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UNION FORMATION AND DEPRESSION:  
SELECTION AND RELATIONSHIP EFFECTS

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**Union Formation and Depression:  
Selection and Relationship Effects**

Abstract

Many studies have established that married people fare better than their never-married counterparts in terms of psychological well-being. It is still unclear, however, whether this advantage is due primarily to beneficial effects of marriage or to the selection of psychologically healthier individuals into marriage. This study employs data from both waves of the National Survey of Families and Households to test hypotheses based on selection and relationship effects simultaneously. Further, we differentiate union formation into cohabitation and marriage with and without prior cohabitation. Results indicate a very small degree of selection of less depressed persons into marriage (but not cohabitation), and a stronger negative effect of entry into marriage on depression, particularly when marriage was not preceded by cohabitation.

**Union Formation and Depression:  
Selection and Relationship Effects**

Introduction

A great many studies have demonstrated that married persons fare better than the never-married on a variety of dimensions, including global happiness (Glenn & Weaver, 1988; Lee, Seccombe, & Shehan, 1991; Ruvolo, 1998; Stack & Eshleman, 1998); life satisfaction and related indicators of psychological well-being (Gove, 1972; Gove, Hughes, & Style, 1983; Gove, Style, & Hughes, 1990; Marks, 1996; Marks & Lambert, 1998; Mastekaasa, 1992, 1993, 1994; Ross, 1995); physical health (Waite, 1995); and life expectancy (Lillard & Waite, 1995; Murray, 2000). Of particular interest here, research has shown consistently that married persons tend to be less depressed than the never-married (Horwitz, White, & Howell-White, 1996; Marks, 1996; Marks & Lambert, 1998; Ross, 1995).

Two types of explanations have been proposed for the advantages of the married over the never-married. First is the straightforward argument that married persons benefit directly from their relationships with their spouses, in terms of support, intimacy, mutual caring, companionship, and the financial advantages that come from the pooling of resources (Gove et al., 1990; Marks & Lambert, 1998; Ruvolo, 1998; Simon & Marcussen, 1999). A corollary to this explanation is the idea, introduced by Pearlin and Johnson (1977), that marriage has a "buffering" or

"protective" effect against adverse life events or situations such as illness, poverty, or the loss of loved ones. The marital relationship is a social and psychological resource that helps people better withstand loss and adversity.

Both forms of this argument imply that marriage improves psychological well-being, either directly or by moderating the effects of events and circumstances that would otherwise result in lower well-being. Although this is often termed the "social causation" explanation (e.g., Mastekaasa, 1992), we prefer to call it the "relationship effect."

The second type of explanation is the "selection effect," which postulates that happier, healthier people are more likely to be selected into marriage (Glenn & Weaver, 1988; Horwitz et al., 1996; Mastekaasa, 1992). The selection effect also implies an advantage of the married over the never-married in cross-sectional data, because those with the highest levels of well-being would be most likely to marry, thereby raising the average well-being of the married and lowering the average well-being of the never-married. The selection effect does not imply change in well-being for individuals accompanying the transition to marriage. However, the selection effect and relationship effect explanations are not at all mutually exclusive. The critical question here is *how much* of the advantage of married persons is attributable to each kind of effect.

While it is possible to employ cross-sectional or cohort data to address the issue of relationship versus selection

effects indirectly (see Glenn & Weaver, 1988, for a particularly compelling analysis), panel data are obviously the most useful. Several longitudinal studies have addressed this issue. The general consensus is that relationship effects are more powerful and more important than selection effects, although there is some evidence on each side.

Mastekaasa (1992) found that a measure of life satisfaction predicted subsequent marriage for a sample of young adults in Norway, thus supporting the selection effect. Horwitz et al. (1996) reported that depression predicted subsequent marriage (negatively) for women, but not men, in a sample of never-married New Jersey residents. However, Simon and Marcussen (1999), using the National Survey of Families and Households, observed no differences in depression at Wave I between those who subsequently married and those who remained single. The longitudinal evidence on the selection effect is thus decidedly mixed.

Evidence for the relationship effect is much stronger. Simon and Marcussen (1999) found that those who had married by Wave II of the NSFH were significantly less depressed than those who remained single (recall that there were no differences between these groups at Wave I). Marks and Lambert (1998), also using the NSFH, discovered that those who married between waves became less depressed while those who remained unmarried became more depressed; they report parallel results for global happiness. Horwitz et al. (1996) found that marriage during the

course of their study was associated with reductions in both depression and reported alcohol problems.

