

Mental Illness as a Barrier to Marriage Among Mothers With Out-of-Wedlock Births

Center for Research on Child Wellbeing  
Working Paper #2007-01-FF

Julien O. Teitler  
Nancy E. Reichman

DRAFT

**Abstract:** This study explores how mental illness shapes transitions to marriage among unwed mothers using augmented data from the Fragile Families and Child Wellbeing study. We estimate proportional hazard models to assess the effects of mental illness on the likelihood of marriage over a five year period following a non-marital birth. Diagnosed mental illness was obtained from the survey respondents' prenatal medical records. We find that mothers with mental illness were about two thirds as likely as mothers without mental illness to marry, even after controlling for demographic characteristics, and that human capital, relationship quality, partner selection, and substance abuse explain only a small proportion of the effect of mental illness on marriage.

This research was supported by Grant #R01-HD-35301 from the National Institute of Child Health and Human Development.

One third of births in the United States are to unmarried parents. The proportions are considerably higher than that for minority parents. While many unmarried mothers eventually marry (82 percent of whites, 62 percent of Hispanics, and 59 percent of blacks, according to Graefe and Lichter 2002), they do so at a slow rate. Increasingly, public attention has focused on encouraging marriage among parents with non-marital births.

The role of mental illness as a barrier to marriage among unwed parents has been little explored. This is surprising given that unmarried parents and low-income populations are at disproportionate risk for poor mental health (Neugebauer, Dohrenwend, and Dohrenwend, 1980; Jayakody, Danziger, and Pollack 2000; Teitler, Reichman, and Nepomnyaschy 2004; DeKlyen et al. 2006) and that mental illness is highly co-morbid with substance abuse (Epstein et al. 2004) and poor physical health (Jones et al. 2004), both of which may deter potential marriage partners.

This study explores the role of mental illness in shaping transitions to marriage among mothers whose children were born between 1998 and 2000 in 20 large U.S. cities. Mothers with young children born of outside of marriage are a policy relevant population that little previous research on the links between mental illness and family structure has explored. We use measures of diagnosed mental illness that pre-exist marriage and assess the potential mediating roles of human capital, relationship quality, partner selection, and substance use.

## BACKGROUND AND SIGNIFICANCE

Much prior research has documented negative associations between mental illness and marriage. Numerous studies have investigated the effects of marriage on mental health (e.g., see Gove, Hughes, and Style 1983) or the effects of mental health on marriage quality (e.g., see Larson and Holman 1994) or divorce (see Wade and Pevalin 2004 for a good review). Fewer studies have investigated the effect of mental illness on marriage—the focus of this paper. Those

studies have generally proceeded without acknowledging previous research on the topic and as a result have tended to replicate previous knowledge rather than build upon it. Additionally, many did not distinguish between effects for men and women (despite evidence that the associations differ by gender). Finally, no study has focused on unmarried mothers, whose marriage behaviors differ from the population overall. Below we review and synthesize this body of research.

### **Research on the effects of mental illness on marriage**

Stevens (1969) used British panel data on women who were admitted to a large London mental hospital and compared that group to the general population, both pre- and post-admission. She found that schizophrenia decreased the likelihood of being married at the time of the hospitalization and of subsequently marrying, but that affective disorders had no association with current or subsequent marriage. Similarly, Rushing (1979), using cross-sectional data from a Tennessee hospital, found that schizophrenia was negatively associated with being married at the time of hospitalization, with stronger effects for males than females. Agerbo et al. (2004), using Danish registry data on individuals with a diagnosis of schizophrenia who were admitted to a psychiatric facility over a two decade period, found that schizophrenia decreased the likelihood that individuals (women or men) entered marriage subsequent to the hospitalization, compared to matched controls—even after 25 years. Studying schizophrenia, although it is a severe disorder and relatively rare, is useful for assessing the direction of causality because it is less likely to be caused by social circumstances than many other mental illnesses, including depression (Dohrenwend 1992). However, the effects of schizophrenia on marriage cannot necessarily be generalized to other mental illnesses.

Bartel and Taubman (1986), using U.S. panel data on white veterans, examined the effects of mental illnesses that were classified as psychoses (e.g., schizophrenia), neuroses (e.g., mood disorders), and other on the likelihood of marriage. The conditions were classified according to the 1965 International Classification of Diseases, Adapted for Use in the United States (ICDA). They found that neuroses which were diagnosed when the individual was young reduced the likelihood of marriage in this sample of males, but that recent diagnoses did not. They did not find associations for disorders classified as psychoses or other mental illnesses. It is important to note that the conditions included in the ICDA categories have since been revised substantially (for Diagnostic and Statistical Manual of Mental Disorders-III and DSM-IV coding). For example, the neurosis category has been replaced by more explicitly defined mood, anxiety, adjustment, and personality disorders.

