different union status groups. Column 1 includes our measure of self-reported health status. The cohabiting group reports significantly lower health than both the single (out of parental home) and married groups; marrieds are not significantly different from singles. Column 2 includes the measure of

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[7] Complete details of the regression results for the control variables are available from the authors. The tables presented below serve primarily to summarize the union status differentials. The control factor effects will be briefly mentioned.

depressed affect, and here again, cohabitors report poorer (mental) health than marrieds (but are not significantly different from singles out of the home). As we add controls in Panels B through D there is little substantive change in cohabiting women's low levels of self-rated health. In the final preferred model, in contrast to expectation, cohabiting women report significantly lower levels of health than all other union statuses.

In Column 2 we do see substantive changes in the union status differences in depressed affect across panels; when age and initial mental health status are controlled, the differences between marrieds and cohabitors become nonsignificant (Panel B). Children are significantly associated with greater depressed affect (Panels C and D), which reverses the sign of the cohabitation effect (to reduced depressed affect); although cohabitors and marrieds are not significantly different from singles out of the parental home in the final model (Panel D), there is the suggestion that women in either type of union have improved mental health relative to singles as anticipated. Singles still living in the parental home do report marginally significantly lower depressed affect relative to singles out of the parental home, although the magnitude of the effect is smaller than that observed for women in unions.[8]

[Table 1A About Here]

Turning now to the results for men's general health across union status groups in Table 1B, we follow the same procedures as in Table 1A for women. Like their female counterparts, cohabiting men report the lowest levels of self-rated health (Panel A). Single men still living in the parental home also report significantly lower health than singles outside of the parental home, and are not significantly different from the cohabitors. With the addition of relationship

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[8] Recall that the number of single cases is substantially greater than cohabitors or marrieds.

duration controls (Panel C), married men additionally report significantly greater health than singles (either in the parental home or not). However, as the marital relationship continues there is apparently a slow decline in health. All of the observed differences continue to hold with the complete array of controls (Panel D).

Men's mental health initially appears to be best among the married and worst for those singles still living with their parents; cohabitors do not report significantly lower levels of depressed affect than do singles out of the parental home, or significantly more than the married (Panel A). With the addition of age and initial level of depressed affect (Panel B), the beneficial effects of union status for both married and cohabiting men are intensified, and both become significantly different from singles (both types); as anticipated, the substantive conclusions are the same after the complete set of controls is added in Panel D.

[Table 1B About Here]

Health Risk Behaviors

Table 2A presents the results of the analysis of health behaviors analogous to that in Table 1A. As expected, married women exhibit healthier behaviors than cohabitors (Panel A), although the observed difference between cohabitors and marrieds in receiving an annual physical is not significant (but married women are marginally significantly more likely to receive an annual physical than single women out of the parental household). Cohabitors and singles (both types) are equally likely to receive physicals, but cohabitors are less likely to binge drink than singles out of the parental home; the reduced level of binging for cohabitors is statistically equivalent to that of singles still living with their parents. Married women are the least likely to

binge drink. In contrast to expectation, cohabiting women are significantly heavier tobacco consumers than all other groups.

The gradual addition of controls clarifies the union status differences in each of these health behaviors. Panel D shows that married women are more likely to have an annual physical than single (out of the parental home) or cohabiting women (who are not statistically different from singles). However, the older the marital or cohabiting union becomes, the less likely it becomes that women will have a physical. Finally, the presence of children in the household increases the likelihood of an annual physical and reduces binge drinking, but is positively associated with tobacco consumption.

[Table 2A About Here]

The results for the health behaviors of men are presented in Table 2B, and here as well, the married exhibit healthier behaviors than cohabitors (Panel A); as was the case with the women, the observed difference between cohabitors and marrieds in receiving an annual physical is not significant. In contrast to the findings for the women, however, both married and cohabiting men are significantly less likely to receive an annual physical than single men. As with the women, cohabitors are less likely to binge drink than singles out of the parental home; the reduced level of binging for cohabitors is statistically equivalent to that of singles still living with their parents. Married men are the least likely to binge drink. Again in contrast to expectation, cohabitors are significantly heavier tobacco consumers than all other groups, but different from the women, married men are also significantly higher tobacco consumers than singles.

The addition of age, prior health status, and relationship characteristic controls account for the differences in physicals and tobacco consumption across all union status groups, but the full set of controls actually enhance the differences between union status groups and binge drinking. Children again increase tobacco consumption, but also reduce men's likelihood of receiving an annual physical exam.