Each of these studies, however, assumed that the transition to marriage is a single event, and that the relevant comparison is simply between those who marry and those who don't. But over half of all contemporary marriages are preceded by cohabitation, and more than half of all adults under age 40 have cohabited at least once (Brown, 2000; Bumpass & Lu, 2000; Bumpass & Sweet, 1989; Seltzer, 2000). Although cohabitation typically lasts for a much shorter period of time than marriage (Bumpass & Lu, 2000; Seltzer, 2000), it is a prelude to marriage for many and an alternative to marriage for some.

None of the longitudinal studies mentioned above examines either selection into cohabitation or the consequences of cohabitation for well-being. Instead, if cohabitants are included in the studies, they are treated as unmarried. If cohabitation has some of the same consequences as marriage, or if individuals are positively selected into cohabitation based on their well-being, treating cohabitants as single would minimize differences between the single and the married.

Some cross-sectional studies have found cohabitants to be intermediate between never-marrieds and marrieds in terms of psychological well-being (e.g., Kurdek, 1991). This is consistent with the idea that cohabitation offers some of the advantages of marriage - intimacy, support, regular sexual relations, companionship, economical living arrangements - but

without the strength of commitment and full pooling of resources marriage entails (Horwitz & White, 1998). However, cohabitation could also be a means of obtaining the advantages of marriage without the costs of long-term commitment, in which case it might have positive effects on well-being equal to or greater than those of marriage. On the other hand, there is evidence that cohabitation is selective of those with greater financial and personal problems (Axinn, 1992; Booth & Johnson, 1988; Brown, 2000; Bumpass & Sweet, 1989; Clarkberg, 1999), and that cohabitants experience lower relationship quality than do married persons (Nock, 1995), particularly if they do not have plans to marry (Brown & Booth, 1996). This suggests that cohabitants may have lower levels of psychological well-being.

The longitudinal evidence on the relation of cohabitation to psychological well-being is somewhat mixed. Horwitz and White (1998) followed their New Jersey sample through transitions to either cohabitation or marriage, and found that those who entered cohabiting unions were more depressed than those who married both before and after the transition. However, the post-transition difference disappeared under controls for gender, financial need, and relationship quality.

Brown (2000) compared those who entered cohabiting unions with those who married using the National Survey of Families and Households. She found a significant reduction in depression for those who entered marriage between waves, but not for those who cohabited. She also found no evidence of selection effects.



However, her analysis compared individuals who entered cohabiting unions with individuals who entered marital unions; she did not include the continuously unpartnered.

This study employs data from the National Survey of Families and Households to follow young adults who were unpartnered at Time 1, and who had never cohabited or married, through transitions into cohabitation and/or marriage. Because it is the best-measured of the indicators of psychological well-being available in the NSFH, we focus on depression as the critical variable. We employ depression at Time 1 as a predictor of union formation between waves, and change in depression between waves as a consequence of union formation.

Beginning with the subsample of those who have never cohabited or married, we use Time 1 depression to predict three possible outcomes: (1) remaining continuously unpartnered; (2) entering a cohabiting union; and (3) marrying, without prior cohabitation. Because we are interested in the effects of depression on selection into relationships, in this part of the analysis we ignore information on relationship outcomes; in other words, for those who entered a union between waves we are concerned only with the initial union they entered.

The second stage of the analysis predicts change in depression between waves based on four outcome statuses: continuously unpartnered, cohabitation, cohabitation followed by marriage, and marriage without prior cohabitation. In this analysis, our intent is to examine the effects of entry into

unions, not union dissolution. To achieve this objective, we eliminate cases where individuals entered and exited a union between waves. This means that people who cohabited and broke up, married and divorced, cohabited with multiple partners, or cohabited with one person but married another were excluded from the analysis.

We hypothesize that depression at Time 1 negatively predicts selection into both cohabitation and marriage. In addition, we expect the effect of depression on marriage to be stronger than its effect on cohabitation. This is because marriage entails a stronger and more permanent commitment than cohabitation, and therefore is likely to be regarded as a more serious and consequential decision than cohabitation; thus depression and other selection factors should play a greater role.

In the second stage of the analysis, we hypothesize that those who marry between waves experience the greatest decrease in depression, followed by those who enter and remain in cohabiting unions. We expect those who cohabit then marry to be similar to those who marry without prior cohabitation, because both have made the ultimate commitment of marriage.

