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MARRIAGE AND INTRAHOUSEHOLD DECISIONS

Agreeing on more than chicken soup: Intra-household decision-making and treatment for child psychopathology

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Abstract Using a large, U.S. dataset it is shown that children are more likely to receive needed mental health specialty treatment when women have greater decision-making power, as measured by an index of wife-favorable divorce laws and by the sex ratio at the time of marriage. Stratified analyses show that this effect is modified by the degree of marital conflict. Marriages characterized by high conflict conform more closely to the unified household model. The paper then presents a model of household decision-making consistent with these results that incorporates both objective determinants of bargaining power as well as the role of violent coercion in maintaining otherwise unsustainable equilibria. Implications for improving children's access to mental health treatment are offered.

Keywords Intra-household decision-making · Mental health · Children · Health care demand · Domestic violence

JEL Classifications I10 · D10

1 Introduction

A considerable literature in economics has blossomed around the notion that households do not make consensual decisions about time and budgetary allocation decisions, but that instead outcomes reflecting different preferences.

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A key area of inquiry has been around household decision-making for investment in children, where it has been shown in specific contexts that women are more dedicated to using resources for children's benefit than are men, and that accordingly children fare better in households in which the wife has greater decision-making power relative to the husband's. An improved understanding of how households make decisions about investment in their children holds considerable promise for improvements in specialty help-seeking for children with mental health needs.

1.1 Theoretical models of household decision-making

The canonical model in economics of household decision-making assumes that households speak—and buy and sell—with a single voice. Several alternative models of the household reject the assumption of unitary decision-making. Becker's (1973) model assumes that individual resources at marriage are pooled but then determine each spouse's access to what the marriage produces. Grossbard-Shechtman (1984) extends this insight by modeling the effects of marriage market conditions on allocation decisions throughout the marriage.

Manser and Brown (1980) and McElroy and Horney (1981), offer models that argue that household decisions emerge out of a bargaining process that integrates multiple, competing preferences and economic influences over each spouse's bargaining power. This literature has been extensively reviewed in several articles (Behrman, 1997; Haddad, Hoddinott, & Alderman 1997; Lundberg & Pollak, 1996; Manser & Brown, 1980; Strauss, Mwabu, & Beegle, 2000; Vermeulen, 2002). Theoretical approaches have typically employed Nash equilibrium concepts, maintained by threat points that represent the opportunity utility of the partners outside of the marriage. In these models, the bargaining power of each partner is determined by what his or her utility would be in divorce versus what it is inside the marriage.

Considerable evidence exists that children's mental health problems are severely undertreated (Cohen & Hesselbart, 1993; Costello, Farmer, Angold, Burns, & Erkanli, 1997; Farmer, Stangl, Burns, Costello, & Angold, 1999; Haines, McMunn, Nazroo, & Kelly, 2002; Leaf et al., 1996; Verhulst & van der Ende, 1997; Zahner, Pawelkiewicz, Defrancesco, & Adnopoz, 1992). Undertreatment for mental health problems is especially tragic, given that depression, attention-deficit, hyperactivity, and other mental health problems have been shown to interfere not only with children's current well-being, but also with educational attainment and future job performance, and therefore with future psychosocial and economic well-being (Krueger, Caspi, Moffitt, & Silva, 1998; Mannuzza, Klein, Bessler, Malloy, & Hynes, 1997; Velting & Whitehurst, 1997).

The decisions to seek treatment for children's mental health issues occur in an environment unlike other health care decisions for children and even unlike adult mental health treatment decisions. For this reason, the study of the socio-economic determinants of children's mental health services use is

particularly important. This paper advances that research agenda by testing the role of marriage market factors in treatment decisions.

The rest of this paper is organized as follows. After a brief overview of the separate literatures on intra-household decision-making and on investment in children's mental health in Section 2, Section 3 presents an empirical model testing whether marriage-market factors affect the decision to seek treatment for a child's mental health needs. Section 4 presents the data source and variable definitions, and Section 5 presents results of the empirical estimation. Section 6 concludes with some conceptual implications presented in the form of a theoretical model as well as implications for improving children's mental health care.

2 Intra-household decision-making and investment in children's health and development

The literature on intra-household decision-making argues that wives with more individual resources and/or more favorable marriage-market conditions at marriage and/or better threat-point utilities would be expected to achieve outcomes in household spending decisions that are more in accord with their preferences. Similarly, the marriage-market models argue that wives in marriage markets in which women are relatively scarce tend to achieve outcomes in line with their preferences.

It has generally been assumed that women are more interested in their children's welfare than are men. To detect a non-unitary allocation mechanism here it is not necessary that all men be indifferent to their children's mental health—only that a substantial portion of fathers be less sensitive to the need for treatment than are mothers.