[Table 2B About Here]

Body Maintenance

The final set of tables summarize the GLM regressions of the body maintenance indicators (exercise and BMI deviation) on union status. Panel A of Table 3A indicates that married and cohabiting women exercise significantly less than single women (out of the parental home), and that married women also have more abnormal BMIs than any other group, followed by women living at home with their parents. The addition of age and initial body maintenance measures does not attenuate the observed differences in exercise frequency, but does somewhat for BMI deviation. Relationship characteristics also do not attenuate the differences in exercise frequency, although relationship duration does appear to be positively associated with a slight increase in exercise. The substantial increase in BMI deviation associated with marriage appears to be attributable to the presence of children and a gradual increase in BMI abnormality as the marital duration increases (Panel C). With the full array of controls, cohabiting and married women remain significantly less physically active than singles; all union status differences in BMI deviation are attenuated (statistically), although the sign of the union status coefficients and

- 26 -

the marginally significant marital duration effect still suggest an elevated abnormality. Presence of children also becomes nonsignificant with regard to BMI.

[Table 3A About Here]

The exercise frequency results for men in Table 3B are virtually identical to those observed for women in Table 3A, with the exception that relationship duration is not significantly associated with activity. The results for men's BMI deviation are not consistent with those for women, however. The observed differences in Panel A indicate that single men (outside of the parental home) have significantly more normal BMI scores than the other union statuses (which are equal to one another). With the addition of age and initial BMI deviation controls, married men become significantly more abnormal than cohabitors, who are in turn more abnormal than single men living with their parents (contrast not shown). Married men's BMIs remain significantly more abnormal after the introduction of controls on relationship duration, as well as with the full set of controls. Although the coefficient for cohabitors is positive but not significant in the final model (Panel D), cohabiting relationship duration is significantly associated with a slow increase in BMI abnormality. Single men in the parental home also have significantly greater BMI abnormality than other single men.

Summary of Results

Overall the results provide more surprises than they do meet expectation. Although married women fared best among the groups in terms of many of their healthy behaviors (most likely to receive an annual physical exam, least likely to binge drink, and least frequent tobacco use), the anticipated benefits to mental and physical health were not observed; married women's

health was equivalent to that of single women, although at least the direction of the observed relationship between mental health and marriage was in the expected direction, if not at a significant level. When we also consider that women with greater depressed affect were selected into marriage, but then show less depressed affect (though not significantly so) from singles it may be that we are understating the positive effects of marriage on the mental health of women. Contrary to expectations, married women were among the least physically active.

As expected, (married) men appeared to gain more health benefits from marriage than women did. Both self-reported and mental health were highest for married men, and binge drinking was lowest. However, tobacco use and physical exams did not vary significantly from singles, but married men exercised least, and had the most abnormal BMIs.

The health benefits of cohabitation were much less consistent, and were equally or more likely to be health detriments. Returning to our initial research questions, it does appear that cohabitation is linked to health, but not necessarily in the expected manner. For women, cohabitation is generally associated with worse health relative to marriage *and* singlehood. The exceptions to this are in mental health (where cohabitors report lower depressed affect relative to singles, but not significantly so) and in some health behaviors (binge drinking is lower among cohabitors).

The results for cohabiting men are generally more promising, as we might expect from the research on marriage and health. Cohabiting men reported significantly lower levels of depressed affect than single men, equal to that of married men. Cohabiting men also gained from less frequent binge drinking than singles outside the parental home (but more than married men). Cohabiting men also had more normal BMIs than married men, but which grew less so as the duration of the cohabitation grew longer. However, cohabitation was not related to tobacco

use or receipt of annual physicals, and was associated with significantly lower levels of physical activity than singles, and, like among the women, with the lowest self-rated health.

Additionally, throughout the Tables, the observed differences across union status groups were robust to the addition of a range of controls. Despite the addition of controls there was relatively little attenuation in the associations between union status and health outcomes, with the possible exceptions of depressed affect for both men and women, tobacco consumption for men, and BMI for women. There also appeared to be some minor selection into cohabitation by less healthy (at Wave 1) individuals. The Add Health survey captures respondents at an early stage of the life course, and thus there may also be some form of selection into the (relatively early) marriages we observe by Wave 3 that further contributes to group contrasts.

