All in the Family: Mental Health Spillover Effects between Working Spouses[*]

Jason Fletcher[*]

Abstract

It is well documented that mental health outcomes are correlated between spouses. There are several alternative hypotheses for this correlation, including both causal and non-causal pathways. In this paper, I use an instrumental variables/fixed effects approach to examine whether there is evidence that an individual's mental health status spills over on his or her spouse's mental health status. Results from the IV-FE specifications that use spousal job problems as an instrument are large in magnitude. In particular, spousal mental health status is estimated to have a greater influence on an individual's mental health status than his or her own mental health endowment and is similar in magnitude with his or her own physical health status. Although not conclusive, these findings suggest that within-family spillovers of mental illness could be economically important and that policies that reduce mental health problems for individuals likely have unmeasured benefits for their family members.

Keywords

mental health; spousal spillovers; peer effects

Introduction

It is well known that individual circumstances, such as family background, neighborhood characteristics, and household characteristics are correlated with mental and physical health outcomes for individuals. There is also evidence that spousal characteristics are related to own measures of health. There are several hypotheses that would imply a positive correlation between spousal and own mental health measures. One explanation is that there are common environmental factors that affect both spouses simultaneously, resulting in correlations between spouses but no causal effect of mental health between spouses.[1] For example, spouses face similar neighborhood environments (e.g. crime, safety) that affect each individual's health. Another potentially relevant mechanism for correlations in spousal outcomes is from Becker (1973), who suggested that high quality individuals will seek out other high quality individuals in the marriage market—leading to positive assortative mating. Whether positive assortative mating would suggest causal spillovers in health between spouses is less clear. If spousal health is similar to characteristics like attractiveness, which presumably confer direct utility benefits

*Yale University, jason.fletcher@yale.edu.

[1]Manski (1993, 2000) labels this as correlated effects in the social interactions literature.

due to preferences for attractiveness or dynastic considerations, it may be that spousal health has no direct effect on health. On the other hand, spousal health could be desirable in the marriage market because it is an input in household production,[2] indicating a causal effect on health.

One potential way to examine this question is to find determinants of mental health status for an individual that should only affect his/her spouse through its effect on the individual's mental health status. I argue that time-varying measures of an individual's job-stress should affect his or her spouse's mental health only through an effect on the individual's mental health, controlling for other important characteristics of the relationship, environment, and occupational fixed effects. In preferred specifications, I also use the panel nature of the dataset to control for characteristics that may lead to poor mental health as well as selection into bad jobs, selection of marital partners, and other important time-invariant individual heterogeneity.

Using this approach, I find evidence that OLS estimates of the effect of individual mental health on spousal mental health are downward biased, and results from combined 2SLS-FE specifications are large in magnitude. In particular, individual mental health status is estimated to have a comparable influence on spousal mental health status as spousal physical health status and a greater influence than spousal mental health status measured at a young age. There are at least two explanations for larger results using the instrumental variables strategy. These larger 2SLS estimates could result from measurement error in the categorical scale of the mental health status outcome used in the analysis. Additionally, heterogeneity in the spillover effects of poor spousal mental health status could produce larger 2SLS results. In particular, the specification is estimating a local average treatment effect (LATE) (Imbens and Angrist 1994) for those individuals with spouses that experience negative fluctuations in job stress. The impact of these negative shocks to job stress may be larger than the impact for individuals continually exposed to job stress.

The results suggest that mental health interventions on an individual could have positive spillover effects on members of the individual's household, indicating that cost-benefit analyses of mental health interventions may not fully capture some indirect (within-family) benefits of the intervention. The results also suggest investments to reduce job stress may have positive externalities for members of the worker's family and that one primary determinant of mental health status for individuals could be the mental health status of their spouses.

Background

There is a large and growing literature that shows that married couples have similar characteristics and make similar choices. Characteristics that have been shown to be positively correlated between spouses include education, cognitive performance, race, religion, age, political preferences, and physical health status (Dufouil et al. 2000, Kalmijn 1991; Schwartz and Mare 2005, Wilson 2002). Several important choices are also correlated between spouses, including alcohol decisions (Leonard and Mudar 2003) smoking decisions (Clark and Etile 2006), and preventive care choices (Falba and Sindelar 2008). There is also some evidence that mental health outcomes, such as depressive symptoms, are correlated between spouses (Siegel et al. 2004, McLeod 1993).

Having a "higher quality" spouse has also been found to be associated with several desirable outcomes. Several researchers have focused on the association between spouse's education level and an individual's health. Egeland (2002) and Bosma et al. (1995) find that individuals

---

[2]Spousal health could be an input because it increases efficiency of the household production function (Jacobson 2000) or because spousal health is an input in learning about health (Clark and Etile 2006).

who have more educated spouses have lower mortality rates, even controlling for own education. Monden (2003) finds that having a more educated spouse is also associated with better health and health behaviors, such as smoking and excessive drinking.

These correlations in outcomes and the associations with desirable spouse characteristics and individual health outcomes could represent several alternative mechanisms. First, spouses' choices could be similar because they face similar environments and choice sets. For example, both spouses' choices to obtain medical care would likely be affected by the distance from their residence to the nearest health care facility. Likewise, neighborhood crime rates likely affect the health and mental health of both spouses. A second potential mechanism is the matching process in the marriage market (Becker 1973). If spousal characteristics are complementary inputs into household production functions, then individuals would prefer to marry someone with similar characteristics. It is unclear whether mental health status of spouses is an input in household production functions, a consumption good in an individual's utility function, or is spuriously correlated with own-health.