### Methods

#### *The Sample*

Both waves of the National Survey of Families and Households are utilized in this study. Wave I is a national

probability sample of 13,007 respondents, including the primary cross-section of 9637 households and oversamples of cohabiting couples, persons recently married, and African-Americans. Data were collected for the first wave in 1987 and 1988. Wave II involves re-interviews of surviving Wave I main respondents (N=10,007) in 1992-1994, as well as interviews with the original spouse or cohabiting partner of the respondent, and the current spouse or cohabiting partner of the respondent if applicable.

The sample for this study is limited to persons at Wave I who had never been married and never cohabited (classified as "unpartnered") and were between the ages of 18 and 35, as the normative age for marriage in the United States is the mid-twenties for both males and females (Horwitz and White, 1991). Individuals who cohabit or marry for the first time after age 35 are scarce, and are likely to differ from those who establish their initial unions at more normative ages.

Wave I of the NSFH contained 1154 persons who had neither cohabited nor been married and were between the ages of 18 and 35. Of these, 920 (79.7%) were followed up at Wave II. To test the selection effect, respondents' *first* union transitions were ascertained. Fifteen cases were deleted from analyses because they contained missing data on variables related to start dates of relationships such that it could not reasonably be ascertained whether respondents had, for instance, cohabited before marriage if they had done both. Another 21 cases were deleted due to missing data on the Wave I depression scale, the

main predictor of Wave II marital status. This leaves 884 cases remaining for analysis of selection into marriage. An additional 11 cases were deleted from the equation predicting selection into cohabitation because, at Wave II, they reported inception dates for their cohabitation relationship that were prior to the date of the Wave I interview.

The sample was further reduced for the analysis of the relationship effect. Of the original 920 Wave II respondents, 40 failed to answer at least 9 of the 12 items measuring depression at one time or the other (see below), and were consequently eliminated from the sample. Of the remaining 880, 149 respondents were deleted from this analysis because they entered and dissolved relationships between waves. These included 33 respondents who married but subsequently separated or divorced; two who were married and widowed; 10 who reported marrying more than once; 13 who cohabited with one partner but married another; 24 who cohabited with more than one partner; and 67 who entered but subsequently dissolved a cohabiting relationship. In addition, two respondents gave conflicting information as to their marital status at Wave II. This leaves 729 respondents for the analysis of the relationship effect who were either continuously unpartnered ( $n=407$ ) or entered a union they did not leave prior to Wave II. The latter category includes 61 respondents who entered and remained in a cohabiting union; 110 who cohabited and then married; and 151 who married without prior cohabitation.

### *Measurement*

The primary criterion variable in this analysis is depression, measured by the 12-item version of the Center for Epidemiological Studies Depression scale (CES-D). The 12-item scale was developed from the original 20-item version (Radloff, 1977) by Ross and Mirowsky (1984), and was designed to have identical psychometric properties for men and women. The items ask how many days in the past week the respondent felt (for example) "depressed," "bothered by things that don't usually bother you," and "that everything you did was an effort." Responses for each item ranged from 0 to 7; the range of the summated scale is thus 0 to 84. The same twelve items were used at each time. Reliability is high at both Wave I (Cronbach's  $\alpha = .93$ ) and Wave II (Cronbach's  $\alpha = .92$ ).

Forty respondents who answered eight or fewer of the 12 items at either or both times were eliminated from the analysis. For those who answered between nine and eleven items at either time, their mean scores for the items they did answer were substituted for the missing items.

Several socio-demographic variables measured at Wave I are included in the analyses because of possible relations to both depression and marital status. These include gender (male = 1); race (dummy variables for Black, Hispanic, and other, with non-Hispanic White as the reference category); and education in years. Age is also measured in years, and age-squared is

included because marriage before or after the normative ages may have consequences for depression. To avoid multicollinearity problems age and its quadratic term were centered.

Physical disabilities may affect an individual's prospects for marriage, and may also mediate the relationship between marital status and depression. For the Wave I data used to predict union transitions, an index of limitations in activities of daily living (ADLs) was constructed by summing dichotomous responses (yes = 1) to questions asking about limitations in ability to care for personal needs, moving around inside the home, working for pay, performing household tasks, climbing stairs, and walking one city block. For the analysis of Wave II depression the concurrent measure of ADL limitations was used, in which the items were scored from 1 (no limitation) to 3 (extensive limitation). Also, an additional item involving heavy housework was added, resulting in an index ranging from 7 (no limitations) to 21 (extensive limitations).