Some brief comments about several of the independent variables (which were not shown) are in order. First, consistently the most important predictor of health at the end of the observation period (Wave 3) was the health at the beginning of the observation period (Wave 1). However, when we control on prior health status (Panel B in the Tables), in almost every instance the observed relationships between union status and health outcomes (Panel A in the Tables) remain substantively the same. The only notable exception to this is men's depressed affect, where the addition of the prior depression score strengthens the relationships between union status and health. This may be a result of the slight selection into cohabitation of men with higher depressed affect (refer to Footnote 6).

The analyses of health outcomes also indicates that as we anticipated, available income is a significant positive factor for health, particularly for women. Income was significantly positively associated with self-reported health for both men and women. Further, income also contributed to more frequent exercise and more appropriate BMIs for women. This provides some support for the "increased material well-being" protection mechanism. Parental education

also uniformly contributed significantly to all measures of women's health, with the exception of binge drinking, where it was associated with *increased* frequency (which was also observed for men). For men, parental education was only positively associated with lower depressed affect and increased exercise.

Presence of children in the household was generally associated with poorer health outcomes, particularly for women. Children increased women's depressed affect, increased tobacco use, and reduced exercise frequency. Children also decreased the likelihood that men obtained an annual physical, increased tobacco use, and lowered the frequency of exercise. Children also offered some positive health effects for both women and men: women were more likely to have had an annual physical exam, and both women and men binge drank less. This may reflect both the time costs (in terms of exercise) associated with childrearing, but also the positive influence of social control (by the self and the spouse) to reduce alcohol consumption in order to provide adequate childcare.

DISCUSSION

Differences in mental and physical health between married and nonmarried individuals, favoring the married, have been repeatedly observed in the literature. The rapid growth of nonmarital cohabitation throughout Western societies raises the question as to whether the health benefits thought to be derived from marriage are also experienced by those who participate in this growing family form. The results indicate that cohabiting women tend to receive little positive health benefit, but some significant health detriments, particularly to self-reported health status. Cohabiting men also appear to suffer in terms of self-reported health, but do receive mental health and several other benefits.

Selection effects, both into cohabitation and into marriage, appear to play a role in accounting for some of these health differences. Women in worse mental health and with lower levels of physical activity appear to be selected into unions (either marriage or cohabitation), while both women and men with poor health behaviors, and men with higher levels of depressed affect appear to be particularly selected into cohabitation. As previously noted, if these are indicative of some unobserved, underlying traits or behaviors, then our GLM results may be biased towards underestimating the *positive* impact of cohabitation and marriage on health. More detailed examination of selection effects should be considered in the future.

It appears then, that the answer to the question "does cohabitation affect health?" is a qualified "yes", but not always in the beneficial direction. That marriage provides more benefits than cohabitation in terms of physical health may be due in part to the greater autonomy or alternatively, a greater lack of commitment, in cohabitation. Perhaps, rather than benefit substantially from the regulation of a partner with long-term obligations, cohabitors may rely primarily on self-regulation of health behaviors. We saw the most consistent benefits of cohabitation arising in health behaviors for both men and women. The significantly reduced levels of problem drinking among the married than the cohabiting hints at this reduced social control within cohabitations as compared to marriages, but to a distinct improvement over singlehood (out of the parental home); cohabitor drinking mimicked singles living with their parents.

The primary health benefit of cohabitation is largely the mental health improvement enjoyed by its male participants. Consistent with MacDonald et al. (1992), cohabitors generally experience less depressive symptoms than those that are not currently in a union. Cohabiting and married men do not differ significantly in terms of depressed affect, consistent with the findings of Horwitz and White (1998). Perhaps the identification of mental health benefits, but not

- 31 -

physical health benefits, is in part due to the more developed measure available for mental health. While we have employed more detailed physical health measures than other research in the United States, the measures are still relatively simplistic.

As mentioned, there also appear to be some health benefits for cohabitors with respect to risk factors. Cohabiting men and women engage in significantly less problem drinking than singles (out of the home). However, this must be balanced against the lower physical activity of male and female cohabitors (equally poor are the marrieds), and the frequent tobacco consumption of cohabiting women.

While selection effects appear to play some role in the union status health differentials observed, protection effects are the most likely source of benefits. For example, consistent with prior research linking social support to improved health, (e.g., Kessler and Cleary 1980; Thoits 1983), particularly for men, the presence of a cohabiting partner provides increased opportunities for social support, subsequently benefiting mental health. Also consistent with prior research (e.g., Ellison 1991; Kessler and Cleary 1980; Waldron et al. 1996), greater household income is associated with higher self-evaluations of health among both women and men. The added income of a cohabiting partner may similarly provide a protective effect for cohabiting women.