There has been a small but provocative body of research to suggest that fathers and mothers indeed have different preferences for their children's mental health treatment, particularly for Attention-Deficit and Hyperactivity Disorder (ADHD). Zimmerman (2005) finds that controlling for family income, insurance, the number of adults, the child's symptom-level, and other covariates, children in households with the father present are about half as likely to obtain needed mental health treatment as those with the father absent. One important study reports the results of interviews with 39 mothers and 22 fathers of boys currently being treated for ADHD (Singh 2003). Because all the children were in treatment, none of the fathers in the sample were categorically against treatment. But only 32% of the fathers had participated in the process of assessment and treatment. Moreover, the researchers placed the fathers into three categories according to their acceptance of treatment for their sons. The majority, 59%, were categorized as ''reluctant believers.'' These fathers had seen some positive effects of treatment, but continued to wonder whether their sons' behavior truly merited treatment. They were reluctant to use drugs to alleviate their sons' academic problems, but welcomed the effects of the drugs on improved athletic performance. The next largest

group, at 27%, were ''tolerant non-believers.'' These fathers did not believe in the treatment of ADHD either at all or for their own sons, believing that ''boys will be boys''. These fathers did not actively oppose treatment, but many of the wives of these fathers reported having not informed them about the process until the boys had been assessed and treatment had begun. Only a small minority, just 18%, of the fathers were fully engaged in the diagnosis and treatment process from the beginning. Yet the diagnosis (and even more so the treatment) of ADHD, as for many child mental health issues, is complex and intensive, demanding repeated evaluations, working with school officials as well as with several health professionals, dedicated follow-up over time, and careful observation of the child (Hoza et al., 2000).

Given the reluctance of men to fully participate in this process, the theoretical implication that emerges from a bargaining or marriage-market model of the household is that when women have relatively more resources, children would be more likely to have treatment for mental health issues.

In previous literature, theoretical attention has focused on two determinants of an individual spouse's decision-making power: the woman's independent income and assets (relative to those of her husband), and the legal and social environment surrounding divorce. The economic resources involved would include human capital such as health, education, and intelligence; unearned income; and assets derived from inheritances or otherwise. The external social and legal environment is deemed to matter through divorce laws—which stipulate how easy it is to divorce and common property is divided upon divorce—as well as features of the marriage market, such as the local ratio of men to women.

The literature in behavioral economics has demonstrated that how a game is framed—either explicitly or through culturally determined expectations—can have an effect on its outcome (Bowles, 1998; Camerer & Thaler, 2003; Kahneman, 2003). Similarly, in intra-household decision-making, an expectation of what is socially appropriate is likely to determine the particular equilibrium that is reached. The marriage-market literature concretizes these insights, arguing that expectations emerge in part out of a balance between the supply and demand of potential marriage partners when couples are dating, and that these expectations persist into marriage. For example, there a range in the kinds of marital distributions that men and women perceive to be fair (Lennon & Rosenfield, 1994), and these differences might arise from two competing social norms of how household income should be spent: whether it should be pooled and joint decisions made, or whether the earner should have greater (or exclusive) control over how his or her income is spent. If the social norm is to share income regardless of who earns it, then the non-cooperative equilibrium (which serves as a threat point), may still involve some level of income pooling. For households that perceive a social norm of sharing income equally, differences in relative income may in fact not lead to differences in decision-making power, and therefore may not affect outcomes.

In addition to social norms, however, there are important differences in the quality of relationships that may drive outcomes. Some relationships are

characterized by a high degree of mutual respect, while in other couples there is a demanding, domineering, and perhaps even abusive partner, with the other partner in a clearly inferior or submissive position. Clearly such psychological features of a relationship will drive outcomes, yet have been little discussed in the literature. Lundberg and Pollak (1996) argue that the existence of wasteful phenomena such as domestic violence and child abuse is evidence of non-cooperative equilibria—it may also more fundamentally be evidence of asymmetric psychological power, which in turn betokens a limitation of existing economic models of household decision-making.

Non-unitary household decision-making models have in common an assumption that economic variables constrain behavior of spouses who benefit from the collective gains from intra-household exchange. When one spouse exercises violence or threats of violence, however, he may compel behavior from the other spouse that may not be rational on strictly economic grounds. Domestic violence is an extreme example: victims regularly report being terrified of violent retribution if they do not accede to their abusive partner's wishes, and report feeling like they have no choice but to persist in a terrible relationship (American Psychological Association Presidential Task Force on Violence and the Family, 1996). Economic models of household decision-making are only as good as the freedom of each spouse to decide where his/her own best interests lie (Grossbard-Shechtman, 1993).

2.1 Empirical analyses of intra-household decision-making

Empirical work in this area has focused largely on developing countries, where there are strong social norms that would be expected to drive large differences in child well-being outcomes as a result of decision-making power differences. Typical results are that the financial and physical assets that women bring into marriage have been shown to be positively associated with nutritional and schooling outcomes in Malaysia (Kusago & Barham, 2001) and in Bangladesh and South Africa (Quisumbing & Maluccio, 2003); that greater unearned maternal income has been associated with better child nutrition and health measures in Brazil (Thomas, 1990); that pensions directed toward women in South Africa have been associated with better nutritional status among girls (Duflo, 2003); and that divorce law changes in the Philippines led to improvements in children's nutrition (Folbre, 1984).

There has been considerably less empirical work in the developed-country context. Lundberg, Pollak, and Wales (1997) found that when the United Kingdom began to write checks for the governmental child benefit in the mother's name, rather than in the father's name as previously, household expenditures on children's clothing increased. A descriptive study found that households in which the wife's income was higher (as a proportion of the husband's income) spent more money on child care (Phipps & Burton 1998).

The Phipps and Burton study presents a good opportunity to discuss the severe problems facing empirical researchers in this area. Almost any indicator of the wife's earnings relative to the husband's will have several effects upon

household allocation decisions, through relative prices in household production and through selection. When the wife earns more, the cost of her time in household production increases, and one would expect to see such households spending less time in household production, and hiring-in more such services. Even more importantly, marriages in which the wife has high human capital are likely to be marriages in which the husband has unobserved preferences for human capital. These preferences presumably carry over to his children, so that an observation that high wife's wages are associated with children doing well may be nothing more than an observation that men who care about human capital in potential marriage partners turn out to be caring fathers.