Two recent studies looked at the effect of depression in adults on the likelihood of marriage using panel data from the National Survey of Families and Household (NSFH), which includes the Center for Epidemiological Studies Depression (CES-D) Scale. The CES-D, which asks respondents about the number and duration of depressive symptoms, is generally considered an indicator of relative risk for depression rather than a diagnostic instrument (Radloff 1977). Simon (2002) focused on the extent to which marriage is emotionally advantageous for women and men, but also tested for causality in the opposite direction. She found no evidence that risk for depression, as measured by the CES-D, affects transitions to marriage among women or men. Lamb et al. (2003) investigated the direction of causality underlying the negative association between depression and marriage for both women and men and found no evidence that risk for depression, as measured by the CES-D, affects transitions to marriage among individuals who had never cohabited.

Forthofer et al. (1996) used panel data from the National Comorbidity Survey that includes the World Health Association's Composite Interview Diagnostic Instrument (CIDI), which is a comprehensive, fully-structured interview designed to be used by trained lay interviewers for the assessment of mental disorders according to the definitions and criteria of ICD-10 and DSM-IV (Robins et al. 1988). The authors examined a number of different disorders and found that affective disorders (particularly depression) and conduct disorder reduced the likelihood of marriage after age 19 for both men and women. The authors did not assess the effects of psychoses, which have low rates of sensitivity in the CIDI (Cooper, Peters, and Andrews 1998).

On balance, the evidence from these studies indicates that there are negative effects of schizophrenia on marriage and that diagnosed depression and some other disorders also appear to have negative effects. The magnitudes of the effects are difficult to ascertain, however, because few studies report effect sizes in terms of risk ratios for mentally ill to not mentally ill. The few studies that do present results in a comparable metric show substantially larger effects of schizophrenia than of depression and other mental illnesses.

Virtually nothing is known about the effects of mental illness on marriage among unwed parents, the population that is the major target of marriage promotion efforts. The findings from past research do not necessarily apply to mothers with children born out-of-wedlock. For example, mental illness may affect non-marital fertility but not subsequent marriage behavior, or it could compound economic or other hardships associated with unwed parenthood, leading to stronger negative effects on marriage than for the general population.

Only one study of mental illness and marriage that we know of focused specifically on mothers with young children born outside of marriage (DeKlyen et al. 2006). However, that

study estimated effects in the opposite direction (how marital status at the time of a birth is related to depression and anxiety one year later, assessed using the CIDI). The authors found that unmarried parents have higher levels of depression or anxiety than married parents and that unmarried parents whose relationships ended prior to the birth have higher rates of these mental health problems than do other groups of unmarried parents.

### **Potential Mediators**

In addition to estimating the effects of mental illness on the likelihood that mothers with out-of-wedlock births transition to marriage, we explore some potential mediators. As far as we know, no previous studies have investigated *how* mental illness affects marriage behavior. Specifically, we explore the potential mediating roles of human capital, relationship quality, partner selection, and substance abuse.

(1) *Human capital*. Mental illness could affect individual's human capital through reduced cognitive functioning or discrimination in education or employment. Previous studies have found links between mental illness and educational attainment (Berndt et al. 2000; Currie and Stabile 2005) and between mental illness and employment (Marcotte and Wilcox-Gok 2001; Jayakody, Danziger, and Kessler 1998; Ettner, Frank, and Kessler 1997). There is also a substantial body of research showing positive effects of human capital on marriage (e.g., Waite and Spitze 1981), though these effects appear to vary somewhat by sex. Earnings potential, for example, appears to be a stronger predictor of marriage for men than for women (Xie et al. 2003).

(2) *Relationship quality*. Cognitive deficits or behaviors of individuals with mental illness may adversely affect their ability to communicate effectively, resolve conflicts, or engage in mutually rewarding relationships. Research on the effects of mental illness on marital disruption

(Rushing 1979; Bartel and Taubman 1986; and Kessler et al. 1998), social functioning (Tweed 1993), and relationships with family (Nicholson, Sweeney, and Geller 1998), lends empirical support to this possible mechanism.

(3) *Partner selection*. Mental illness could affect an individual's ability to choose or attract a compatible partner. In terms of choosing partners, cognitive deficits associated with mental illness may lead to "bad matches" and relationships that have poor long term prospects. In terms of attracting partners, potential mates may be deterred as a result of cognitive deficits, behaviors, or stigma associated with mental illness (Angermeyer and Matchinger 1996; Corrigan and Penn 1999; Link et al. 1987; Phelan et al. 2000)

(4) *Substance abuse*. Mental illness and substance abuse are highly co-morbid (Epstein et al. 2004). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), substance abuse is a form of mental illness. However, there is also evidence that substance abuse can be caused by certain types of mental illness (Harris and Edlund 2005).

## DATA AND MEASURES

The data for this study are from the Fragile Families and Child Wellbeing Study (hereafter, FF). FF follows a cohort of parents and their newborn children in 20 U.S. cities (located in 15 states). Mothers were interviewed in the hospital shortly after their child's birth (baseline) and over the telephone one, three, and five years later. Baseline interviews were conducted with a probability sample of 3,712 unmarried mothers and a comparison group of 1,196 married mothers from 1998 to 2000 (see Reichman et al. 2001 for details of the research design). Response rates of unmarried mothers were 87 percent at baseline, 90 percent (of baseline mother interviews) at the one year follow-up, 87 percent (of baseline mother interviews)

at the three year follow-up wave, and 87 percent (of baseline mother interviews) at the five year follow-up wave.