For the test of the selection effect (i.e., the prediction of Time 2 marital status from Time 1 depression), respondent's income (logged to correct skewness) and employment status (employed = 1) at Time 1 were included. In addition, a dummy variable indicating whether a pregnancy occurred to either a female respondent or a male respondent's partner was created.

The test of the effect of union transitions on Time 2 depression included respondent's education and employment status at Time 2. Income was measured by respondent's individual income

for the unpartnered, and couple income for the cohabiting and married, and again was logged to eliminate skewness.

### *Procedures*

Proportional hazards models, specifically competing risks models (Allison, 1995), were employed to test the selection effect (i.e., the effect of Time 1 depression on subsequent union formation). The hazard of the  $j^{th}$  event occurring for the  $I^{th}$  individual at time  $T$  is:

$$h_{ij}(t) = \lim_{\Delta t \rightarrow 0} \frac{\Pr\{t \leq T_i < t + \Delta t, J_i = j \mid T_i \geq t\}}{\Delta t}, \quad j=1..3$$

In this equation,  $T$  represents the time of first union transition for each respondent  $i$ , and  $J$  represents the different types of union transitions (cohabitation, cohabitation followed by marriage, and marriage without prior cohabitation). Hence, the equation represents the hazard that a union transition  $T$  occurs for individual  $i$  between time  $t$  and  $t + \Delta t$ , given that the transition is of type  $j$ , and given that the individual has survived to at least time  $t$  without any transitions having occurred.

As in previous studies, risk of union formation was assumed to begin at the date of the respondents' eighteenth birthday. Survival time was therefore coded as date of Wave I interview (in century months) minus date of eighteenth birthday, plus the date

of first union formation (or, for the continuously unpartnered, the date of the Wave II interview) minus the date of the Wave I interview. This sum represents total survival time of respondents at risk of union formation. Hence, all respondents who formed unions were censored as of the date of union formation, with respondents remaining single considered censored as of the Wave II interview.

Two competing risks models were computed via the SAS system, using the same predictors. The first model takes marriage as the marital status of interest, treating cohabitators and unpartnered persons as censored. The second model predicts cohabitation, with married and unpartnered persons censored.

For the test of the relationship effect (i.e., the effect of union formation on Wave II depression), ordinary least squares regression is employed because the criterion variable is an interval-appearing scale. Predictors were entered in blocks, beginning with Wave I depression and the outcome union statuses (cohabitation, cohabitation-to-marriage, and marriage). Subsequent blocks were entered to ascertain whether they explained the effects, if any, of union transitions. Gender was entered in the second block. Other socio-demographic variables measured at Wave I (race, age, and age-squared) were entered in the third block. These were followed by variables measuring the respondent's current (Wave II) situation: current education and income, employment status, health (limitations in activities of daily living), and number of children. In preliminary analyses,



interaction terms for each union transition by sex were entered to determine whether the transitions affect men and women differently. However, these terms did not approach significance, so were deleted from the final model.

A Heckman two-step estimation procedure (Heckman, 1979) was run to ascertain how socio-demographic predictors affected selective attrition of interviewees between waves. This involves first estimating a probit equation with inclusion at Wave II coded as 1, and non-inclusion coded as 2. These probit estimates were used to calculate  $\lambda$ , representing the hazard of exclusion from the Wave II interview, based on age, race, sex, education, self-reported health, income, employment status, and Wave I depression. However, although there was some selective attrition based on gender, race, and other socio-demographic factors, the probit equation predicted only about seven percent of the variation in attrition, and the equations with and without  $\lambda$  were essentially identical. This indicates that sample attrition between waves did not affect the results of this analysis. Consequently the attrition measure is not included in the analyses reported below.

### Results

Univariate statistics for the 884 cases used to test the effect of Wave I depression on subsequent union transitions are reported in Table 1.

INSERT TABLE 1 ABOUT HERE

The proportional hazards analysis of the effect of Wave I depression on the odds of marriage and cohabitation is shown in Table 2. The coefficients in the table are hazard ratios, so numbers less than 1 indicate a negative effect and numbers greater than 1 indicate a positive effect. Depression indeed has a significant negative effect on the risk of marriage, with each increase of one point on the depression scale corresponding to a decrease of 1 percent in the probability of marriage. This is evidence in favor of the selection effect hypothesis. However, the effect is certainly small. There is no effect of Wave I depression on the probability of cohabitation.