Because of the difficulty in differentiating among competing hypotheses, there has been little research directed at examining whether spousal characteristics and choices have causal effects on an individual's health. One exception is Clark and Etile (2006), who use panel data and individual fixed effects to show that smoking decisions within households are likely due to positive assortative matching rather than learning or household bargaining. Fields (2005) uses an instrumental variables approach to examine within-household education spillovers and finds that children's education increases parental smoking cessation.

The present study is somewhat different in that it does not focus on examining health behaviors like smoking but rather health status variables such as self-reported mental health status. The paper uses an instrumental variables approach to examine whether an individual's mental health status affects his or her spouse's mental health status. To do this, I use spousal working conditions that I argue only affect an individual's mental health status through their effect on spousal mental health, once important individual and household characteristics are controlled. This choice of instrument is motivated by a relatively large literature showing that own-work conditions are associated with own-mental health status. Plaisier et al. (2007) find that psychological demands at work predict the incidence of depressive and anxiety disorder in both men and women. Grzywacz and Bass (2003) find evidence that work-to-family stress increase the risk of depression, problem drinking, and anxiety for workers. Small and Riley (1990) find that work stress can affect family and personal life in several ways, including marital relations and anxiety symptoms. Griffin et al. (2002) find effects for job control on depression that differ by gender and occupational status in Whitehall II. Together, these studies and the broader literature suggest that working conditions likely impact own-mental health, which suggest that this variable satisfies one of the conditions of the instrumental variables approach; I discuss below the evidence that working conditions satisfy other conditions of valid instruments.

Data

This paper uses the public-access version[3] of the National Survey of Midlife Development in the United States (MIDUS), which was a national survey of 7,000 individuals aged 25 to 74 in 1994–6 (including 1,900 twins and nearly 1,000 siblings) (Brim et al. 2003, Ryff et al. 2007). The stated purpose of the study was to investigate the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health. Importantly, respondents were asked about their spouses' health, mental health, and

---

[3]http://webapp.icpsr.umich.edu/cocoon/ICPSR-STUDY/02760.xml

occupation.[4] These respondents were then followed for 10 years and administered a second survey in 2004–6.

Although the full sample of individuals in MIDUS contains 7,000 respondents, several restrictions are placed on the data in forming the analysis sample. First, since I focus on individuals with spouses who are employed, I must drop 2,000 unmarried individuals and 2,000 individuals with a spouse who is not in the labor force.[5] Of the 2,979 individuals with valid mental health status data, 2,656 individuals reported information on spousal mental health status.[6] Non-response to demographic variables leaves an analysis sample of 2,419 individuals from wave 1 of the survey.[7] Of these individuals, 1,200 respondents also meet the sample selection criteria at Wave 2.[8] In what follows, I will present results using Wave 1 observations only, Wave 2 observation only, and pool the observations from both waves.

The principal individual control variables I use are suggested by the large literature on the determinants of mental health outcomes. It is well-documented that females have higher rates of depression than males (Blazer, Kessler et al. 1994), and mental health status has been associated with socioeconomic status (Kessler 1979), education (Blazer, Kessler et al. 1994), income (Townsend, Miller et al. 2001), and physical health (Blazer, Burchett et al. 1991). Importantly, I am able to control for health status "endowments" of respondents during adolescence (16 years old).

Family-level variables I incorporate into the empirical model include measures of relationship quality (disagreements on leisure activities and on household tasks) and spousal characteristics, including income, education level, and health status. As mentioned previously, I also control for occupational fixed effects or individual fixed effects in the preferred results. Summary statistics are presented in Table 1 for wave 1 respondents; summary statistics for wave 2 respondents can be found in the appendix in Table 2A. As expected, average self-reported measures of physical and mental health decline between 16 years old and the respondent's current age.

Conceptual Model and Empirical Methodology

The conceptual model is motivated by work in the health economics literature on household health production (Jacobson 2000). I use a simplified version of this model, abstracting away from the dynamic considerations, labor choices, marriage/divorce choices, and medical care expenditures to focus on potential causal and non-causal mechanisms leading to correlations in spousal mental health status. This conceptual model is outlined in order to formalize the logic that I discuss above and focus on the empirical difficulties with this research question rather than to prove particular propositions or otherwise extend the theory in this area.

Following Jacobson (2000), I use a common preference model of family behavior. The static utility function is assumed to be

[4]Complete information about the dataset can be found at: http://midus.wisc.edu/
[5]In the appendix, I present summary statistics of the analysis sample compared with the unmarried individuals and the individuals with non-working spouses. In general, the analysis sample is more advantaged than the unmarried sample and less advantaged than the sample of individuals with non-working spouses. I discuss this further in the conclusion.
[6]The question asked of respondents is: "How would you describe your spouse's or partner's overall mental or emotional health at the present time?" The five point scale allows responses of excellent, very good, good, fair, and poor.
[7]Family income is imputed in order to keep respondents in the analysis sample; a dummy variable is included in the empirical models to indicate missing data.
[8]Recall that to be in the sample, the respondent must be married and having a working spouse. Since the original respondents were ages 25–75, many of the respondents do not meet these criteria after the ten year follow up.

$$u=u(H^m, H^f, Z) \tag{1}$$

where u is family utility, H^m and H_f are husband (male) and wife (female) health status, and Z is a vector of commodities the household consumes. The vector of commodities, Z, is a function of market goods purchased (X^m, X^f), household time inputs (h_z^m, h_z^f),, and household production efficiency, which is a function of health status ($f(H^m, H_f)$).