Additional data are being collected from the mothers' and infants' hospital medical records (from the birth) and, at this time, are available for 3,517 (72%) of the baseline sample (2714 unmarried, 803 married). The medical records provide rich data on the mothers' health history including pre-existing mental illness. Thus, we are able to establish that the mental illness preceded the birth. However, the timing of onset of mental illness was not available. The analyses are based on the four waves of the FF survey augmented with the medical record data.

Information on mothers' mental health history, psychiatric medications, and substance abuse or addiction was collected from multiple sources within the medical records (e.g., laboratory test results, notes, and ICD-9 codes). Our primary measure of mental illness excludes drug and alcohol related diagnoses because we are interested in the potential mediating effect of substance abuse. However, since substance abuse itself is considered mental illness according to DSM-IV, we conduct supplementary analyses with a measure of mental illness that includes substance abuse diagnoses. The main measure of mental illness includes schizophrenia, bipolar disorder, anxiety disorder, eating disorders, depression, and all other non-substance abuse DSM-IV mental illness diagnoses.

We focus on mothers who were unmarried at the time of the birth. Our outcome of interest is marriage, either to the baby's father or to someone else. We used information from the one, three, and five year follow-up interviews to determine marital status of the mother at each month after her baseline interview until her final interview date or until she got married. For the 14 percent of cases for which we did not have exact marriage dates, we imputed dates based on the mother's report of her marital status at each wave.

The following demographic characteristics (reported by the mother at baseline), all of which may be associated with mental illness and have been shown by prior research to be associated with marriage, are included as control variables in multivariate analyses: the mother's race/ethnicity (non-Hispanic black, Hispanic, and other non-white, compared to non-Hispanic white), nativity (U.S.-born, vs. foreign-born), number of other children (none, vs. one or more), and age (21-29 years old and 30+ years old, compared to less than 21 years old).

As explained earlier, we explore several sets of potential mediators, one of which we classify as human capital. This set of measures includes the mother's educational attainment (high school education or equivalent, some college education, and college graduate, compared to less than high school), physical health status (excellent, very good, and good, versus fair or poor) and employment (whether she was employed at all in the 12 month period preceding her one year follow-up interview), as well as the following proxies for income, which is a manifestation of human capital: whether the birth was covered by Medicaid (versus private, other type of insurance, or no insurance); whether the mother received welfare or food stamps in the 12 month period prior to the birth; and whether the mother lived in a census tract with at least 30 percent of households below poverty. Other than employment, all of these measures were taken from mothers' baseline reports.

To explore relationship quality as a potential mediator, we include whether the mother was cohabiting with the focal child's father at the time of the birth, whether the mother had any children with another father at the time of the birth, the number of months the mother knew the father before the focal child was conceived (12 or more months, compared to less than 12 months), and the number of romantic relationships the mother had prior to her relationship with the focal child's father (6+, compared to 0 - 5). The cutoffs were based on the distributions in the

data.

We also explore partner selection as a potential mediator: whether the focal child's father was employed or in school, whether the father had ever hit or slapped the mother or often insults or criticizes her (versus never hit/slapped her and does not often insult/criticize her), whether the father had ever been in prison or jail, whether the father had problems such as keeping a job or getting along with family and friends because of alcohol or drug use, and whether the father has any physical or mental health condition that limits the amount or kind of work he can do (whether the father had ever been in prison or jail is from the mother's one year follow-up interview; all others are from mothers' reports at baseline).

Our measure of maternal substance abuse as a potential mediator combines information from the baseline surveys and the medical records. It includes having had drug or alcohol problems that interfered with work or personal relationships (from the survey), having been treated for substance use (from the survey), and positive drug test results, ICD9 codes for substance abuse, and progress notes indicating substance abuse (from the medical records).

## METHODS

We employ an event history approach to model the effect of mental illness on the likelihood of marriage. Specifically, we estimate Cox proportional hazard models in which duration is measured in months from the child's birth. All mothers who reported that they were unmarried at baseline and completed one-year follow-up interviews are included, whether or not they completed 3- or 5-year follow-up interviews. Individuals who did not marry during the observation period are right-censored at the time of their last interview. Breslow's method was used for handling ties. The Schoenfeld residuals method confirmed that we were not violating

the proportionality assumption. We test the sensitivity of our results to alternative measures of mental illness and to various sample restrictions.

By using panel data, we can be confident that mental illness preceded the marriage if one took place. Additional advantages of using event history analysis are that we do not have to choose an arbitrary time point at which to assess marital status and are able to include data from respondents regardless of how long they stayed in the study. Our analysis strategy does not entirely address the possibility that, even with the rich FF data, there are unmeasured variables that are associated with both mental illness and marriage (unobserved heterogeneity). We interpret our findings accordingly.