Of note is the less wide-spread effect of marriage on health than expected. Marriage provides mental and physical health benefits to men. For the women in our sample, however, marriage appears to provide few benefits beyond improved health behaviors. It may be that among the young population we examine here the variance in health is too small to detect union status effects; young people are generally quite healthy. It may also be that the marriages included in this age range (maximum age 27) are comprised of more "early" marriages than data sources used in previous studies; early marriages may be comprised of qualitatively different

individuals than those that are more normatively timed. This question could be addressed in future research by separating "early marriages" from relatively later marriages in Add Health and contrasting marital status effects for each group.

Another consideration is that it is possible that the protective role of marriage on health has attenuated over time with the rise in women's labor force participation or other trends. Cherlin (2004) describes what he identifies as the "deinstitutionalization of marriage" – the norms defining behavior within marriage have eroded over time. If these norms also refer to the obligations to monitor one's spouse for "undesirable" or "inappropriate" behaviors in terms of obligations and commitments to a long-lasting, supportive marriage, and lead to a weakening of social integration, then many of the benefits derived from social support and social control within and beyond the family are lost.

Some additional future concerns include more detailed treatment of the selection into coresidential unions. Methods that are able to cope with selection on unobserved factors will be essential to truly clarifying the relationships between union status and health, and may potentially offer different conclusions than those drawn here.

Add Health also offers data that may offer more direct measures of the protection mechanisms: social support, social control, and material well-being. Social support may be more proximately assessed using information about aspects of intimacy within the relationship. Social control may be better measured through level of commitment to the relationship. Material well-being can be assessed through a variety of direct financial and instrumental measures beyond our simple income measure. We have constructed these measures (Pollard and Harris 2003) and intend to add them to supplement the analyses

Currently we treat cohabitations as a homogenous group, much as past studies typically viewed "unmarried" individuals as a single group (e.g., Cotton 1999). Casper and Sayer (2002)

make the important observation that "comparisons of cohabiting and married [or single] individuals rest on the assumption that cohabiting relationship are homogenous in terms of their purposes, goals, and meaning" (p4). Recent research has indicated a good deal of heterogeneity within cohabitors as a group, and that it is possible to distinguish four types of cohabiting relationships: substitute for marriage (unlikely to marry, unlikely to dissolve), precursor to marriage (definite plans to marry), trial marriage (no definite plans to marry, evaluating compatibility), and coresidential daters (Casper and Bianchi 2002; Casper and Sayer 2002; Pollard and Harris, Forthcoming). Following our initial hypotheses about social support, social control, and increased material well-being serving as the three primary mechanisms though which union status affects health, it is not hard to imagine that the strength of each of these would vary quite substantially across different "types" of cohabitation. Using Add Health it is possible to identify larger samples of each "type" of cohabitation than other surveys, and to examine them in relation to health.

With the growth in the prevalence and duration of cohabitations in Western societies, the importance of understanding the consequences of this type of family structure become ever more salient. In terms of the health benefits provided by membership, there generally do not appear to be significant differences between cohabitation and marriage, but not necessarily in the ways we initially anticipated, particularly for women.

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Table 1A. GLM of General Health Indicators on Union Status, Women, Add Health Wave 3

Union Status	Self-Rated Health (Ordered Logit)	Depressed Affect (10 item) (OLS)
A. Without Controls		
Single (parental home)	-0.034	-0.121
Cohabiting	-0.289 ***	0.243
Married	-0.014	-0.103
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	13.326 ***	3.42 †
-2 Log Likelihood	17096.5	40370.6
B. Age, Prior Condition Controls		
Single (parental home)	0.046	-0.207
Cohabiting	-0.22 **	0.038
Married	0.027	-0.239
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	10.261 **	2.44
-2 Log Likelihood	16205.2	39538.6
C. Age, Prior Condition, Relationship Duration Controls		
Single (parental home)	0.044	-0.194
Cohabiting	-0.195 *	-0.277
Married	0.134	-0.403 †
Single non-parental home (omitted)		
Children	-0.094 **	0.451 ***
Duration	0	0.009
Duration*Married	-0.002	-0.013
F-Ratio Contrast: Cohabiting = Married	7.45 **	0.21
-2 Log Likelihood	16192.3	39502
D. All Controls[a]		
Single (parental home)	0.058	-0.245 †
Cohabiting	-0.228 *	-0.306
Married	0.078	-0.362
Single non-parental home (omitted)		
Children	-0.044	0.361 ***
Duration	0	0.008
Duration*Married	-0.003	-0.011
F-Ratio Contrast: Cohabiting = Married	6.376 *	0.04
-2 Log Likelihood	16098.2	39459.6
N	6916	6882