$$Z=z(X^m, X^f, h_z^m, h_z^f, f(H^m, H^f)) \tag{2}$$

Market goods are purchased at price p subject to the household budget constraint:

$$W \geq p(X^m+X^f), W=w(h_w^m, h_w^f, H^m, H^f) \tag{3}$$

where W represents household income and is a function of work hours by each household member as well as health status. Health is assumed to be a function of initial health endowment, investments in health, and environmental factors:

$$H^i=h(H_0^i, I^i, N^i) \quad \text{for i=m, f} \tag{4}$$

Investments in health capital (I) are a function of time inputs and initial health status (medical care purchases are not considered in this model).

$$I^i=I(h_I^m, h_I^f, H_0^i,) \tag{5}$$

Finally, each household member is endowed with one unit of time, T, and can divide his/her time between market work (w), household production (z), health investment (i) and sick time (s), so that the time constraint is

$$T^i \geq h_z^i+h_I^i+h_w^i+h_s^i \quad \text{with } h_s^i=h(H_0^i) \quad \text{and i=m, f} \tag{6}$$

Thus, the household decisions include time use decisions, consumption, and health investment decisions. Critical for this paper, the model suggests that spousal health can be correlated with individual health for several reasons. First, spousal time is used directly for investments in health. Second, spousal health can affect the efficiency of household production both directly through the efficiency parameter and indirectly through time-use decisions. These factors have repercussions for the time available to invest in health production. Third, spousal health affects household income directly through the income generating function and indirectly through time use decisions. Importantly, spousal health could also be correlated through common environmental factors (a subset of N), which presents a difficulty in inferring causality in similarities in health status between spouses. Finally, while this model shows several direct causal pathways for individual health to affect spousal health, it could also be the case that individuals receive direct utility from spousal health (through consumption complementarities, altruism, or the "direct consumption" benefits of spousal health—spousal health could be similar to attractiveness in the marriage market). While these possibilities are not included in

the model outlined above, they represent other hypotheses of why health is correlated between spouses.

Following the theoretical outline of health production, I approach the empirical model by specifying a relatively parsimonious mental health production function, where an individual's health is determined by individual, family, and community/neighborhood factors as well as spousal health. Importantly, I am able to control for individual and spousal income and focus attention on individuals with working spouses. As noted above, income and employment status of the spouse are two relevant indirect channels that spousal health can affect individual health. By focusing on currently employed spouses and controlling for income sources, I attempt to examine direct channels of spousal health correlations. In terms of the conceptual model (equation (4) and equation (5)), the empirical question is to determine:

$$\frac{\partial H^i}{\partial H^j} = \frac{\partial h((H_0^i, I(h_l^m(H^j), h_t^f(H^j), N^i)}{\partial H^j}$$

(7)

Linearizing the health production function for spouses i and j (where i is the respondent) gives the following system of equations to estimate for each household:

$$health_i = \theta health_j + X_i\beta + F_i\alpha + N\delta + \varepsilon_i$$

(8)

$$health_j = \lambda health_i + X_i\phi + F_i\sigma + N\rho + \pi Z_j + \upsilon_j$$

(9)

where spousal health is allowed to affect the respondent's health and *Z* are a subset of environmental variables (*N*) that are assumed to only directly affect spousal health. Specifically, I use measures of spousal job-stress.[9] In order to be a credible instrument, spousal job stress must be strongly correlated with spousal mental health and validly excluded from equation (8). I take several steps to increase the validity of the instrument. First, I include controls variables implied by the conceptual model in order to reduce some of the direct pathways that spousal job stress may impact own mental health. For example, spousal work stress may directly impact own mental health (violating the assumed exclusion restriction) through income effects, so own and spousal income are directly controlled in the analysis. Additionally, some households may have a higher risk of spousal job stress, thus spousal job stress could be correlated with other unobserved household factors in the error term of the main equation. I use several alternative strategies to reduce this concern. First, I control for spousal occupational fixed effects, which largely eliminates differential risks in job stress across occupations. Second, in the preferred empirical models, I control for all time-invariant characteristics of the household by using individual-level fixed effects. This forces the instrument to only reflect job-stressors that are time-varying and more likely exogenous. Since concerns about the validity of the instrument could remain even after controlling for individual fixed effects, I cautiously interpret the results that follow as suggestive rather than conclusive.

Results

Results from baseline OLS regressions that examine the individual and family-level determinants of mental health status are presented in Table 2. Males have slightly higher mental

---

[9]The question asked in MIDUS is "In the past 12 months has your spouse or partner had problems at school or at work." The respondent chooses either 'yes' or 'no'.

health ratings, and no statistically significant racial differences are found. Mental health is slightly lower for older respondents, and higher for more educated respondents. Current physical health status and initial (at age 16) mental health status are important predictors of current mental health status, increasing mental health in the former case by 0.4 per unit and in the latter case by nearly 0.2 per unit. Consistent with previous research (e.g. Siegel et al. 2004), individuals with more educated spouses have better mental health, but this result is not statistically significant. Individuals who report higher levels of agreement in household matters also report higher levels of mental health.

In the baseline specification, for each unit increase in spouse mental health status, the individual's mental health status increases by over 0.13 units.[10] In Column 2, I present results with spousal occupational fixed effects so that comparisons are made between individuals who have spouses with the same occupation.[11] Few substantive differences are found after including occupational fixed effects.