INSERT TABLE 2 ABOUT HERE

Blacks are about 49 percent less likely to marry during the interval between waves than Whites, and Hispanics are approximately 65 percent less likely than Whites to marry; neither group differs significantly from Whites on the risk of cohabitation. Those who are employed at Wave I are more likely to both cohabit and marry than are their nonemployed counterparts. This could also be interpreted as evidence in favor of a selection effect: unmarried individuals with incomes are more desirable spouses or partners. However, income itself is unrelated to the odds of either cohabitation or marriage. A

more reasonable interpretation may be that the employed are more likely to form unions because they have completed their educations.

Age itself is unrelated to the hazard of marriage, but the quadratic term is positively related to marriage. This indicates that the hazard of marriage increases with age at later ages. On the other hand, both age and its square are negatively related to the hazard of cohabitation, meaning that the risk of entering a cohabiting union decreases with age at an increasing rate. Cohabitation is considerably more common among younger persons. Years of schooling decrease the risk of cohabitation, but do not affect the odds of marriage. Physical health limitations are unrelated to the risk of either marriage or cohabitation. Pregnancy between waves substantially increases the risk of marriage, but is unrelated to cohabitation.

There is thus some evidence for a selection effect for marriage, in that depression marginally decreases the risk of marriage. However, this effect is very small, and it has no counterpart for cohabitation. Of the other variables on which selection into marriage might be based (employment, income, education, and physical disability), only employment influences the odds of marriage, and this may be simply a reflection of the fact that those who have completed their educations and thus entered the labor force are more likely to marry. Employment similarly increases the odds of cohabitation, but education decreases the likelihood of cohabitation, an effect opposite to

what would be expected based on the selection hypothesis. Overall, it appears that selection of the less depressed into marriage accounts for a very small portion of the advantage of the married.

Means and standard deviations for the variables included in the prediction of Wave II depression are shown in Table 3. It is notable that the mean depression score at Wave II is substantially (and significantly;  $p < .001$ ) lower than at Wave I. Clearly events or processes occurring in the interval between waves have operated to reduce depression among sample members.

INSERT TABLE 3 ABOUT HERE

Table 4 reports the results of the OLS regression analysis of Wave II depression, controlling for Wave I depression. The consequence of this control is that the dependent variable is actually change in depression between waves. Model 1 includes the baseline depression score and the Wave II outcome statuses.

INSERT TABLE 4 ABOUT HERE

Those who entered and remained in a cohabiting relationship do not differ on depression from the continuously unpartnered. However, those whose cohabitations eventuated in marriage report significantly lower depression at Wave II, and those who married without prior cohabitation showed the greatest decrease in

depression compared to the unpartnered. This remains true after gender is added in Model 2; males experienced a greater decrease in depression than females between waves, but the effects of the outcome statuses are not altered by the control for gender.

The socio-demographic variables race and age are added in Model 3. Blacks experienced a greater increase (or smaller decrease) in depression than non-Hispanic Whites between waves; no other variable has a significant effect. The negative effect of cohabitation followed by marriage is marginally reduced and becomes nonsignificant. There is also a marginal reduction in the effect of marriage without cohabitation, although it remains significant at  $p < .01$ . The reductions occur because Blacks are more depressed than Whites, and also less likely to marry. Some of the apparent negative effect of marriage on depression is due to the racial difference in marriage patterns.

Model 4 adds the variables that indicate the health, economic, and family situations of respondents at Wave II. In this model the effects of marriage, whether or not preceded by cohabitation, become nonsignificant. The effect of cohabitation followed by marriage is reduced by 79 percent from Model 1, and the effect of marriage without prior cohabitation is reduced by 54 percent.

Two of the added variables in Model 4 have significant effects. Limitations in activities of daily living increase depression. However, these limitations are unrelated to union transitions, so do not explain the effects of the outcome

statuses. Income, on the other hand, significantly reduces depression and is significantly related to marriage both with ( $r = .21, p < .001$ ) and without ( $r = .26, p < .001$ ) prior cohabitation. This indicates that one reason those who marry are less depressed than those who do not is the increased income marriage entails. Interestingly, the bivariate correlation between cohabitation and income, while significant, is much smaller ( $r = .09, p < .05$ ), suggesting that cohabitation without marriage is more common among lower-income segments of the population.