[a] Model controls for the explanatory variables shown in Appendix
*** p <0.001   ** p <0.01   * p <0.05 (Two-Tailed Tests); † p <.05 (One-Tailed Test)

Table 1B. GLM of General Health Indicators on Union Status, Men, Add Health Wave 3

Union Status	Self-Rated Health (Ordered Logistic)	Depressed Affect (10 item) (OLS)
A. Without Controls		
Single (parental home)	-0.17 **	0.212 †
Cohabiting	-0.327 ***	-0.101
Married	-0.1	-0.315 *
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	6.302 *	1.29
-2 Log Likelihood	14488.2	33912.4
B. Age, Prior Condition Controls		
Single (parental home)	-0.11 †	0.095
Cohabiting	-0.263 ***	-0.315 *
Married	-0.021	-0.456 **
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	6.86 **	0.62
-2 Log Likelihood	13815	33256.1
C. Age, Prior Condition, Relationship Duration Controls		
Single (parental home)	-0.108 †	0.096
Cohabiting	-0.249 *	-0.198
Married	0.26 *	-0.327
Single non-parental home (omitted)		
Children	-0.062	0.084
Duration	0	-0.008
Duration*Married	-0.01 *	-0.001
F-Ratio Contrast: Cohabiting = Married	12.47 ***	0.22
-2 Log Likelihood	13804.6	33253.8
D. All Controls[a]		
Single (parental home)	-0.123 *	0.011
Cohabiting	-0.262 *	-0.317 *
Married	0.222 †	-0.4 *
Single non-parental home (omitted)		
Children	-0.072	0.037
Duration	0	-0.009
Duration*Married	-0.011 *	0.001
F-Ratio Contrast: Cohabiting = Married	11.21 ***	0.2
-2 Log Likelihood	13742.8	33208.6
N	6182	6140

[a] Model controls for the explanatory variables shown in Appendix
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (Two-Tailed Tests); † $p < .05$ (One-Tailed Test)

Table 2A. GLM of Selected Health Behaviors on Union Status, Women, Add Health Wave 3

Union Status	Physical within year (Logit)	Binge Drinking (Ordered Logit)	Tobacco Use (days) (OLS)
A. Without Controls			
Single (parental home)	-0.022	-0.403 ***	-0.534
Cohabiting	-0.001	-0.207 **	3.865 ***
Married	0.153 †	-1 ***	-0.125
Single non-parental home (omitted)			
F-Ratio Contrast: Cohabiting = Married	2.355	87.17 ***	59.08 ***
-2 Log Likelihood	7146.5	17062.9	53421
B. Age, Prior Condition Controls			
Single (parental home)	-0.006	-0.405 ***	-0.472
Cohabiting	0.007	-0.277 ***	2.065 ***
Married	0.174 *	-1.034 ***	-0.606
Single non-parental home (omitted)			
F-Ratio Contrast: Cohabiting = Married	2.73 †	77.165 ***	32.14 ***
-2 Log Likelihood	7121	16837.1	51188.6
C. Age, Prior Condition, Relationship Duration Controls			
Single (parental home)	-0.003	-0.414 ***	-0.439
Cohabiting	0.135	-0.101	1.918 ***
Married	0.326 **	-0.777 ***	-0.73
Single non-parental home (omitted)			
Children	0.203 ***	-0.541 ***	0.673 **
Duration	-0.009 *	-0.002	0.003
Duration*Married	-0.002	0.003	-0.013
F-Ratio Contrast: Cohabiting = Married	1.384	24.54 ***	13.69 ***
-2 Log Likelihood	7095	16659.3	51177.6
D. All Controls[a]			
Single (parental home)	-0.019	-0.341 ***	-0.14
Cohabiting	0.165	-0.229 *	1.597 **
Married	0.404 **	-1.014 ***	-1.325 *
Single non-parental home (omitted)			
Children	0.119 *	-0.371 ***	0.995 ***
Duration	-0.007 †	-0.004	-0.004
Duration*Married	-0.002	0.004	-0.012
F-Ratio Contrast: Cohabiting = Married	2.136	32.038 ***	17.14 ***
-2 Log Likelihood	6920.1	15875.5	50957.6
N	6592	6881	6710