This point about the endogeneity of the wife's wage has been abundantly made in the empirical literature, which has struggled to find exogenous measures of the wife's decision-making power. Unearned income has generally been the favorite, but this, too, is not always exogenous. In traditional societies, men may feel threatened by women who have an independent source of economic power. Such a threat, after all, is the premise of the bargaining literature, and men would have to be economically irrational not to recognize it as such.

The exogeneity of the legal and social environment is more plausible, although individuals may self-select into appropriate environments by moving to states with programs and laws that benefit them more.

2.2 Investment in children's health and development in developed countries

The prior research on intra-household decision-making has unfolded largely in the context of developing countries, in which there are obvious potential investments in child health and development that are made at the margins—some households prioritize and are able to make investments in children's schooling, nutrition, and health care, while others are not. In developed countries, the marginal investments in children can be more subtle. Children's physical health problems are relatively rare in developed countries, nutritional status is generally good, and vaccination and school enrollment rates are universally high. The areas in which investment decisions are made at the margin are those which are inadequately covered by insurance, and/or which require an extra effort on the part of the parents. The health services literature clearly identifies one such opportunity for investment at the margin: children's mental health care.

2.3 Children's mental health

In a given year, some 21% of all children experience a mental health problem, and 11% of children experience significant functional impairment (Shaffer et al., 1996). Considerable evidence exists that children's mental health problems are undertreated, with fewer than half and as few as 11% of children who screen positive for some disorder actually receiving treatment (Cohen &

Hesselbart, 1993; Costello et al., 1997; Farmer et al., 1999; Haines et al. 2002; Leaf et al., 1996; Verhulst & van der Ende, 1997; Zahner et al., 1992). The importance of these problems is heightened by the fact that over the last 50 years, the trend has been for ever earlier onset of mental health problems, now reaching well into childhood (Burvill, 1995).

The decisions to seek treatment for children's mental health issues occur in a peculiar environment, substantively unlike other health care decisions for children and even unlike adult mental health treatment decisions. Children's mental health problems may develop slowly, subtly, or be difficult to distinguish from normal—though at times difficult—child and adolescent development. Depression in children (as for some adults) can manifest as physical symptoms, sometimes without report of psychological symptoms (Stewart, 2003). Moreover, children rarely seek treatment on their own; instead parents make decisions about whether and how to seek treatment. However, they do so in a social context that can be confusing. School teachers and counselors exhibit some influence on the process (Farmer, Burns, Pillips, Angold, & Costello, 2003), and this influence may or may not align well with the parents' own perceptions of the child's need for treatment. Parental perceptions or concern about stigma surrounding mental health problems continue to exist, and this stigma is strengthened by a belief on the part of many parents that effective treatments are not available, or that their child will not be well-served by mental health providers (Richardson, 2001; Starr, Campbell, & Herrick, 2002). Finally, unlike for most physical health problems, for which the child's primary care provider can provide some clarity and insight for parents as to the best care for their child, for mental health issues, many primary care providers are unsure of appropriate treatments and not comfortable dealing with mental health (Geller, 1999).

In this environment, specialty treatment for mental health care is at the margins of care: some parents are willing and able to provide such treatment for their children, but others are either unwilling or unable. Specialty mental health treatment therefore could be expected to be sensitive to differences among households in maternal decision-making power. Specifically, the existing literature on intra-household decision-making, together with the literature on children's mental health treatment, suggest that children will be more likely to receive mental health treatment in those families in which the mother has relatively more decision-making power. As articulated above, this power is expected to be positively associated with the mother's independent earning power and by features of the legal and social environment.

3 An empirical model of intra-household decision-making and mental health specialty use

The analysis implements a logit regression of treatment for mental health problems by specialty providers. The explanatory variables include those that have been previously identified in the literature as contributing to the

probability of treatment (see (Zimmerman, 2005), and include the child's race/ethnicity, age, birth order, gender, insurance status, region and urbanicity of residence; as well as maternal and paternal education and employment status. Symptoms (**S**) are also included as important predictors of treatment, so that the resulting coefficient estimates on all covariates may be interpreted as the marginal effect of the variable upon the probability of treatment, controlling for underlying need, or symptom level.

The Treatment Equation is

$$T* = \boldsymbol{\alpha_0} + \mathbf{M}\boldsymbol{\alpha_1} + \mathbf{x}\boldsymbol{\alpha_2} + \mathbf{z}\boldsymbol{\alpha_3} + \boldsymbol{L}\boldsymbol{\alpha_4} + \boldsymbol{S}\boldsymbol{\alpha_5} + \boldsymbol{\varepsilon}$$
$$T = \begin{cases} 1 \text{ if } T* \geq 0 \\ 0 \text{ otherwise} \end{cases}$$

where **M** represents the marriage-market variables (the Divorce Index and sex ratio); **x** is a vector of child characteristics including insurance status, age, gender and birth order; **z** is a vector of household characteristics including the mother's and father's work hours, wages, and education; ***L*** represents two local factors that may confound the relationship between the marriage-market variables and mental health treatment: the local ratio of child psychiatrists per 1,000,000 population, and the level of state generosity of welfare payments; ***S*** is the indicator of symptoms, or need; and the α's are parameters to be estimated.

This equation is estimated on the whole sample and also separately for high-conflict and low-conflict marriages, divided at the median. Doing so provides insight into how marital conflict affects the value of non-unitary theories of household decision-making.