I stratify the baseline regression of the determinants of mental health status by gender in Table 3. The full-sample baseline results are shown in Column 1 for comparison. The association between spousal mental health status and respondent mental health status is approximately 25% higher for female respondents than male respondents (0.15 vs. 0.12 per unit change). Interestingly, spousal education is more highly correlated with respondent mental health for males than for females. Agreement in household tasks is a slightly more important predictor of mental health for females than males. Spousal income level is negatively related to male mental health. Most other determinants of mental health status are quite consistent between genders. Adding occupational fixed effects (column 3 for males and column 5 for females) does not appreciably change the results.

As mentioned above, the 0.13 baseline OLS estimate could be biased upward or downward. It could be biased upward because each spouse is exposed to common environmental factors and/ or because of self-selection into marriage and occupation. The OLS results could be biased downward if the mental health status variable is measured with error, which is plausible because it is a 5-point categorical variable (excellent, very good, good, fair, poor). In addition, since the OLS results reflect the average effects of spousal mental health, it could also be the case that the spillover effects are heterogeneous and that OLS results could be lower than the 2SLS results, which estimate the local average treatment effect (LATE).

I present results using instrumental variables and instrumental variables/fixed effects specifications in Table 4. Column 1 repeats baseline results.[12] While few coefficients change between the baseline specification in Column 1 and the instrumental variables results in Column 2, the effect of spousal mental health on the respondent's mental health doubles, indicating that a one unit increase in spousal mental health increases the respondent's mental health by over 0.28 units (1/3 a standard deviation). First stage results are reported in Column 3, indicating a large F-statistic for the instrument, over 26. The effects of spousal mental health are more than half the size of increases in respondent's physical health status. As discussed above, it is not obvious a priori whether the 2SLS results should be larger or smaller than the OLS results. The larger 2SLS results could imply that there is substantial measurement error in the mental health scale used in the analysis and/or that the effect of poor spousal mental

[10]The analysis sample includes the pooled sample of individuals across waves 1 and 2. Similar correlations are found if I estimate this specification on only wave 1 respondents or only wave 2 respondents.
[11]The occupation codes refer to the 1980 3-digit codes created by the Census.
[12]While the ideal specification would be a two stage ordered probit due to the categorical nature of the outcome and endogenous variable, this specification would not converge because of the inclusion of the large number of individual fixed effects (per observation). Making progress on methods to estimate this specification would be beneficial to pursue in future work.

health is larger for those affected by the "treatment" of job-stress than the average effect of poor spousal mental health, or that the instrument is invalid.

In order to further increase confidence in the validity of the instrument, individual-level fixed effects are controlled in the final specification. With the inclusion of individual fixed effects, there are additional reasons to predict larger estimates for 2SLS-FE than OLS specifications. It is likely the case that individuals tend to respond to questions about mental health and job stress in a relative way (rather than an absolute way).[13] That is, individuals are likely accustomed to a certain level of job stress and certain level of mental health, making it difficult to compare measures of stress and mental health across individuals. In this case, it is changes in these measures that are likely more comparable across individuals. Thus, it may be reasonable to assume that individuals who report "yes" to having a problem at work (the instrument) are indicating a recent negative shock to the work environment. Combining the instrumental variable strategy with individual fixed effects likely produces a LATE where the affected individuals are those who have recently had a reduction in mental health due to a recent change in job stress. If these recent, unanticipated changes in job stress have stronger effects on mental health than time-invariant job-stress, we would expect the LATE to be larger than the OLS estimate.

In addition, the use of the individual fixed effects likely eliminates serially correlated measurement error within-individuals. For example, individuals who tend to answer the subjective mental health scale "pessimistically" will have their idiosyncratic interpretation of the scale eliminated by controlling for individual level fixed effects. In this case, measurement error may not be exacerbated with the use of fixed effects but instead largely eliminated.[14] This reduction in measurement error combined with the LATE interpretation suggests a larger coefficient for the 2SLS-FE estimate.

The preferred estimates are presented in column 4.[15] While a causal interpretation is premature due to the continuing concerns with the validity of the instrument, the combined 2SLS-FE specification suggests large effects of spousal mental health on own mental health status for those individuals affected by the instrument. In fact, the preferred results are larger than the correlation between own-physical health and own-mental health.[16] These results suggest that interventions that increase mental health outcomes for individuals could have important beneficial spillovers on household members' mental health outcomes. Further, the results are also suggestive of potential unmeasured downstream benefits (positive externalities) in reducing job-stress for the spouses (and families) of the individuals.

Conclusion

In this paper, I examine the correlation of mental health status between spouses in a national sample of working age individuals and examine several specifications that are suggestive of (but not conclusion on) the existence of spillover effects between spouses. In baseline specifications, I find correlations in mental health status between spouses of approximately 0.13, which is almost identical to the correlations between spouses in self-reported general

---

[13]This issue is also extensively discussed in the literature examining the economics of happiness. There has been evidence in the psychology literature that shows that while lottery winners as well as paraplegics report initial substantial changes in happiness, they often report similar levels of happiness as non-winners and non-paraplegics after time has passed, suggesting adaptation to circumstances as well as answering subjective questions such as happiness (and possibly mental health status) in a relative way (see Di Tella and MacCulloch 2006 for a recent survey).

[14]See Bound and Krueger (1991) for further discussion of this argument. I thank Caroline Hoxby for suggesting this discussion.

[15]Controlling for spousal occupational fixed effects as well as individual fixed effects lead to qualitatively similar findings and the spousal occupational fixed effects are not jointly statistically significant.