[a] Model controls for the explanatory variables shown in Appendix

*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (Two-Tailed Tests); † $p < .05$ (One-Tailed Test)

Table 2B. Selected Health Behaviors on Union Status, Men, Add Health Wave 3

Union Status	Physical within year (Logit)	Binge Drinking (Ordered Logit)	Tobacco Use (days) (OLS)
A. Without Controls			
Single (parental home)	0.01	-0.415 ***	-0.252
Cohabiting	-0.227 **	-0.346 ***	2.756 ***
Married	-0.189 *	-0.689 ***	1.363 *
Single non-parental home (omitted)			
F-Ratio Contrast: Cohabiting = Married	0.134	14.247 ***	9.803 ***
-2 Log Likelihood	7544.9	19793.4	49412
B. Age, Prior Condition Controls			
Single (parental home)	0	-0.405 ***	-0.406
Cohabiting	-0.178 *	-0.43 ***	1.011 †
Married	-0.091	-0.721 ***	0.71
Single non-parental home (omitted)			
F-Ratio Contrast: Cohabiting = Married	0.694	10.089 **	0.21
-2 Log Likelihood	7550.3	19531.6	47236
C. Age, Prior Condition, Relationship Duration Controls			
Single (parental home)	-0.001	-0.406 ***	-0.398
Cohabiting	-0.092	-0.282 **	0.472
Married	-0.109	-0.638 ***	-0.906
Single non-parental home (omitted)			
Children	-0.078	-0.098 †	0.909 *
Duration	-0.003	-0.006 †	0.013
Duration*Married	0.006	0.005	0.029
F-Ratio Contrast: Cohabiting = Married	0.012	6.215 *	1.85
-2 Log Likelihood	7484.3	19523.5	47224.8
D. All Controls[a]			
Single (parental home)	-0.031	-0.303 ***	0.235
Cohabiting	-0.063	-0.349 **	0.246
Married	-0.089	-0.745 ***	-1.16
Single non-parental home (omitted)			
Children	-0.116 †	0	1.25 **
Duration	-0.004	-0.006 †	0.009
Duration*Married	0.008	0.005	0.029
F-Ratio Contrast: Cohabiting = Married	0.025	7.527 **	1.99
-2 Log Likelihood	7312.8	19000.7	47005.8
N	5489	6141	5943

[a] Model controls for the explanatory variables shown in Appendix
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (Two-Tailed Tests); † $p < .05$ (One-Tailed Test)

Table 3A. GLM of Body Maintenance Indicators on Union Status, Women, Add Health Wave 3

Union Status	Exercise Frequency (Ordered Logit)	BMI Deviation (OLS)
A. Without Controls		
Single (parental home)	-0.061	0.418 ***
Cohabiting	-0.422 ***	0.262
Married	-0.38 ***	0.602 ***
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	0.331	4.31 *
-2 Log Likelihood	29128.2	28492.2
B. Age, Prior Condition Controls		
Single (parental home)	-0.024	0.123
Cohabiting	-0.4 ***	0.24 †
Married	-0.33 ***	0.549 ***
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	0.934	4.96 *
-2 Log Likelihood	28744.1	25803.8
C. Age, Prior Condition, Relationship Duration Controls		
Single (parental home)	-0.028	0.122
Cohabiting	-0.413 ***	0.074
Married	-0.273 **	-0.002
Single non-parental home (omitted)		
Children	-0.304 ***	0.151 *
Duration	0.005 †	0.006
Duration*Married	0	0.012 †
F-Ratio Contrast: Cohabiting = Married	1.51	0.12
-2 Log Likelihood	58660.3	25779
D. All Controls[a]		
Single (parental home)	-0.019	0.104
Cohabiting	-0.459 ***	0.129
Married	-0.347 ***	0.106
Single non-parental home (omitted)		
Children	-0.216 ***	0.009
Duration	0.005 †	0.008
Duration*Married	-0.001	0.013 †
F-Ratio Contrast: Cohabiting = Married	0.954	0.01
-2 Log Likelihood	28556.9	25670.2
N	6902	5198