Using our measure of mental illness that excludes cases with only substance abuse diagnoses, we estimate six different models: Model 1 includes no covariates and therefore measures the unconditional (total) association between mental illness and marriage. Model 2 measures the association between mental illness and marriage net of basic demographic characteristics. The next four models, all of which control for demographic characteristics, investigate the roles of specific sets of potentially mediating factors: Model 3 includes measures of the mother's human capital, Model 4 includes measures of relationship quality, Model 5 includes attributes of the father (to test for the potential mediating role of partner selection), and Model 6 includes maternal substance abuse.

A total of 2,404 mothers were unmarried at baseline, had medical record data available, and completed one-year follow-up interviews. We excluded 154 of these cases because of missing data on one or more analysis variables.<sup>1</sup> The remaining 2250 cases form the sample for the analyses that follow.

## DESCRIPTIVE ANALYSIS

Figure 1 shows transitions to marriage among mothers with and without pre-existing diagnosed mental illness (excluding only substance abuse diagnoses) over a period of five and a half years. Mothers with pre-existing mental illness were almost twice as likely to remain unmarried as those without mental illness. Within one year of the birth of the child, 10 percent of mothers without mental illness and only 5 percent of mothers with mental illness were married. Within 5 years, the respective figures were 26 percent and 16 percent.<sup>2</sup>

[Figure 1 here]

Table 1 shows characteristics of the sample by mothers' mental illness status. Mothers with pre-existing mental illness were more likely to be non-Hispanic white, less likely to be Hispanic, less likely to be foreign born, more likely to have had previous births, and older at the time of the birth than mothers without pre-existing mental illness, although many of the differences are not substantial. With the exception of race/ethnicity, the demographic characteristics that previous research indicates are positively associated with marriage are negatively associated with mental illness.

The differences between groups are larger in terms of human capital, relationships, and father characteristics than for the demographic characteristics. Mothers with mental illness were more likely than mothers without mental illness to have suboptimal physical health (17 versus 8%) and lower levels of education. They were less likely to have been employed, more likely to have been covered by Medicaid for the birth, more likely to have received welfare or food

---

<sup>1</sup> For certain covariates that had missing values for more than 3 percent of observations, we used dummy variables

stamps at baseline (57 versus 44%), and more likely to have lived in a poor neighborhood (28 versus 23%).

Mothers with pre-existing mental illness were less likely than mothers without mental illness diagnoses to have cohabited with the father at baseline and more likely to have had children with another father (51 versus 40%). There are no significant differences, however, in the length of time the mother knew the father before conception of the focal child or the number of previous romantic partners.

Mothers with mental illness were more likely to report at baseline that the father was not employed or in school (18 versus 12%), that they have been abused by the child's father (8 versus 4%), that the father had ever been in prison or jail (49 versus 36%), that the father had substance abuse problems (13 versus 5%), and that the father had an activity-limiting physical or mental health condition (10 versus 6%).

Finally, mothers with mental illness were four times more likely to have substance use problems than mothers without mental illness (44 versus 11%).

## PROPORTIONAL HAZARD RESULTS

Table 2 presents our main results. The hazard ratio for diagnosed mental illness (excluding cases with only substance abuse diagnoses) in the first model is .599, indicating that mothers with mental illness were 60 percent as likely as those without mental illness to marry during the 5 year period. Adding the demographic measures, in Model 2, the estimated effect of mental illness remains virtually unchanged. Among the demographic characteristics, the strongest predictor of marriage during the five year period is race/ethnicity.

---

for missing data in order to minimize sample loss.

Model 3, which includes measures of the mother's human capital as potential mediators, indicates that lower levels of education and living in a poor neighborhood were negatively associated with marriage. None of the other measures of human capital was a statistically significant predictor of marriage. Census tract level poverty may reflect individual level poverty, or the availability of marriageable men.<sup>3</sup> Together, the measures of human capital account for some of the effect of mental illness on marriage (the hazard ratio for mental illness increases by 5.7 percentage points, from .571 to .628, when the human capital measures are included).

From Model 4 we find that measures of relationship quality explain little of the association between mental illness and marriage (the hazard ratio for mental illness in Model 4 is .598). Of this set of measures, only baseline cohabitation is predictive of marriage. Table 1 showed that baseline cohabitation was significantly associated with mental illness. However, the mental illness-cohabitation link is not sufficiently strong to explain the association between mental illness and marriage.

While many father attributes are associated with marriage, they, too, account for only some of the association between mental illness and marriage (Model 5)—about the same proportion that human capital characteristics did. That is, most of the effect of mental illness on marriage does not appear to be due to mentally ill mothers choosing or attracting partners who possess traits that mark them unsuitable as husbands.

Model 6 includes maternal substance abuse as a potential mediator. We find that it explains very little of the association between mental illness and marriage (the hazard ratio for mental illness is .608 compared to .571 in Model 2).

---

<sup>2</sup> Figures are life table estimates since not all respondents were followed up for 5 years.

<sup>3</sup> Excluding the measure of living in a poor neighborhood does not appreciably affect the estimates of the other measures of human capital (result not shown), suggesting that the effect of living in a poor neighborhood does not simply reflect individual level poverty.