[16]It is important to note that the goal of this paper is not to separately estimate the endogenous and contextual social effects (Manski 1993) but only the combined social spillover effects of mental health status between spouses.

health status found by Wilson (2002). I document that many of the determinants of mental health status in this sample are similar between males and females, with spousal mental health status a stronger determinant for females. These results are robust to the inclusion of fixed effects for spousal occupation.

Finally, I use an instrumental variables/fixed effects approach to examine whether there is evidence of spillover effects of spousal mental health on respondent's mental health. I use an indicator of spousal job-stress as an instrument and argue that a spouse's stress at work should only affect the respondent's mental health through its effect on the spouse's mental health. This instrument is shown to have good statistical properties, and the increase in the magnitude of the relationship between own and spousal mental health after instrumenting suggests that mental health status is measured with error and/or the spillover effects are heterogeneous and larger for households affected by job stress. A unit change in *spouse's* mental health has a comparable effect on the respondent's mental health as a unit change in the *respondent's* physical health status.

While these results are quite intriguing, there are several limitations that should be acknowledged. First, the implications of the results are limited in scope because of the sample restrictions used to create the analysis sample. Previous research has shown a relationship between mental health status and marriage probabilities as well as labor force decisions (Horwitz et al. 1996, Ettner et al. 1997). Since this paper focuses on individuals who are married and have spouses in the labor force, the results are only relevant for individuals in similar circumstances and are not able to address how mental health affects the extensive margins of marriage and labor force decisions or the potential spillovers of mental health between individuals who are not employed. Second, it is possible that there is a relationship between the respondent's mental health status and whether the spouse has job-stress. For example, individuals with spouses who are depressed could miss work to care for them, creating job-stress. This would raise concerns with the validity of the instrument, which has led to the cautious interpretations in the paper and no strong assertions about causality. Third, the specifications in this paper control for occupational fixed effects or individual fixed effects. There could be unobserved time-varying characteristics that could simultaneously affect both spouses' mental health, potentially leading to spurious findings. Finally, this analysis relied on respondent's report about his/her spouse's characteristics, which could bias the measures. Each of these limitations in this paper should be kept in mind by the reader when interpreting the results.

However, if the findings in this paper are not spurious, there are several implications for work-place policies and mental health policies more generally. In particular, the findings suggest that interventions to reduce work-stress could be more beneficial than previously suggested. The potential negative spillover effect from work to families has been documented in prior research, but positive spillovers have been the subject of less research. For example, previous research shows that mothers who experience stress at work are more likely to withdraw when they get home (Repetti and Wood 1997), and that fathers who are coping with high job demands withdraw from their families (Repetti 1994). These spillovers have several other potential consequences. For example, (Almeida, Wethington et al. 1999) show that marital tensions are likely to affect parent-child relationships and (Turner and Kopiec 2006) finds that exposure to interparental conflict increases the odds of major depression and alcohol abuse in young adults. Therefore, policies that decrease work-stresses could have direct and indirect impacts on the well-being of spouses and families more generally, leading to potentially more favorable cost-effectiveness ratios of the policies from a societal standpoint (Basu and Melter 2005).

References

Almeida DM, Wethington E, Chandler AL. Daily transmission of tensions between marital dyads and parent-child dyads. Journal of Marriage and the Family 1999;61(1):49–61.

Basu A, Meltzer D. Implications of Spillover Effects within the Family for Cost-Effectiveness Analysis. Journal of Health Economics 2005;24:751–773. [PubMed: 15960995]

Becker GS. Theory of Marriage: Part 1. Journal of Political Economy 1973;81(4):813–846.

Blazer D, Burchett B, Service C, George LK. The Association of Age and Depression among the Elderly - an Epidemiologic Exploration. Journals of Gerontology: Social Sciences 1991;46(6):M210–M215.

Blazer DG, Kessler RC, McGonagle KA, Swartz MS. The Prevalence and Distribution of Major Depression in a National Community Sample - the National Comorbidity Survey. American Journal of Psychiatry 1994;151(7):979–986. [PubMed: 8010383]

Bound J, Krueger AB. The Extent of Measurement Error in Longitudinal Earnings Data: Do Two Wrongs Make a Right? Journal of Labor Economics 1991;9(1):1–24.

Brim, OG.; Baltes, PB.; Bumpass, LL.; Cleary, PD.; Featherman, DL.; Hazzard, WR.; Kessler, RC.; Lachman, ME.; Markus, HR.; Marmot, MG.; Rossi, AS.; Ryff, CD.; Shweder, RA. 2nd ICPSR version. Ann Arbor, MI: DataStat, Inc./Boston, MA: Harvard Medical School, Dept. of Health Care Policy [producers], 1996. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor]. 2003. National Survey of Midlife Development in the United States (MIDUS), 1995–1996 [Computer file].

Clark AE, Etile F. Don't give up on me baby: Spousal correlation in smoking behaviour. Journal of Health Economics 2006;25(5):958–978. [PubMed: 16542742]

Di Tella R, MacCulloch R. Some Uses of Happiness Data in Economics. Journal of Economic Perspectives 2006;20(1):25–46.