[a] Model controls for the explanatory variables shown in Appendix
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (Two-Tailed Tests); † $p < .05$ (One-Tailed Test)

Table 3B. GLM of Body Maintenance Indicators on Union Status, Men, Add Health Wave 3

Union Status	Exercise Frequency (Ordered Logit)	BMI Deviation (OLS)
A. Without Controls		
Single (parental home)	0.015	0.387 ***
Cohabiting	-0.306 ***	0.376 **
Married	-0.473 ***	0.567 **
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	3.77 †	1.29
-2 Log Likelihood	27641.7	22922.2
B. Age, Prior Condition Controls		
Single (parental home)	0.026	0.216 **
Cohabiting	-0.202 ***	0.401 ***
Married	-0.384 ***	0.617 ***
Single non-parental home (omitted)		
F-Ratio Contrast: Cohabiting = Married	1.4	2.77 †
-2 Log Likelihood	27288	20454.2
C. Age, Prior Condition, Relationship Duration Controls		
Single (parental home)	0.025	0.217 **
Cohabiting	-0.211 *	0.229 †
Married	-0.341 **	0.716 ***
Single non-parental home (omitted)		
Children	-0.111 *	-0.026
Duration	-0.002	-0.01 †
Duration*Married	0.003	-0.013 †
F-Ratio Contrast: Cohabiting = Married	0.949	5.85 *
-2 Log Likelihood	27282.6	20450
D. All Controls[a]		
Single (parental home)	0.002	0.2 **
Cohabiting	-0.187 †	0.224
Married	-0.358 **	0.705 ***
Single non-parental home (omitted)		
Children	-0.119 *	-0.055
Duration	-0.002	0.01 †
Duration*Married	0.003	-0.013 †
F-Ratio Contrast: Cohabiting = Married	1.63	5.69 *
-2 Log Likelihood	27213.6	20425.4
N	6165	4668

[a] Model controls for the explanatory variables shown in Appendix
*** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$ (Two-Tailed Tests); † $p < .05$ (One-Tailed Test)

Appendix A. Variable Descriptions

	Females		Males	
Dependent Variables	**Mean**	**S.D.**	**Mean**	**S.D.**
Self-Rated Health (1 - 5) (1=poor, 5=excellent)	3.812	0.911	3.997	0.878
Depressed Affect (0 - 29)	7.024	4.957	5.332	3.880
Physical Within Year (1=yes)	0.639	0.480	0.670	0.470
Binge Drink Within Year (1 - 7) (1=never, 7=almost/every day)	1.503	1.116	1.751	1.406
Tobacco Use (days / month) (cigarettes and chewing tobacco)	3.743	8.978	5.042	10.998
Exercise Frequency Last Week (range 0 - 9)	3.295	2.003	4.144	2.164
BMI Deviation (Deviation from 'normal' range)	0.645	1.974	0.505	1.614

	Females		Males	
Independent Variables	**Mean**	**S.D.**	**Mean**	**S.D.**
Age at T2	21.788	1.730	22.022	1.744
Race / Ethnicity (1 = yes)				
Black	0.219	0.414	0.185	0.389
Hispanic	0.146	0.353	0.161	0.368
Other	0.078	0.268	0.092	0.290
(White = Reference)				
Immigrant Status (1 = yes) (First or Second-Generation)	0.198	0.398	0.217	0.412
Combined Income (T2)	17925.88	21657.61	18501.16	20708.98
Parents' Highest Education (1= < high school, 5 = college)	2.963	1.187	3.006	1.181
Religiosity (0 - 6) (see Appendix B)	2.987	2.181	2.733	2.177
Self Esteem (3 - 15) (see Appendix B)	6.299	2.110	5.609	1.839
Coping (4 - 20) (see Appendix B)	8.787	2.452	8.719	2.508
Relationship Duration (months)	9.043	16.767	5.943	13.338
Children (0-5) (number of R's in household)	0.403	0.726	0.170	0.523

APPENDIX B: SCALE INFORMATION

Depressed Affect: Sum of the following variables (range 0-29)