Overall, the main hazard results indicate that although the hypothesized mediators (human capital, relationship quality, partner selection, and substance abuse) explain some of the mental illness effect on marriage, most of the effect remains unexplained. When all sets of potential mediators were included in a model together (not shown), they accounted for somewhat more of the mental illness effect than any one set did; however, most of the effect still remained unexplained (the estimated hazard ratio of mental illness in a model with all covariates included was .69, which remained statistically significant at  $p < .05$ ).

While the medical records data are very valuable for picking up cases with a large range of diagnosed mental illnesses (including rare diagnoses such as schizophrenia) and for differentiating between diagnosed substance abuse and non-substance abuse disorders, they are limited in terms of isolating specific non-substance abuse diagnoses. However, by augmenting these data with CIDI-based diagnoses from the one year follow-up interview, we were able to differentiate between mothers with depression (with or without other mental illnesses), those with mental illness other than depression, and those without mental illness.<sup>4</sup> Comparing effects across these groups allows us to further explore the causal mechanism as, among women, depression is more likely than other types of mental illness to be caused by social circumstances (Dohrenwend et al. 1992). We found that the estimated effects of mental illnesses other than depression were as large as those of depression (results not shown), suggesting that the association is not attributable to omitted “social” factors.

---

<sup>4</sup> Specifically, we coded respondents as depressed if they had a diagnosis of (non-substance related) mental illness from the medical records and a diagnosis of depression from the 1-year CIDI survey instrument, and as having another mental illness if they had a (non-substance related) diagnosed mental illness according to the medical records but did not have depression according to the 1-year CIDI. Both of these groups are compared to those who did not have any mental illness diagnoses indicated in their medical records. Of course, to the extent that there are false positives for depression according to the CIDI, there could be some contamination across the mental illness groups. It is also possible that depression at baseline was no longer present at follow-up or that depression developed between baseline and one year, which would lead to a misclassification of the type of mental illness.

To assess the robustness of our results, we estimated supplemental sets of models with specific sample restrictions and using an alternative measure of mental illness that included substance abuse diagnoses from the medical records (not shown in tables). First, we considered that mothers who have diagnosed mental health problems that require ongoing treatment may be reluctant to marry for fear of losing Medicaid benefits. To test this, we stratified the sample by whether the birth was covered by Medicaid and re-estimated the models in Table 2. The findings for both subgroups were very similar to those for the full sample, suggesting that Medicaid eligibility does not explain the effect of mental illness on marriage. Second, we excluded cases with missing data on all analysis variables and found that the results did not change. Third, we ran a set of models using a measure of mental illness that included substance abuse diagnoses (from the medical records) and, again, found that the results were very similar to those in Table 2.

We ran models that added measures of mother's cognitive ability and impulsivity (from the 3 year mother interview), separately, to the model with demographic characteristics (Model 2). We also added a measure of father's impulsivity (from the 1 year father interview) to the partner selection model (Model 5). We found that the measures of mothers' cognitive ability and impulsivity explained some of the mental illness effect (father's impulsivity did not), but that adding the additional mother measures to a "full" model that included these new measures in addition to demographics, human capital, relationship quality, partner selection, and substance abuse did not change the estimated effect of mental illness in that model (the hazard ratio remained at .69).

Finally, we considered another explanation for the mental illness effect on marriage—that rather than limiting opportunities or imposing constraints, mental illness may alter intentions to

marry or tastes for marriage. To test this potential explanation, we estimated models that included all of the demographic measures from Model 2, as well as measures of the mother's baseline report of how likely she was to marry anyone in the future (a "pretty good" or "almost certain chance" versus "no chance," "a little chance," or "a 50-50 chance"). We found that marriage intentions (as we have measured them) explain some of the mental illness effect. They increased the mental illness hazard ratio to .67 and it remained significant.

## CONCLUSION

We found strong effects of mental illness on marriage among women who had out-of-wedlock births. The likelihood of marriage among mothers with diagnosed mental illness is 57% of that of mothers without mental illness after controlling for demographic characteristics. This effect size is similar in magnitude to estimates from previous studies of all women (including those without children). Two factors suggest that the effects may be causal: (1) the mental illness diagnoses preceded the observation period, and (2) the effects are not confined to depression diagnoses (i.e., they exist also for other illnesses that are not likely to be socially triggered). Furthermore, the effect of mental illness remains strong even when we add extensive measures of socioeconomic status and relationships, the most likely confounders.

We used a strict definition of mental illness—diagnosed conditions that were recorded in the mother's hospital medical record prior to the birth. To the extent that there are undiagnosed cases of mental illness in the sample, our mental illness effects would be underestimated. We also do not disaggregate effects by specific types of illnesses. Rather, we model the effects of all diagnosed mental illnesses, as is usually done in demographic analyses of the consequences of physical health.

A key contribution of our study is that we tested a number of potential mechanisms, most of which we can rule out as simple explanations of how mental illness affects marriage. We found that little of the association between mental illness and marriage can be explained by selection on the basis of demographic factors or by human capital, relationships, partner selection, or maternal substance abuse. The fact that we were able to explain more of the mental illness effect when we included all of the potential mediators together may be indicative of complex relationships between those factors, mental illness, and marriage. We also found that differences in marriage expectations explain only some of the effect of mental illness on marriage, as did limited measures of the mother's cognitive ability and impulsivity and the father's impulsivity.