4 Data

4.1 Data sources

Data for this study were drawn from the National Longitudinal Survey of Youth 1979 Children and Young Adults (NLSY-Child), an outgrowth of the original National Longitudinal Survey of Youth 1979 (NLSY79). The NLSY79, sponsored by the U.S. Department of Labor, began with a nationally representative sample of almost 12,700 individuals aged 14–22 years in 1979 who have been interviewed annually or biennially since. Blacks and Latinos were over-sampled to provide statistical power for analyses involving these important sub-groups, and population weights are available to draw valid national inferences. In 1986, the biennial NLSY-Child was begun as an extensive collection of information for over 11,000 children of the female respondents to the NLSY79 regarding developmental assessment, family background, home environment, and health history (Center for Human Resource Research, 2000). Information for the NLSY-Child is obtained from the mother, the interviewer and sometimes the child (depending on the child's age). The

records from NLSY79 and NLSY-Child are linkable via the mother's sample identification number. Data from both the NLSY-Child and NLSY79 were pulled for this study using the CHRR Database Investigator Software (Center for Human Resource Research, The Ohio State University, Build 1.4.1.57).

The initial cohort of respondents constituted a nationally representative sample of the US population. Attrition has been low overall and evenly distributed across relevant sub-groups (US Department of Labor, 2000). Follow-up rates for the NLSY range from 85–90% by the late 1990's, and these rates are similar across different ethnic groups (US Department of Labor, 2000). As a result, the analysis sample is highly representative of adults in the U.S. about 30 years old, not counting recent immigrants. Variables measured in the NLSY include a wide variety of high-quality health, demographic, and economic variables on both the parents and the children.

The sample included 5,869 children 7–14 years old in the year 2000, the most recent survey wave available. Only children of continuously married couples are included in the sample. As discussed above, the requirement that the marriages have lasted 7 years implies that those couples for whom divorce was in the cards would already have become divorced, since over half of divorces occur in the first 3 years (Huston, Caughlin, Houts, Smith, & George, 2001; Carrere, Buehlman, Gottman, Coan, & Ruckstuhl, 2000). Because of missing data in the treatment or symptom data, the analytical sample included between 4,959 and 5,869 children, depending on the sample. Population weights were used to make nationally representative inferences, and the Huber–White estimator of variance was used to adjust the estimated standard errors to account for clustering of children within counties, the primary sampling unit for the NLSY, and the level at which the sex ratios were measured.

Data for the calculation of the local ratio of men to women (the sex ratio) were from the U.S. Census 1980, 1990, and 2000 SF3 (summary file 3), extracted using Geolytics software. Following Grossbard-Shechtman (1993), the measure is defined as the average sex ratio over all places lived when the mother was ages 23–27-years-old, weighted by how long she lived in each place. Data for intercensal years was determined by linear interpolation. To facilitate interpretation, the sex ratio was normalized by subtracting the mean and dividing by the standard deviation.

4.2 Specific variables: main outcomes and predictors

Table 1 presents descriptive statistics on the variables used in the study. The outcome of interest is maternal report of whether the child had seen a specialty mental health service provider since the previous interview (about 2 years before), including visits to psychiatrists, psychologists, or counselors for any emotional, behavioral or mental health problem. A follow-up question asked the reason for the visit, so that it is possible to analyze visits for depression and for externalizing behavior problems separately. In what follows, ''ADHD'' will be used as shorthand for externalizing behavior problems, which included

Table 1 Descriptive statistics

Variable	Obs	Mean	Std. Dev.
Outcomes: mental health specialty visits			
Any Visit	5869	3.60%	
Depression Visit	5869	.61%	
ADHD Visit	5869	1.64%	
Marriage market factors[a]			
Divorce Law Index: 1	5869	34.6%	
Divorce Law Index: 2	5869	37.6%	
Divorce Law Index: 3 or 4	5869	27.8%	
Normalized sex ratio	5869	–.01	.99
Child characteristics			
Age in months	5869	116.41	26.75
Girl	5869	48%	
Middle child	5869	28%	
Youngest child	5869	32%	
Only child	5869	7%	
Child has private insurance	5869	88%	
Child on Medicaid	5869	7%	
African-American (non-Hispanic)	5869	15.5%	
Latino	5869	16.5%	
Household characteristics			
Log of mother's years of education	5869	2.56	.22
Log of total household income	5869	10.71	.77
Log of father's income	5869	9.93	1.03
Mother works part time	5869	23%	
Mother works full time	5869	40%	
West	5869	22%	
South	5869	36%	
North Central	5869	28%	
Northeast	5869	14%	
Rural	5869	17%	
Predictors of need			
Behavior Problems Indextotal score	5869	7.16	.95
Behavior Problems Indexdepression score	5449	7.95	.99
Behavior Problems IndexADHD score	5499	7.72	.99
Negative hedonic score at 2 years	5869	21.56	4.51
Local control variable			
Local ratio of child psych's/pop.	5869	1.67	.69
Index of state welfare generosity	5869	.104	.82
Marriage quality			
High-conflict	5869	53%	

[a] Higher values for these variables correspond to more bargaining power for wives

the following three possible reasons for seeking help: ''Attention Deficit/Hyperactivity Disorder (ADHD, ADD)'', ''Behavior Problems In School/Preschool'', ''Unmanageable, Temper Tantrums, Disruptive, Hyperactive''.