#### Discussion

This study is one of the few to examine the effects of psychological well-being on union formation and the effects of union formation on psychological well-being simultaneously. It is also one of a very small number of studies to look at the predictors and effects of both cohabitation and marriage. For these reasons it provides a fairly complete picture of the relations among depression and union formation for young adults.

Entry into a cohabitation relationship is not predicted by Time 1 depression, nor does cohabitation have a significant effect on Time 2 depression. Our results agree with those of Horwitz and White (1998) and Brown (2000) that cohabitants are more depressed than comparable married persons. We add that entry into a cohabiting relationship appears to produce no decrease in depression compared to remaining unpartnered.

Those who married between waves were less depressed at Time 2 than those who remained unpartnered or were cohabiting. This appears, in our analysis, to be primarily a consequence of marriage rather than of the selection of less depressed persons into marriage. Less depressed people are indeed more likely to marry, but the effect is small. On the other hand, those who married between waves, particularly without prior cohabitation, were substantially less depressed by Wave II than those who remained unmarried. Marriage appears to have significant and meaningful negative effects on depression.

However, the effect of marriage for those who cohabited first was almost entirely eliminated, and reduced to nonsignificance, by controls for other variables. In addition, the effect of marriage without prior cohabitation was reduced by over half and became marginally nonsignificant in our final model. Two variables, race and income, appear to be primarily responsible for these reductions.

Blacks were more depressed than Whites at Time 2, and also less likely to enter either cohabitation or marriage between waves. Inclusion of race in the equation (Model 3 of Table 4) noticeably reduced the effects of marriage both with and without prior cohabitation. To some degree, then, the relationship between marriage and depression is spurious due to differing depression levels and marriage patterns for Blacks and Whites. (Hispanics and members of other races were more depressed than Whites in this sample, but the effects were nonsignificant.)

The effect of being Black became nonsignificant in Model 4 when health limitations and income were added to the equation. The bivariate correlation matrix (not shown) reveals that Blacks were substantially more likely than Whites to report limitations in activities of daily living ( $r = .21, p < .001$ ) and to have lower incomes ( $r = -.25, p < .001$ ); each of these variables is strongly related to depression. Income also mediates a portion of the marriage-depression relationship; in part, married people are less depressed because they are more secure financially.

This analysis does not further our understanding of why those who cohabit prior to marriage appear to experience less of a benefit from marriage. The negative effect of marriage on depression is smaller for those who first cohabited in our initial model (see Table 4), and remains smaller and becomes nonsignificant when race enters the equation. Selection into cohabitation as a first union has nothing to do with depression (see Table 2). One possibility is that those who cohabited prior to marriage have been in the relationship longer, and are therefore more accustomed to their partnership and less excited about it. To test this, we entered time since inception of coresidence into Model 4 of Table 4; its effect on depression did not approach significance ( $b = .03, p = .31$ ), and the coefficients for the union status variables did not change. This explanation therefore appears unlikely.

A "kinds of people" explanation is also tempting, particularly given that Table 2 implies pre-union differences



between those who enter cohabitation and those who enter marriage directly on race/ethnicity, age, and education. However, Table 4 shows that the initial difference in the effects of marriage with and without prior cohabitation ( $5.33 - 3.83 = 1.50$ ) remains quite constant as other variables are added to the model. If the difference is due to prior characteristics of those who cohabit versus those who marry directly, the relevant characteristics are not included in this analysis.

Our conclusion is that marriage is associated with lower levels of depression in young adults primarily because of benefits of the marital relationship. Marrying is associated with a significant and substantively meaningful reduction in depression, particularly but not exclusively if marriage is not preceded by cohabitation. While it is true that people who are less depressed initially are slightly more likely than others to marry, the effect is very small and does not appear at all for those whose first union is cohabitation. It also appears to be the case that some of the most important benefits of marriage, at least according to the criterion of reducing depression, are financial; married persons are less depressed than the unpartnered in large part because their incomes are higher.

Further research on the properties of marriage that reduce depression would be helpful in understanding the processes by which the relationship effect works. Such research might also help us understand why prior cohabitation reduces the beneficial effect of marriage.