Possible mechanisms that we are unable to fully explore include low cognitive ability (our survey measure of cognitive ability is very limited) and poor executive functioning, which are symptoms of many mental illnesses (Schillerstrom 2001, Channon and Green 1999; Jeste et al. 1996; Nelson et al. 1998; Austin et al. 2001) and are associated with life course trajectories, of which marriage is an important marker (e.g., Bandura; Shanahan et al. 1997; Hitlin and Elder 2006). Another possibility is that the stigma of mental illness does not affect partner selection but affects individuals' perceptions of themselves as being marriage-worthy (Link 1987, 1989).

While much is known about the determinants and consequences of family structure and the effects of marriage on mental health have been widely studied, much less attention has been paid to mental health as a determinant of family structure. Our findings indicate that at least some of the strong association between mental illness and marriage among mothers giving birth out of wedlock is the result of mental illness affecting marriage rather than the other way around.

This finding may have important implications for marriage promotion efforts and for maternal and child wellbeing in low income families.

## REFERENCES

- Austin, M. and P. Mitchell. 2001. "Cognitive Deficits in Depression." *The British Journal of Psychiatry* 178: 200-206.
- Agerbo, E., M. Byrne, W.W. Eaton, and P.B. Mortensen. 2004. "Marital and Labor Market Status in the Long Run in Schizophrenia." *Archives of General Psychiatry* 61(1): 28-33.
- Angermeyer M.C. and H. Matchinger. 1996. "Public Attitude Towards Psychiatric Treatment." *Acta Psychiatr Scand* 94: 326-336.
- Bartel, A. and P. Taubman. 1986. "Some Economic and Demographic Consequences of Mental Illness." *Journal of Labor Economics* 4(2): 243-256.
- Bandura A. 2001. "Social Cognitive Theory: An Agentic Perspective." *Annual Review of Psychology* 52:1-26.
- Berndt, E.R., L.M. Koran, S.N. Finkelstein, A.J Gelenberg, S.G. Kornstein, I.M. Miller, M.E. Thase, G.A. Trapp, and M.B. Keller. 2000. "Lost Human Capital From Early-Onset Chronic Depression." *American Journal of Psychiatry* 157(6): 940-947.
- Channon, S. and P.S.S. Green. 1999. "Executive Function in Depression: The Role of Performance Strategies in Aiding Depressed and Non-Depressed Participants." *J Neurol Neurosurg Psychiatry* 66:162-171.
- Cooper, L., L. Peters, and G. Andrews. 1998. "Validity of the Composite International Diagnostic Interview (CIDI) Psychosis Module in a Psychiatric Setting." *Journal of Psychiatric Research* 32: 361-368.
- Corrigan, P.W. and D.L. Penn. 1999. "Lessons from Social Psychology on Discrediting Psychiatric Stigma." *American Psychologist* 54(9): 765-76.
- Currie, J. and M. Stabile. 2005. "Child Mental Health and Human Capital Accumulation: The Case of ADHD." NBER Working Paper #10435.
- DeKlyen, M., J. Brooks-Gunn, S. McLanahan, and J. Knab. 2006. "The Mental Health of Married, Cohabiting, and Non-Coresident Parents with Infants." *American Journal of Public Health* 96(10): 1836-41
- Epstein, J., P. Barker, M. Vorburgur, and C. Murtha. 2004. Serious mental illness and its co-occurrence with substance use disorders, 2002. (DHHS publication No. SMA 04-3905, Analytic Series A-24). Rockville, MD: Substance Abuse and Mental Health Services Administration.
- Ettner, S., R.G. Frank, and R.C. Kessler. 1997. "The Impact of Psychiatric Disorders on Labor Market Outcomes." *Industrial and Labor Relations Review* 51: 64-81.
- Forthofer, M.S., R.C. Kessler, A.L. Story, and I.H. Gotlib. 1996. "The Effects of Psychiatric Disorders on the Probability and Timing of First Marriage." *Journal of Health and Social Behavior* 37(2): 121-132.
- Gove, W.R., M. Hughes and C.B. Style. 1983. "Does Marriage Have Positive Effects on the Psychological Well-Being of the Individual?" *Journal of Health and Social Behavior* 24(2): 122-131.
- Graefe, D.R. and D.T. Lichter. 2002. "Marriage among Unwed Mothers: Whites, Blacks and Hispanics Compared." *Perspectives on Sexual and Reproductive Health* 34(6): 286-293.
- Harris, K.M. and M.J. Edlund. 2005. "Self-Medication of Mental Health Problems: New Evidence From a National Survey." *Health Services Research* 40(1): 117-137.
- Hitlin, S. and G.H. Elder. 2006. "Agency: An Empirical Model of an Abstract Concept." *Advances in Life Course Research* 10: In press.