Two variables measure marriage-market factors: the extent to which divorce laws tend to be favorable to the interests of women, and the local ratio of men to women. Although almost all states had adopted some form of ''no-fault'' divorce by the time of the data of this analysis, there was still considerable variation in how easy it is to obtain a divorce. For example,

some states require a lengthy separation before a no-fault divorce is granted or a unilateral divorce is quite expensive. Following previous work in this area (Gray, 1998; Chiappori, Fortin, & Lacroix, 2002) these states are classified as not true ''no-fault'' states. By reducing the burden of seeking a divorce, no-fault divorce laws are assumed to increase women's bargaining power to the extent that divorce is a threat-point in intrahousehold bargaining.[1] Some states help to enforce alimony and support payments by allowing the court to collect such payments directly from the ex-husband for distribution to the ex-wife. From the mother's perspective, such provisions simplify (and make more certain) the collection of payments in the event of a divorce, and would therefore be expected to improve her divorce threat-point utility. Many states allow for a spouse to make a claim against professional degrees in the division of property. Since husbands are more likely to have such degrees, a statutory provision to consider the income flow from such an asset in a divorce settlement increases the wife's decision-making power. Finally, some states provide for a division of property under a community property framework, in which the principle is equitable division. Since in most marriages the husband has earned more than the wife, a community property law is an advantage to wives over the alternative system of common law, in which the courts have less capacity to promote equitable division of property. These four attributes together define a legal environment which can be more or less hospitable to women seeking or contemplating divorce. A Divorce Law Index was created by summing indicators for the presence of these laws in each state, and ranged from 1 to 4. This index is the same as that used previously (Chiappori, Fortin, & LaCroix, 2002). Because only one state had an index value of 4, it was combined with the states with values of 3 to create a single category. The breakdown of the divorce index values is presented in Tables 2 and 3.

The ratio of men to women (the sex ratio) is a second marriage-market factor used here. A higher sex ratio creates more favorable marriage-market conditions and enhances a wife's utility under divorce, and therefore should enhance her decision-making power within marriage.

4.3 Specific variables: additional covariates

The analysis also controls for other state-specific variables that might have an effect on the outcome. The most obvious of these is the availability of mental health specialty treatment for children. The county ratio of child psychiatrists per 1,000,000 population, (taken from the Area Resource File), and a measure of state generosity to control for the possibility of risk-based selection of needier populations to more generous states. Generosity of state spending was measured as the financial standard (or dollar amount) for a family of family of four receiving benefits under Aid to Families with Dependent Children

[1] The opposite could also be true: see Grossbard-Shechtman and Lemennicier (1999).

Table 2 Divorce law categorization

Divorce law category	Full sample			Low-conflict marriages			High-conflict marriages		
	N individuals	Percent of sample	*N* States*	*N* individuals	Percent of sample	*N* states*	*N* individuals	Percent of sample	*N* states*
1	1,899	33	21	953	36	18	946	31	20
2	2,204	38	18	1,025	38	18	1,179	38	18
34	1,633	28	11	687	25	10	946	31	8
Total	5,736	100	50	2,665	100	46	3,071	100	46

* Includes the district of Columbia

(AFDC) in 1995, as reported in the Urban Institute's Welfare Rules database (see http://anfdata.urban.org). We use data from 1995 rather than more recent data because the welfare reform act of 1996 greatly proscribed states' latitude in setting welfare payments. Finally, regional dummies and indicators of rural/urban residence were also included.

To control for underlying need for treatment, two measures are used: the child's total score on the Behavior Problems Indexinstrument and the child's score on the negative hedonic temperament scale at age 2 (assessed by maternal report). The negative hedonic score is composed of 11 items including whether the child smiles in certain situations (in bath, playing) and whether he/she cries or is upset in certain situations (during day, around loud sounds, etc). Since it had been measured many years prior to the treatment decisions, it is not simultaneously determined with treatment. The Behavior Problems Index (BPI) is a parental-report behavior-rating scale, which includes items such as ''frequently restless'', ''has trouble concentrating,'' ''has sudden changes in mood'', and so on. Because it depends on parental evaluation of behavior, it is not a diagnosis-based indicator of psychopathology. As such, it should not change in the wake of a visit. The BPI has been validated in several studies (Baker, Keck, Mott, & Quinlan, 1993), and is derived in large part from the Achenbach Child Behavior Checklist, a well-known parental-report behavior rating scale. The raw scores of the BPI have been rescaled to facilitate interpretation, so that the standard deviation is 1.

Controls for the child's age and age-squared are included, as well as the child's gender and birth order. Dummy variables are included for whether the child is covered by private insurance or by Medicaid. The log of total household income is included, along with the log of father's wage income. The log of mother's highest grade completed is included. In preliminary analyses, this specification provided a better fit to the data than other specifications for mother's education. Dummies are included for whether the mother works part time or full time (as opposed to not at all).

4.4 Relationship quality

In the year 2000 survey wave, respondents were asked a set of 11 questions about the quality of their marital relationship. Questions included items such as

Table 3 Divorce law index by state

State	Divorce law index
Alabama	1
Alaska	1
Arizona	3
Arkansas	1
California	4
Colorado	2
Connecticut	1
District of Columbia	1
Florida	3
Georgia	2
Hawaii	1
Idaho	2
Illinois	1
Indiana	3
Iowa	3
Kansas	2
Kentucky	2
Louisiana	1
Maine	1
Maryland	1
Massachusetts	2
Michigan	2
Minnesota	2
Mississippi	1
Missouri	1
Montana	2
Nebraska	2
Nevada	2
New Hampshire	1
New Jersey	4
New Mexico	2
New York	1
North Carolina	2
North Dakota	3
Ohio	1
Oklahoma	1
Oregon	2
Pennsylvania	2
South Carolina	1
South Dakota	1
Tennessee	2
Texas	2
Utah	1
Vermont	1
Virginia	2
Washington	3
West Virginia	1
Wisconsin	1
Wyoming	3

''How often do you have arguments about your children?''; ''How often do you have arguments about money?''; ''How often do you calmly discuss things?'', and so on. Each question was coded with on a Likert scale from 1–4 (Often–Never). The responses to these questions were combined (reverse-coding items

as appropriate) into a measure of marital relationship quality ranging from 11–44.