Dufouil C. A. Alperovitch for the EVA Study Group. Couple Similarities for Cognitive Functions and Psychological Health. Journal of Clinical Epidemiology 2000;53:589–593. [PubMed: 10880777]

Ettner S, Frank R, Kessler R. The Impact of Psychiatric Disorders on Labor Market Outcomes. Industrial and Labor Relations Review 1997;51(1)

Falba TA, Sindelar JS. Spousal Concordance in Health Behavior Change. Health Services Research 2008;43(1):96–116. [PubMed: 18211520]

Griffin JM, Fuhrer R, Stansfeld SA, Marmot M. The importance of low control at work and home on depression and anxiety: do these effects vary by gender and social class? Social Science & Medicine 2002;54(5):783–798. [PubMed: 11999493]

Grzywacz JG, Bass BL. Work, family, and mental health: Testing different models of work-family fit. Journal of Marriage and the Family 2003;65(1):248–261.

Horwitz A, Raskin White H, Howell-White S. Becoming Married and Mental Health: A Longitudinal Study of a Cohort of Young Adults. Journal of Marriage and the Family 1996;58(4):895–907.

Imbens G, Angrist J. Identification and Estimation of Local Average Treatment Effects. Econometrica 1994;62(2):467–475.

Jacobson L. The Family as Producer of Health--An Extended Grossman Model. Journal of Health Economics 2000;19:611–637. [PubMed: 11184796]

Kalmijn M. Shifting Boundaries - Trends in Religious and Educational Homogamy. American Sociological Review 1991;56(6):786–800.

Kessler RC. Stress, Social-Status, and Psychological Distress. Journal of Health and Social Behavior 1979;20(3):259–272. [PubMed: 479536]

Klumb P, Hoppmann C, Staats M. Work hours affect spouse's cortisol secretion - For better and for worse. Psychosomatic Medicine 2006;68(5):742–746. [PubMed: 16987948]

Manski C. Identification of Endogenous Social Effects--The Reflection Problem. Review of Economic Studies 1993;60(3):531–542.

Manski C. Economic Analysis of Social Interactions. Journal of Economic Perspectives 2000;14(3):115–136.

McLeod J. Spouse Concordance for Depressive Disorders in a Community Sample. Journal of Affective Disorders 1993;27:43–52. [PubMed: 8432960]

Monden C, van Lenthe F, Dirk De Graaf N, Kraaykamp G. Partner's and Own Education: Does Who You Live with Matter for Self-Assessed Health, Smoking and Excess Consumption? Social Science & Medicine 2003;57:1901–1912. [PubMed: 14499514]

Ryff, C.; Almeida, DM.; Ayanian, JS.; Carr, DS.; Cleary, PD.; Coe, C.; Davison, R.; Hong, J.; Krueger, RF.; Lachman, ME.; Love, GD.; Marks, NF.; Mroczek, DK.; Radler, BT.; Seeman, T.; Mailick Seltzer, M.; Singer, BH.; Sloan, RP.; Tun, PA.; Weinstein, M.; Williams, D. ICPSR04652-v1. Madison, WI: University of Wisconsin, Survey Center [producer], 2006. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-03-07. Midlife Development in the United States (MIDUS2), 2004–2006 [Computer file].

Schwartz CR, Mare RD. Trends in educational assortative marriage from 1940 to 2003. Demography 2005;42(4):621–646. [PubMed: 16463914]

Siegel MJ, Bradley EH, Gallo WT, Kasl SV. The Effect of Spousal Mental and Physical Health on Husbands' and Wives' Depressive Symptoms, Among Older Adults: Longitudinal Evidence From the Health and Retirement Survey. Journal of Aging and Health 2004;16:398–425. [PubMed: 15155069]

Small SA, Riley D. Toward a Multidimensional Assessment of Work Spillover into Family-Life. Journal of Marriage and the Family 1990;52(1):51–61.

Townsend AL, Miller B, Guo S. Depressive symptomatology in middle-aged and older married couples: A dyadic analysis. Journals of Gerontology Series B-Psychological Sciences and Social Sciences 2001;56(6):S352–S364.

Turner HA, Kopiec K. Exposure to interparental conflict and psychological disorder among young adults. Journal of Family Issues 2006;27(2):131–158.

Wilson S. The Health Capital of Families: An Investigation of the Inter-Spousal Correlation in Health Status. Social Science and Medicine 2002;55:1157–1172. [PubMed: 12365528]

Table 1

Summary Statistics

MIDUS Data, Wave 1, N=2,427				
Variable	**Mean**	**Std. Dev**	**Min**	**Max**
Mental Health Status (5=excellent, 1=poor)	3.93	0.90	1	5
Physical Health Status (5=excellent, 1=poor)	3.67	0.93	1	5
Age	43.48	10.52	24	74
Male	0.50	0.50	0	1
White	0.92	0.27	0	1
Black	0.04	0.19	0	1
Other Race	0.04	0.19	0	1
Education	13.98	2.61	0	20
Personal Income ($10000s)	2.83	2.77	0	15
Unemployed	0.02	0.14	0	1
Initial Mental Health (16 yrs) (5=excellent, 1=poor)	4.18	0.95	1	5
Initial Physical Health (16 yrs) (5=excellent, 1=poor)	4.45	0.80	1	5
Spouse Mental Health Status (5=excellent, 1=poor)	3.95	0.94	1	5
Spouse Education	14.21	2.58	0	20
Spouse Work Problems	0.08	0.27	0	1
Spouse Income ($10000s)	3.27	2.75	0	15
Agree on Household Tasks	2.88	0.92	1	4
Agree on Leisure Activities	3.04	0.84	1	4

Notes: MIDUS Wave 1 data. Sample includes only respondents with working spouses for which there is information on spouse's work problems.