- Jayakody, R., S. Danziger, and R.C. Kessler. 1998. "Early-Onset Psychiatric Disorders and Male Socio-Economic Status." *Social Science Research* 27(4):623-651.
- Jayakody, R., S. Danziger, and H.A. Pollack. 2000. "Welfare Reform, Substance Use and Mental Health." *Journal of Health Politics, Policy and Law* 25(4): 623-651.
- Jeste, D.V., S.C. Heaton, J.S. Paulsen, L. Ercoli, J. Harris, and R.K. Heaton. 1996. "Clinical and Neuropsychological Comparison of Psychotic Depression With Nonpsychotic Depression and Schizophrenia." *American Journal of Psychiatry* 153: 490-496.
- Jones, D.R., C. Macias, P.J. Barreira, W.H. Fisher, W.A. Hargreaves and C.M. Harding. 2004. "Prevalence, Severity, and Co-Occurrence of Chronic Physical Health Problems of Persons With Serious Mental Illness." *Psychiatr Serv* 55: 1250-1257.
- Kessler, R.C., E.E. Walters, and M.S. Forthofer. 1998. "The Social Consequences of Psychiatric Disorders, III: Probability of Marital Stability." *American Journal of Psychiatry* 155(8): 1092-1096.
- Lamb, K.A., G.R. Lee, and A. DeMaris. 2003. "Union Formation and Depression: Selection and Relationship Effects." *Journal of Marriage and Family* 65(4): 953-962.
- Larson, J.H. and T.B. Holman. 1994. "Premarital Predictors of Marital Quality and Stability." *Family Relations* 43(2): 228-237.
- Link B.G., F.T. Cullen, J. Frank, and J.F. Wozniak. 1987. "The Social Rejection of Former Mental Patients: Understanding Why Labels Matter." *Am J Sociol* 92: 1461-1500.
- Link, B.G. 1987. "Understanding Labeling Effects in the Area of Mental Disorders: An Empirical Assessment of the Effects of Expectations of Rejection." *American Sociological Review* 52: 96-112.
- Link, B.G., F.T. Cullen, E. Struening, P.E. Shrout, and B.P. Dohrenwend. 1989. "A Modified Labeling Theory Approach to Mental Disorders: An Empirical Assessment." *American Sociological Review* 54: 400-423.
- Marcotte, D.E. and V. Wilcox-Gok. 2001. "Estimating the Employment and Earnings Costs of Mental Illness: Recent Developments in the United States." *Social Science and Medicine* 53(1): 21-7.
- Nelson, E.B., K.W. Sax, and S.M. Strakowski. 1998. "Attention Performance in Patients With Psychotic and Nonpsychotic Major Depression and Schizophrenia." *American Journal of Psychiatry* 155: 137-139.
- Neugebauer, D.D., B.P. Dohrenwend, and B.S. Dohrenwend. 1980. "The Formulation of Hypotheses about the True Prevalence of Functional Psychiatric Disorders among Adults in the United States." Pp. 45-94 in *Mental Illness in the United States*, edited by P.B. Dohrenwend, B.S. Dohrenwend, M.S. Gould, B. Link, R. Neugebauer, and R. Wunsch-Hitzig. New York: Praeger.
- Nicholson, J., E.M. Sweeney, and J.L. Geller. 1998. "Focus on Women: Mothers With Mental Illness: II. Family Relationships and the Context of Parenting." *Psychiatric Services* 49(5): 643-649.
- Phelan, J.C., B.G. Link, A. Stueve, and B.A. Pescosolido. 2000. "Public Conceptions of Mental Illness in 1950 and 1996: What is Mental Illness and is it to be Feared?" *Journal of Health and Social Behavior* 41(2): 188-207.
- Radloff, L.S. 1997. "The CES-D Scale: A Self-Report Depression Scale for Research in the General Population." *Applied Psychological Measurement* 2: 385-401.
- Reichman, N.E., J.O. Teitler, I. Garfinkel, and S. McLanahan. 2001. "Fragile Families: Sample and Design." *Children and Youth Services Review* 23(4/5): 303-326.

- Robins, L.N., J.K. Wing, H.U. Wittchen, J.E. Helzer, J. Burke, A. Farmer, A. Jablenski, R. Pickens, D.A. Regier, N. Sartorius, and L.H. Towle. 1988. "The Composite International Diagnostic Interview: An Epidemiologic Instrument Suitable for Use in Conjunction With Different Diagnostic Systems and in Different Cultures." *Archives of General Psychiatry* 45: 1069-1077.
- Rushing, W.A. 1979. "Marital Status and Mental Disorder: Evidence in Favor of a Behavioral Model." *Social Forces* 58(2): 540-556.
- Schillerstrom, J. 2001. "Executive Control Function in Psychiatric and Medical Illness." *Journal of Psychiatric Practice* 8(3): 160-169.
- Shanahan, M. J., G. H. Jr. Elder, and R.A. Miech. 1997. "History and Agency in Men's Lives: Pathways to Achievement in Cohort Perspective." *Sociology of Education* 70(1): 54-67.
- Simon, R.W. 2002. "Revisiting the Relationships among Gender, Marital Status, and Mental Health." *American Journal of Sociology* 107: 1065-1096.
- Stevens, B.C. 1969. "Probability of Marriage and Fertility of Women Suffering from Schizophrenia or Affective Disorders." *Population Studies* 23(3): 435-454.
- Teitler, J., N.E. Reichman, and L. Nepomnyaschy. 2004. "Sources of Support, Child Care, and Hardship among Unwed Mothers, 1999-2001." *Social Service Review* 78(1): 125-148.
- Tweed, D.L. 1993. "Depression-Related Impairment: Estimating Concurrent and Lingering Effects." *Psychological Medicine* 23: 373-386.
- Wade, T.J. and D.J. Pevalin. 2004. "Marital Transitions and Mental Health." *Journal of Health and Social Behavior* 45(2): 155-170.
- Waite, L.J. and G.D. Spitze. 1981. "Young Women's Transition to Marriage." *Demography* 18(4): 681-694.
- Xie Y., J.M. Raymo, K. Goyette, and A. Thornton. 2003. "Economic potential and entry into marriage and cohabitation." *Demography* 40(2): 351-67.