For stratified analyses, the sample was divided into those above versus below the median value on this scale.

5 Results

Table 4 presents the results of the logit regression of whether the child had a mental health specialty visit for any reason (first column), for depression in particular (second column), or for ADHD (third column). Because the outcome is relatively rare, the logit coefficients can be exponentiated to obtain more easily interpretable odds ratios. The main predictors are the marriage-market variables. Higher values represent a social and legal environment that is friendlier toward women, and are assumed to correspond to greater female decision-making power.

The results in Table 4 present a clear relationship: children in areas with marriage-market factors more favorable to women are more likely to have mental health specialty care, controlling for their need, insurance status, mother's education and working hours, and other relevant covariates. Those children in the two best of the four divorce law categories are over twice as likely to receive needed care as those in the worst of the four divorce law categories. A similar relationship holds for the role of divorce laws for depression treatment in particular, although the results do not achieve significance. For mental health care for ADHD, the results are stronger, with children in areas with the highest divorce law category about four times as likely to receive needed treatment as those in the lowest divorce law category, a result that is highly significant. In addition, in all three models, there is a clear dose-response pattern, with those in the highest divorce law categories faring better not only than those in the lowest category, but also than those in the medium category, themselves better off than those in the lowest category.

The sex ratio achieves significance only for ADHD treatment specifically, for which a 1-standard-deviation increase in the sex ratio is associated with about a 34% increase in treatment probability.

The effects of the BPI indicators of current need are all large and highly significant, as expected. Controlling for current symptomology, past negative affect is associated with a reduced likelihood of treatment. This result suggests that parents of children who have for a long time had personalities that predispose them to depression are less likely to seek treatment for children. A possible reason is that they might ascribe ongoing symptoms of distress to traits (which are impervious to treatment), rather than to current emotional states (which can be remedied).

Only-children are more likely than children with siblings to receive depression specialty care. For children with siblings, birth order does not have a significant affect on the probability of receiving treatment, with the exception that middle children are less likely than either older children or youngest

Table 4 Results of logit regression of mental health specialty visits

	(1)		(2)		(3)	
	Any Visit		Depression Visit		ADHD Visit	
	Odds ratio	*p*-value	Odds ratio	*p*-value	Odds ratio	*p*-value
Marriage-market factors[a]						
Divorce Law Index: 2	1.725	(.031)	1.448	(.494)	1.625	(.308)
Divorce Law Index: 3 or 4	2.337	(.009)	2.185	(.203)	4.166	(.005)
Normalized sex ratio	1.125	(.194)	.947	(.787)	1.338	(.004)
Child characteristics						
Age	1.063	(.036)	.967	(.653)	.978	(.566)
Age-squared	1.000	(.060)	1.000	(.720)	1.000	(.488)
Girl	.807	(.888)			.317	(.643)
Middle child[b]	1.008	(.976)	1.264	(.619)	.503	(.072)
Youngest child[b]	1.236	(.367)	.560	(.291)	1.014	(.965)
Only child	2.165	(.017)	4.805	(.004)	1.702	(.273)
Child has private insurance	.734	(.342)	.210	(.008)	.636	(.292)
Child on Medicaid	1.478	(.405)	2.774	(.266)	1.566	(.347)
African-American	.873	(.719)			1.049	(.939)
Latino	.531	(.075)	.187	(.086)	.375	(.042)
Household characteristics						
Log of mother's years of education	2.085	(.224)	.895	(.939)	2.329	(.334)
Log of father's income	.972	(.805)	.969	(.800)	.756	(.063)
Log of total household income	1.358	(.123)	2.992	(.006)	1.028	(.902)
Mother works part time[c]	.804	(.366)	.899	(.808)	1.039	(.908)
Mother works full time[c]	.562	(.014)	.467	(.098)	.815	(.546)
West	.868	(.769)	3.321	(.134)	.431	(.329)
South	1.158	(.748)	1.555	(.551)	1.474	(.678)
North-Central	1.910	(.135)	2.998	(.204)	1.771	(.503)
Rural	.703	(.253)	.614	(.529)	.821	(.603)
Predictors of need						
Behavior Problems Index score[d]	4.049	(.000)	2.390	(.001)	4.259	.000
Boy*BPI	.985	(.936)			1.025	(.931)
Negative hedonic score at 2 years	.898	(.019)	.908	(.323)		
Boy*negative hedonic	1.041	(.491)				
Local control variable						
Local ratio of child psych's/Pop.	1.642	(.011)	2.762	(.021)	1.804	(.068)
Index of state welfare generosity	.841	(.338)	.469	(.061)	1.239	(.509)
Marriage quality						
High-conflict	.914	(.642)	1.254	(.570)	.701	(.251)
N	5,869		4,959		5,869	
X^2	172		174		192	
p of X^2	.000		.000		.000	
Pseudo R^2	.207		.239		.289	

[a] Higher values for these variables correspond to more bargaining power for wives. The lowest Divorce Law Index category is the base category

[b] Oldest Child is the base category

[c] Mother not working is the base category

[d] BPI score is total BPI score in ''Any Visit'' regression; BPI depression score in ''Depression Visit'' regression; and BPI hyperactive score in ''ADHD Visit'' regression

children to received needed treatment for ADHD. Girls are no less likely to get needed treatment than are boys, and the interaction of gender with symptomology is not significant.