Table 2

Individual and Family Level Determinants of Mental Health Status: Spousal Correlations of Mental Health Status

Outcome	Mental Health Status	Mental Health Status
Occupation Fixed Effects?	No	Yes
Column	1	2
Spouse Mental Health Status	0.138[***]	0.140[***]
	(0.014)	(0.016)
Male	0.063[**]	0.078[**]
	(0.029)	(0.037)
Black	0.053	0.090
	(0.062)	(0.069)
Other Race	0.075	0.086
	(0.070)	(0.073)
Age (yrs)	−0.004[***]	−0.006[***]
	(0.001)	(0.001)
Education Level (yrs)	0.024[***]	0.022[***]
	(0.006)	(0.008)
Personal Income ($10,000s)	0.003	−0.001
	(0.004)	(0.005)
Physical Health Status	0.442[***]	0.431[***]
	(0.016)	(0.018)
Unemployed	−0.171[*]	−0.185[*]
	(0.103)	(0.109)
Mental Health Status at age 16	0.185[***]	0.183[***]
	(0.019)	(0.021)
Physical Health Status at age 16	−0.013	−0.010
	(0.022)	(0.025)
Spouse Education Level	0.008	0.004
	(0.006)	(0.007)
Spouse Income ($10,000)	−0.009[**]	−0.008[*]
	(0.004)	(0.005)
Agreement in Household Tasks	0.032[**]	0.049[***]
	(0.015)	(0.017)
Agreement in Leisure Activities	0.043[**]	0.039[**]
	(0.017)	(0.019)
Missing Information Dummy	−0.053[*]	−0.022
	(0.028)	(0.030)
Constant	0.579[***]	0.702[***]

Outcome	Mental Health Status	Mental Health Status
	(0.127)	(0.157)
Observations	3614	3348
R-squared	0.39	0.45

Source: MIDUS Wave 1 and 2

Mental and Physical Health Status is coded 5=excellent through 1=poor

Robust standard errors in parenthesis, ***1%, **5% *10%.

Table 3

Individual, Family, and Community Level Determinants of Mental Health Status: Differences By Gender

Outcome	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status
Sample	Full	Males	Males	Females	Females
Occupation Fixed Effects?	No	No	Yes	No	Yes
Column	1	2	3	4	5
Spouse Mental Health Status	0.138***	0.126***	0.124***	0.152***	0.149***
	(0.014)	(0.020)	(0.025)	(0.021)	(0.024)
Male	0.063**				
	(0.029)				
Black	0.053	0.041	0.144	0.092	0.115
	(0.062)	(0.095)	(0.109)	(0.079)	(0.102)
Other Race	0.075	0.067	0.122	0.084	0.089
	(0.070)	(0.098)	(0.115)	(0.101)	(0.106)
Age	−0.004***	−0.007***	0.007***	−0.002	−0.004**
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Education Level	0.024***	0.025***	0.029**	0.024***	0.012
	(0.006)	(0.008)	(0.012)	(0.009)	(0.012)
Personal Income ($10,000s)	0.003	0.001	−0.006	0.008	0.007
	(0.004)	(0.005)	(0.007)	(0.007)	(0.009)
Physical Health Status	0.442***	0.426***	0.421***	0.456***	0.444***
	(0.016)	(0.024)	(0.028)	(0.022)	(0.026)
Unemployed	−0.171*	−0.240	−0.253	−0.117	−0.133
	(0.103)	(0.146)	(0.171)	(0.144)	(0.168)
Mental Health Status at age 16	0.185***	0.181***	0.179***	0.191***	0.199***
	(0.019)	(0.029)	(0.035)	(0.024)	(0.028)
Physical Health Status at age 16	−0.013	−0.023	−0.019	−0.007	−0.021
	(0.022)	(0.035)	(0.041)	(0.029)	(0.033)

Outcome	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status
Sample	**Full**	**Males**	**Males**	**Females**	**Females**
Occupation Fixed Effects?	**No**	**No**	**Yes**	**No**	**Yes**
Column	**1**	**2**	**3**	**4**	**5**
Spouse Education Level	0.008	0.013	0.006	0.002	0.002
	(0.006)	(0.009)	(0.011)	(0.008)	(0.010)
Spouse Income ($10,000)	−0.009**	−0.016**	−0.014	−0.006	−0.007
	(0.004)	(0.007)	(0.009)	(0.005)	(0.006)
Agreement in Household Tasks	0.032**	0.026	0.021	0.037*	0.062***
	(0.015)	(0.023)	(0.027)	(0.021)	(0.024)
Agreement in Leisure Activities	0.043**	0.042*	0.045	0.046*	0.039
	(0.017)	(0.024)	(0.027)	(0.025)	(0.029)
Missing Information Dummy	−0.053*	−0.100***	−0.055	−0.010	0.012
	(0.028)	(0.037)	(0.042)	(0.040)	(0.046)
Constant	0.579***	0.903***	0.995***	0.326*	0.652***
	(0.127)	(0.195)	(0.248)	(0.168)	(0.230)
Observations	3614	1766	1670	1848	1678
R-squared	0.39	0.39	0.49	0.40	0.47

Source: MIDUS Wave 1 and 2

Mental and Physical Health Status is coded 5=excellent through 1=poor

Robust standard errors in parenthesis, ***1%, **5%, *10%.