You were bothered by things that usually don't bother you. (Wave1: H1FS1; Wave 3: H3SP5)
You felt that you could not shake off the blues, even with help from your family and your
      friends. (Wave 1: H1FS3; Wave 3: H3SP6)
You felt that you were just as good as other people. (Reverse Coded. Wave 1: H1FS4; Wave 3:
      H3SP7)
You had trouble keeping your mind on what you were doing. (Wave 1: H1FS5; Wave 3: H3SP8)
You felt depressed. (Wave 1: H1FS6; Wave 3: H3SP9)
You felt that you were too tired to do things. (Wave 1: H1FS7; Wave 3: H3SP10)
You felt sad. (Wave 1: H1FS16; Wave 3: H3SP11)
You enjoyed life. (Reverse Coded. Wave 1: H1FS15; Wave 3: H3SP11)
You felt that people disliked you. (Wave 1: H1FS17; Wave 3: H3SP13)
In the Past 12 months, how often have you cried a lot? (Wave 1: H1GH21; Wave 3: H3SP2)

Cronbach alpha:
Males: 0.76 (Wave 1); 0.78 (Wave 3) ; Females: 0.83 (Wave 1); 0.83 (Wave 3)

Self Esteem at Wave 1: Sum of the following variables (range 3-15)
You have a lot of good qualities. (H1PF30)
You like yourself just the way you are. (H1PF33)
You feel like you are doing everything just about right. (H1PF34)

Cronbach alpha: Males: 0.69 ; Females 0.73

Coping at Wave 1: Sum of following items (range 4-20)

When you have a problem to solve, one of the first things you do is get as .many facts about the
      problem as possible. (H1PF18)
When you are attempting to find a solution to a problem, you usually try to think of as many
      different ways to approach the problem as possible. (H1PF19)
When making decisions, you generally use a systematic method for judging and comparing
      alternatives. (H1PF20)
After carrying out a solution to a problem, you usually try to analyze what went right and what
      went wrong. (H1PF21)

Cronbach alpha: Males: 0.73 ; Females 0.75

Religiosity at Wave 1: Sum of following items (range -8):

In the past 12 months, how often did you attend religious services? (H1RE3)
Many churches, synagogues, and other places of worship have special activities for teenagers—
      such as youth groups, Bible classes, or choir. In the past 12 months, how often did you attend
      such youth activities? (H1RE7)
Cronbach alpha: Males : 0.82 ; Females 0.81

Appendix C. Multinomial Logit Models of Selection into Cohabitation and Marriage, Women and Men, 1995-2001/2002 Add Health Survey

Dependent Variables	Women			Men		
	Cohabitation (vs. singlehood)	Marriage (vs singlehood)	Cohabitation (vs. Marriage)	Cohabitation (vs. singlehood)	Marriage (vs singlehood)	Cohabitation (vs. Marriage)
Health Measures						
Self Rated Health	0.041	0.063	-0.0220	-0.008	-0.007	0.000
Depressed Affect	0.005	0.025 **	-0.0200 †	0.016	0.007	0.009
Tobacco Use	0.024 ***	0.005	0.0190 ***	0.020 ***	0.014 **	0.006
Binge Drinking	0.076	0.004	0.0730	0.056	0.028	0.028
Physical Exam	0.080	-0.093	0.1720	0.156	-0.104	0.260 †
BMI Deviation	-0.039 †	-0.055 *	0.0150	-0.045	-0.080 *	0.035
Exercise Frequency	0.032	-0.015	0.0470 †	0.021	-0.030	0.050
Background Factors						
Age	0.110 ***	0.393 ***	-0.2830 ***	0.203 ***	0.401 ***	-0.198 ***
Black	-0.522 ***	-1.245 ***	0.7230 ***	-0.019	-0.565 ***	0.546 **
Hispanic	0.011	-0.296 *	0.3070 †	-0.097	-0.031	-0.067
Other Race	0.056	-0.934 ***	0.9900 ***	-0.241	-0.287	0.046
Immigrant Status	-0.350 *	-0.129	-0.2210	-0.432 *	-0.171	-0.261
Parental Education	-0.121 ***	-0.157 ***	0.0360	-0.120 ***	-0.146 ***	0.025
Religious Participation	-0.066 ***	0.078 ***	-0.1440 ***	-0.076 ***	0.071 **	-0.147 ***
Esteem	-0.011	-0.013	0.0020	-0.015	-0.020	0.005
Coping	-0.022	-0.031 †	0.0090	-0.011	0.009	-0.020
Intercept	-3.011 ***	-8.721 ***	5.71 ***	-5.504 ***	-9.856 ***	4.352 ***
Likelihood Ratio	7936.9			5979.1		

*** p <0.001   ** p <0.01   * p <0.05 (Two-Tailed Tests); † p <.05 (One-Tailed Test)