References

- Allison, P. D. (1995). *Survival analysis using the SAS system: A practical guide*. Cary, NC: SAS Institute, Inc.
- Axinn, W. G. (1992). The relationship between cohabitation and divorce: Selectivity or causal influence? *Demography*, *29*, 357-373.
- Booth, A., & Johnson, D. R. (1988). Premarital cohabitation and marital success. *Journal of Family Issues*, *9*, 255-272.
- Brown, S. L. (2000). The effect of union type on psychological well-being: Depression among cohabitators versus marrieds. *Journal of Health and Social Behavior*, *41*, 241-255.
- Brown, S. L., & Booth, A. (1996). Cohabitation versus marriage: A comparison of relationship quality. *Journal of Marriage and the Family*, *58*, 668-678.
- Bumpass, L. L., & Lu, H. H. (2000). Trends in cohabitation and implications for children's family contexts in the United States. *Population Studies*, *54*, 29-41.
- Bumpass, L. L., & Sweet, J. A. (1989). National estimates of cohabitation. *Demography*, *26*, 615-625.
- Clarkberg, M. (1999). The price of partnering: The role of economic well-being in young adults' first union experiences. *Social Forces*, *77*, 948-967.
- Glenn, N. D., & Weaver, C. N. (1988). The changing relationship of marital status to reported happiness. *Journal of Marriage and the Family*, *50*, 317-324.

- Gove, W. R. (1972). The relationship between sex roles, mental illness and marital status. *Social Forces*, 51, 34-44.
- Gove, W. R., Hughes, M., & Style, C. B. (1983). Does marriage have positive effects on the well-being of the individual? *Journal of Health and Social Behavior*, 24, 122-131.
- Gove, W. R., Style, C. B., & Hughes, M. (1990). The effect of marriage on the well-being of adults. *Journal of Family Issues*, 11, 4-35.
- Heckman, J. J. (1979). Sample selection bias as specification error. *Econometrica*, 47, 153-161.
- Horwitz, A. V., & White, H. R. (1991). Becoming married, depression, and alcohol problems among young adults. *Journal of Health and Social Behavior*, 32, 221-237.
- Horwitz, A. V., & White, H. R. (1998). The relationship of cohabitation and mental health: A study of a young adult cohort. *Journal of Marriage and the Family*, 60, 505-514.
- Horwitz, A. V., White, H. R., & Howell-White, S. (1996). Becoming married and mental health: A longitudinal study of a cohort of young adults. *Journal of Marriage and the Family*, 58, 895-907.
- Kurdek, L. A. (1991). The relations between reported well-being and divorce history, availability of a proximate adult, and gender. *Journal of Marriage and the Family*, 53, 71-78.
- Lee, G. R., Seccombe, K., & Shehan, C. L. (1991). Marital status and personal happiness: An analysis of trend data. *Journal of Marriage and the Family*, 53, 839-844.

- Lillard, L. A., & Waite, L. J. (1995). 'Til death do us part: Marital disruption and mortality. *American Journal of Sociology*, 100, 1131-1156.
- Marks, N. (1996). Flying solo at midlife: Gender, marital status, and psychological well-being. *Journal of Marriage and the Family*, 58, 917-932.
- Marks, N., & Lambert, J. D. (1998). Marital status continuity and change among young and midlife adults. *Journal of Family Issues*, 19, 652-686.
- Mastekaasa, A. (1992). Marriage and psychological well-being: Some evidence on selection into marriage. *Journal of marriage and the Family*, 54, 901-911.
- Mastekaasa, A. (1993). Marital status and subjective well-being: A changing relationship? *Social Indicators Research*, 29, 249-276.
- Mastekaasa, A. (1994). Marital status, distress, and well-being: An international comparison. *Journal of Comparative Family Studies*, 25, 183-206.
- Murray, J. E. (2000). Marital protection and marital selection: Evidence from a historical-prospective sample of American men. *Demography*, 37, 511-522.
- Nock, S. L. (1995). A comparison of marriages and cohabiting relationships. *Journal of Family Issues*, 16, 53-76.
- Pearlin, L. I., & Johnson, J. S. (1977). Marital status, life-strains, and depression. *American Sociological Review*, 42, 704-715.