Table 4

Individual and Family Level Determinants of Mental Health Status: Results using Fixed Effects and 2SLS

Outcome	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status
Specification	Pooled OLS	2SLS	First Stage	2SLS	First Stage
Individual Fixed Effects	**No**	**No**	**No**	**Yes**	**Yes**
Column	**1**	**2**	**3**	**4**	**5**
Spouse Mental Health Status	0.138***	0.283*		0.492**	
	(0.014)	(0.146)		(0.239)	
Male	0.063**	0.050	0.031		
	(0.029)	(0.030)	(0.038)		
Black	0.053	0.001	0.032		
	(0.062)	(0.070)	(0.101)		
Other Race	0.075	0.097	−0.029		
	(0.070)	(0.074)	(0.094)		
Age	−0.004***	−0.004***	−0.003**	−0.005	−0.012**
	(0.001)	(0.001)	(0.002)	(0.005)	(0.005)
Education Level	0.024***	0.025***	−0.020**		
	(0.006)	(0.007)	(0.008)		
Personal Income ($10,000s)	0.003	0.003	0.006	−0.003	0.023**
	(0.004)	(0.004)	(0.006)	(0.012)	(0.011)
Physical Health Status	0.442***	0.428***	0.112***	0.396***	0.074*
	(0.016)	(0.024)	(0.018)	(0.042)	(0.040)
Unemployed	−0.171*	−0.105	−0.258*		
	(0.103)	(0.109)	(0.132)		
Mental Health Status at age 16	0.185***	0.173***	0.119***		
	(0.019)	(0.027)	(0.022)		
Physical Health Status at age 16	−0.013	−0.018	−0.027		
	(0.022)	(0.024)	(0.027)		

Outcome	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status	Mental Health Status
Specification	Pooled OLS	2SLS	First Stage	2SLS	First Stage
Individual Fixed Effects	No	No	No	Yes	Yes
Column	1	2	3	4	5
Spouse Education Level	0.008	0.005	0.012	−0.003	−0.007
	(0.006)	(0.006)	(0.008)	(0.010)	(0.011)
Spouse Income ($10,000)	−0.009**	−0.011**	0.011*		
	(0.004)	(0.005)	(0.006)		
Agreement in Household Tasks	0.032**	0.009	0.163***	−0.039	0.096**
	(0.015)	(0.029)	(0.022)	(0.039)	(0.041)
Agreement in Leisure Activities	0.043**	0.014	0.242***	−0.021	0.138***
	(0.017)	(0.040)	(0.024)	(0.046)	(0.039)
Missing Information Dummy	−0.053*	−0.038	−0.048		
	(0.028)	(0.030)	(0.037)		
Spouse Work Problems			−0.351***		−0.393***
			(0.068)		(0.121)
Observations	3614	3280	3283	1694	1694
R-squared	0.39	0.37	0.16		
Number of Individuals				847	847
F-stat			26.660		10.586

Source: MIDUS Wave 1 and 2

Robust standard errors in parenthesis, ***1%, **5%, *10%.

Mental and Physical Health Status is coded 5=excellent through 1=poor

Additional Controls Include: Constant

Appendix Table 1A

Summary Statistics for Analysis Sample, Unmarried Individuals, and Individuals with Unemployed Spouses

MIDUS Data Wave 1						
	Analysis Sample		Unmarried Sample		Unemployed Spouse Sample	
	N=2,454		N=1,556		N=1,653	
	Mean	Std.	Mean	Std.	Mean	Std.
Mental Health Status	3.93	0.90	3.60	0.97	3.81	0.91
Physical Health Status	3.66	0.93	3.43	1.00	3.51	0.98
Male	0.50	0.50	0.38	0.49	0.54	0.50
White	0.92	0.27	0.86	0.35	0.94	0.24
Black	0.04	0.19	0.09	0.28	0.03	0.18
Other Race	0.04	0.19	0.06	0.23	0.03	0.16
Age	42.87	10.47	46.49	13.71	51.82	13.34
Education	13.99	2.62	13.94	2.77	13.70	2.67
Personal Income ($10000s)	2.95	2.77	2.42	2.43	2.82	3.56
Unemployed	0.02	0.15	0.04	0.19	0.02	0.13
Initial Mental Health (16 yrs)	4.16	0.97	3.99	1.06	4.18	0.95
Initial Physical Health (16 yrs)	4.44	0.82	4.30	0.90	4.43	0.81
Median Income in Area Code	3.94	1.26	3.74	1.22	3.72	1.26

Mental and Physical Health Status is coded 5=excellent through 1=poor

Table 2A

Wave 2 Summary Statistics

Variable	Obs	Mean	Std. Dev	Min	Max
Mental Health Status	1208	3.94	0.86	1	5
Physical Health Status	1208	3.70	0.94	1	5
Age	1208	50.53	9.25	33	80
Male	1208	0.47	0.50	0	1
White	1208	0.95	0.21	0	1
Black	1208	0.02	0.16	0	1
Other Race	1208	0.02	0.14	0	1
Education	1208	14.29	2.44	8	20
Income ($10000s)	1208	4.49	3.82	0	20
Unemployed	1208	0.02	0.13	0	1
Initial Mental Health (16 yrs)	1207	4.13	0.98	1	5
Initial Physical Health (16 yrs)	1207	4.42	0.82	1	5
Spouse Mental Health Status	1208	3.97	0.95	1	5
Spouse Education	1208	14.51	2.60	0	20
Spouse Work Problems	1149	0.06	0.24	0	1
Spouse Income ($10000s)	1208	4.81	3.59	0	20
Agree on Tasks	1199	3.02	0.89	1	4
Agree on Leisure Activities	1197	3.18	0.82	1	4

Notes: MIDUS Wave 2 data. Sample includes only respondents with working spouses for which there is information on spouse's work problems.

Mental and Physical Health Status is coded 5=excellent through 1=poor