African-American children are about as likely to receive treatment as White children, while Latino children are less likely to receive treatment for any visit, and for both depression and ADHD specifically. Other research has shown that African-American men are more likely to suffer depression than White men, controlling for a host of socio-economic characteristics (e.g., Zimmerman, Tracy & Bell, 2006), so the result here that treatment probabilities for children are similar across these two racial groups suggests that distress among African-Americans experienced in adulthood does not represent residual problems untreated in childhood.

Children are somewhat less likely to get specialty care when the mother works full time as opposed to not working outside the home, although there is no effect of part-time employment.

Tables 5 and 6 separate the sample into the high-conflict and low-conflict groups. As predicted, the divorce law categories not only maintain significance in the low-conflict sub-sample, but also have a stronger effect. With the exception of depression visits, a clear dose-response pattern is discernible. By contrast, the magnitude of the effect of the Divorce Law Index is considerably reduced in the high-conflict sample, and loses statistical significance.

The sex ratio is not significant in the high-conflict sample. In the low-conflict sample, a more favorable sex ratio is associated with greater likelihood of treatment for ADHD, but not for depression or for any visit.

For effects of the family, child, and community variables, there are few important differences between the low-conflict and the high-conflict sub-samples.

6 Conclusions and implications

The results presented here suggest that marriage market factors influence whether children get treatment for mental health problems. It also appears that the presence of conflict in a marriage is a significant effect modifier, such that in conflictual marriages the marriage market variables matter less to outcomes than in non-conflictual marriages. Existing theoretical models in the literature are inadequate to capture or explain differences in decision-making behavior in high-conflict versus low-conflict marriages. The following theoretical model provides a theoretical framework in which the relevance of conflict is highlighted.

The central insight of the model is to incorporate the role of violence and the threat of violence into a model of household decision-making. Some equilibria are maintained by reference to the marriage market factors that have been the core of this analysis. However, other equilibria are maintained through violence, and these equilibria may or may not be influenced by marriage market factors. Just as a mugger with a gun can induce a stranger to part with his money, so an abusing spouse can unilaterally maintain an

Table 5 Logit regression results for low-conflict marriages

	(1)		(2)		(3)	
	Any Visit		Depression Visit		ADHD Visit	
	Odds ratio	*p*-value	Odds ratio	*p*-value	Odds ratio	*p*-value
Marriage-market factors[a]						
Divorce Law Index: 2	2.575	(.018)	3.903	(.061)	2.916	(.047)
Divorce Law Index: 3 or 4	4.128	(.002)	3.442	(.204)	11.461	.000
Normalized sex ratio	.934	(.673)	1.173	(.558)	1.021	(.921)
Child characteristics						
Age	.999	(.982)	1.007	(.930)	.931	(.253)
Age-squared	1.000	(.832)	1.000	(.732)	1.000	(.198)
Girl	.839	(.936)			.212	(.657)
Middle child[b]	1.671	(.183)	1.555	(.482)	.228	(.027)
Youngest child[b]	1.866	(.096)	.210	(.183)	.771	(.581)
Only child	3.395	(.023)	11.177	(.007)	.675	(.565)
Child has private insurance	1.137	(.807)	.472	(.338)	.687	(.607)
Child on Medicaid	1.799	(.458)	11.671	(.006)	.283	(.283)
African-American	1.785	(.148)			2.024	(.331)
Latino	.643	(.384)			.212	(.079)
Household characteristics						
Log of mother's years of education	1.266	(.789)	.330	(.349)	1.266	(.813)
Log of father's income	1.308	(.169)	1.253	(.381)	1.048	(.854)
Log of total household income	1.189	(.669)	3.950	(.006)	.649	(.217)
Mother works part time[c]	1.131	(.777)	2.672	(.155)	.872	(.801)
Mother works full time[c]	.691	(.344)	.623	(.605)	1.030	(.955)
West	.597	(.349)	1.536	(.010)	.198	(.017)
South	.499	(.223)	1.843	(.663)	.832	(.794)
North-Central	1.027	(.960)	13.766	(.031)	.843	(.790)
Rural	.893	(.780)			.530	(.264)
Predictors of need						
Behavior Problems Index score[d]	4.511	.000	1.547	(.161)	4.408	.000
Boy*BPI	.967	(.923)			.996	(.992)
Negative hedonic score at 2 years	.881	(.210)	.887	(.419)		
Boy*Negative hedonic	1.054	(.658)				
Local control variable						
Local ratio of child psych's/Pop.	1.550	(.125)	2.235	(.226)	1.987	(.019)
Index of state welfare generosity	.709	(.213)	.532	(.298)	1.252	(.597)
N	2753		1567		2753	
X^2	148		96		115	
p of X^2	.000		.000		.000	
Pseudo R^2	.223		.367		.295	

[a] Higher values for these variables correspond to more bargaining power for wives. The lowest divorce law category is the base category

[b] Oldest Child is the base category

[c] Mother not working is the base category

[d] BPI score is total BPI score in ''Any Visit'' regression; BPI depression score in ''Depression Visit'' regression; and BPI hyperactive score in ''ADHD Visit'' regression