- Radloff, L. S. (1977). "The CES-D scale: A self-report depression scale for research in the general population." *Applied Psychological Measurement*, 1, 385-401.
- Ross, C. E. (1995). Reconceptualizing marital status as a continuum of social attachment. *Journal of Marriage and the Family*, 57, 129-140.
- Ross, C. E., & Mirowsky, J. (1984). "Components of depressed mood in married men and women: The Center for Epidemiological Studies Depression Scale." *American Journal of Epidemiology*, 119, 997-1004.
- Ruvolo, A. P. (1998). Marital well-being and general happiness of newlywed couples: Relationships across time. *Journal of Social and Personal Relationships*, 15, 470-489.
- Seltzer, J. A. (2000). Families formed outside of marriage. *Journal of Marriage and Families*, 62, 1247-1268.
- Simon, R. W., & Marcussen, K. (1999). Marital transitions, marital beliefs, and mental health. *Journal of Health and Social Behavior*, 40, 111-125.
- Stack, S., & Eshleman, J. R. (1998). Marital status and happiness: A 17-nation study. *Journal of Marriage and the Family*, 60, 527-536.
- Waite, L. J. (1995). Does marriage matter? *Demography*, 32, 483-507.

TABLE 1: Means and Standard Deviations for Wave I Variables  
 Predicting Wave II Union Status (N = 884).<sup>a</sup>

<u>Variable</u>	<u>M</u>	<u>sd</u>
Wave I Depression	17.25	17.24
Male	0.60	0.50
White	0.72	0.48
Black	0.15	0.45
Hispanic	0.11	0.28
Other	0.02	0.14
Employed	0.77	0.44
Income (logged)	1.97	1.00
Age	22.85	4.48
Education	13.25	2.43
ADL Limitations	0.09	0.57
Pregnancy	0.04	0.19

a. Means are weighted using the Wave II person weight;  
 standard deviations are unweighted.

TABLE 2: Hazard of Union Formation Between Waves.<sup>a</sup>

<u>Predictor</u>	<u>Marriage (N=884)</u>	<u>Cohabitation (N=873)</u>
Wave I Depression	0.99*	1.00
Male	0.87	1.05
Black <sup>b</sup>	0.51**	0.90
Hispanic <sup>b</sup>	0.35*	0.92
Other <sup>b</sup>	1.51	1.27
Employed	1.65*	1.45*
Income (logged)	1.06	1.08
Age	0.97	0.92*
Age <sup>2</sup>	1.02*	0.98*
Education	1.04	0.94*
ADL Limitations	0.92	1.00
Pregnancy	5.12***	1.40

a. Hazard ratios are shown.

b. White is the omitted category.

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$

TABLE 3: Means and Standard Deviations for Variables Predicting  
Wave II Depression (N = 729).<sup>a</sup>

<u>Variable</u>	<u>M</u>	<u>sd</u>
Depression - Wave II	11.51	14.25
Depression - Wave I	16.43	16.57
Unpartnered	0.52	0.50
Cohabiting	0.09	0.28
Cohabit → Married	0.17	0.36
Married	0.23	0.41
Male	0.58	0.50
White	0.74	0.48
Black	0.14	0.43
Hispanic	0.11	0.28
Other	0.02	0.13
Age	23.11	4.57
ADL Limitations	7.48	1.98
Education	13.74	2.55
Income (logged)	3.21	1.04
Employed	0.87	0.37
Number of Children	0.55	1.13

a. Means are weighted by the Wave II person weight; standard deviations are unweighted.



TABLE 4: Ordinary Least Squares Regression Analysis of Wave II  
Depression (N = 729).

<u>Variable</u>	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>
Intercept	11.00***	12.79***	10.28***	0.53
Depression-Wave I	0.22***	0.21***	0.20***	0.15***
Cohabiting <sup>a</sup>	0.98	0.89	0.98	2.03
Cohabit → Married <sup>a</sup>	-3.83**	-3.70*	-2.67	-0.80
Married <sup>a</sup>	-5.33***	-5.11***	-4.13**	-2.47
Male		-3.34***	-2.68**	-2.00*
Black <sup>b</sup>			4.77***	1.99
Hispanic <sup>b</sup>			2.09	1.19
Other <sup>b</sup>			2.89	3.49
Age			-0.07	-0.04
Age <sup>2</sup>			0.02	0.01
ADL Limitations				2.22***
Education				-0.13
Income (logged)				-1.81**
Employed				1.19
Number of Children				0.20
R <sup>2</sup>	.098	.112	.132	.247
Adjusted R <sup>2</sup>	.093	.106	.120	.231

a. Unpartnered is the omitted category.

b. Non-Hispanic white is the omitted category

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$