Table 1: Characteristics of Sample by Mental Illness

	No Mental Illness (N = 2,059)	Mental Illness (N = 292)
<i>Demographics:</i>		
Non-Hispanic White***	12	22
Non-Hispanic Black	56	57
Hispanic***	29	17
Other Non-White	3	4
Born in U.S.***	87	94
First Birth**	39	32
Age < 21 Years**	37	30
Age 21-29 Years	51	46
Age 30+ Years***	12	24
<i>Human Capital:</i>		
Less Than High School***	40	53
High School Graduate	34	30
Some College***	23	16
College Graduate	3	1
Good, Very Good, or Excellent Health***	92	83
Employed***	77	69
Medicaid Birth***	75	85
Received Welfare or Food Stamps***	44	57
30+ Percent Poverty in Census Tract**	23	28

---

*Relationship Stability:*

Cohabiting With Father at Baseline**	49	41
Any Children With Another Father***	40	51
Knew Father 12+ Months	80	83
6+ Romantic Relationships Before Father	4	6

*Partner Selection:*

Father Unemployed and Not in School**	12	18
Father Has Activity-Limiting Physical or Mental Health Condition***	6	10
Father Ever in Jail***	36	49
Father Hit/Slapped or Insults/Criticizes Mother***	4	8
Father Abuses Alcohol or Drugs***	5	13

*Behavior:*

Maternal Substance Abuse***	11	44
-----------------------------	----	----

---

p < .10, \*\* p < .05, \*\*\* p < .01 (based on chi-square tests for equal proportions)

Table 2: Effects of Mental Illness on Marriage (N = 2,351)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Mental Illness	0.599 (0.001)**	0.571 (0.001)**	0.628 (0.005)**	0.598 (0.002)**	0.630 (0.005)**	0.608 (0.003)**
Non-Hispanic Black		0.412 (0.000)**	0.451 (0.000)**	0.487 (0.000)**	0.424 (0.000)**	0.412 (0.000)**
Hispanic		0.752 (0.033)*	0.850 (0.235)	0.800 (0.098)	0.749 (0.033)*	0.750 (0.033)*
Other Non-White		0.773 (0.332)	0.760 (0.304)	0.881 (0.635)	0.727 (0.232)	0.770 (0.326)
Born in U.S.		0.858 (0.273)	0.818 (0.166)	0.966 (0.806)	0.947 (0.702)	0.877 (0.353)
First Birth		1.044 (0.659)	0.905 (0.330)	1.138 (0.312)	1.028 (0.776)	1.044 (0.658)
Age 21-29 Years		1.133 (0.227)	0.977 (0.831)	1.111 (0.311)	1.085 (0.434)	1.131 (0.236)
Age 30+ Years		1.202 (0.222)	0.946 (0.724)	1.213 (0.207)	1.095 (0.550)	1.213 (0.199)
High School Graduate			1.198 (0.109)			
Some College			1.486 (0.002)**			
College Graduate			2.593 (0.000)**			
Good, Very Good, or Excellent Health			0.945 (0.725)			
Employed			0.966 (0.760)			
Medicaid Birth			0.919 (0.431)			
Received Welfare or Food Stamps			0.902 (0.295)			
30+ Percent Poverty in Census Tract			0.762 (0.029)*			
Cohabiting With Father at Baseline				2.004 (0.000)**		

Any Children With Another Father	1.048 (0.706)	
Knew Father 12+ Months	0.809 (0.059)	
6+ Romantic Relationships Before Father	0.864 (0.527)	
Father Unemployed and Not in School	1.602 (0.013)*	
Father has Activity-Limiting Physical or Mental Health Condition	0.783 (0.271)	
Father Ever in Jail	0.748 (0.004)**	
Father Hit/Slapped or Insults/Criticizes Mother	1.120 (0.625)	
Father Abuses Alcohol or Drugs	0.725 (0.185)	
Maternal Substance Abuse		0.804 (0.133)

---

Figures are proportional hazard ratios and *p*-values  

$p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$

Figure 1: Kaplan-Meier Unmarried Survival Estimates