Table 6 Logit regression results for high-conflict marriages

	(1)		(2)		(3)	
	Any Visit		Depression Visit		ADHD Visit	
	Odds ratio	*p*-value	Odds ratio	*p*-value	Odds ratio	*p*-value
Marriage-market factors[a]						
Divorce Law Index: 2	1.137	(.701)	.570	(.386)	.902	(.854)
Divorce Law Index: 3 or 4	1.379	(.415)	1.275	(.745)	1.943	(.236)
Normalized Sex Ratio	1.144	(.227)	.902	(.704)	1.309	(.053)
Child characteristics						
Age	1.136	(.001)	1.028	(.804)	1.029	(.589)
Age-squared	.999	(.001)	1.000	(.828)	1.000	(.587)
Girl	.791	(.901)	.037	(.458)	.313	(.727)
Middle child[b]	.722	(.308)	.746	(.672)	1.016	(.977)
Youngest child[b]	.914	(.772)	1.110	(.853)	1.280	(.580)
Only child	1.407	(.404)	4.017	(.038)	2.858	(.074)
Child has private insurance	.666	(.340)	.237	(.060)	.569	(.325)
Child on Medicaid	1.367	(.577)	1.212	(.857)	2.222	(.159)
African-American	.430	(.121)			.454	(.353)
Latino	.509	(.151)	.520	(.407)	.430	(.269)
Household characteristics						
Log of mother's years of education	3.160	(.234)	2.219	(.678)	5.645	(.300)
Log of father's income	.713	(.032)	.942	(.785)	.521	(.009)
Log of total household income	1.709	(.004)	2.325	(.045)	1.548	(.083)
Mother works part time[c]	.560	(.072)	.319	(.068)	1.101	(.825)
Mother works full time[c]	.438	(.004)	.350	(.054)	.713	(.480)
West	2.403	(.185)	1.268	(.819)	3.502	(.299)
South	3.973	(.034)	1.519	(.677)	9.198	(.075)
North-Central	5.816	(.006)	1.152	(.892)	11.559	(.043)
Rural	.679	(.284)	1.669	(.492)	1.266	(.604)
Predictors of need						
Behavior Problems Index score[d]	3.916	(.000)	4.026	(.000)	4.643	(.000)
Boy*BPI	1.017	(.943)	.820	(.630)	1.027	(.942)
Negative hedonic score at 2 years	.899	(.048)	.951	(.618)		
Boy*Negative hedonic	1.032	(.619)	.962	(.741)		
Local Control Variable						
Local ratio of child psych's/Pop.	1.777	(.032)	2.462	(.098)	1.677	(.239)
Index of state welfare generosity	.954	(.831)	.520	(.192)	1.421	(.366)
N	3147		2616		3147	
X^2	188		177		152	
p of X^2	.000		.000		.000	
Pseudo R^2	.238		.279		.361	

[a] Higher values for these variables categories correspond to more bargaining power for wives. The lowest divorce law category is the base category

[b] Oldest Child is the base category

[c] Mother not working is the base category

[d] BPI score is total BPI score in ''Any Visit'' regression; BPI depression score in ''Depression Visit'' regression; and BPI hyperactive score in ''ADHD Visit'' regression

otherwise unsupportable equilibrium through the threat of violence. The 1-year prevalence of domestic spousal physical abuse is 1–5% and lifetime prevalence of domestic physical abuse is 20–30% (Tjaden and Thoennes, 2000; American Psychological Association Presidential Task Force on Violence and the Family, 1996). These numbers may be conservative, because violent coercion can be psychological, rather than physical, and/or can be directed at children, rather than only at the spouse. That this violence constrains choices has long been clear to mental health researchers, who have noted that much of the violence occurs *after* partners have separated. It is the threat of such violent retribution that keeps spouses—predominantly women—in abusive relationships (American Psychological Association Presidential Task Force on Violence And The Family, 1996). Economists have also recognized that if marriage partners are not free to choose, then they are not free to take advantage of their market power, and economic models that focus on the determinants of market power are inadequate (Grossbard-Shechtman, 1993).

This section presents a simple theoretical model that explicitly incorporates the role of violence. Investment in the child is assumed to be a public good within the household, in that the child's development is a non-excludable good to which both adult members contribute. There are in addition private goods enjoyed by the husband (h) and wife (w), who determine household resource allocations to maximize their joint utility surplus over a threat point (τ^h, τ^w).

Outcomes are also affected by either the husband's or the wife's use or threatened use of violence within the marriage. The model posits that in marriages with violence, there is an imbalance of psychological standing, which distorts whatever outcome might arise purely from the economic variables. The psychological standing is represented by the parameter ψ, which varies from 0 to 1: at $\psi = 0$ the wife has no psychological standing, and at $\psi = 1$ the husband has none. In extreme cases, when the husband threatens violence against the wife, he is able to all but completely wipe out the impact of the relative economic decision-making power and impose his will unilaterally. This extreme is represented by $\psi = 0$. At the other extreme, the wife may threaten violence against the husband, and impose her own will on him, represented by $\psi = 1$. Short of these extremes are situations in which one spouse undue psychological influence over the other one.[2] Relationships in which spouses have a high degree of mutual respect for one another are more likely to be psychologically equal ($\psi = .5$). In this case, the allocation outcome will more closely reflect true differences in preferences within the marriage and utility of the threat point. History and literature abound with examples of both kinds of extremes, as well as many examples of relative psychological equality and mutual respect.

[2] One or both spouses may view divorce as not an option because of a fear of loneliness and social stigma, because of a sense that it would mean a personal failure, out of a concern for the welfare of the children, or for religious reasons. Such couples might continue to bicker, but once it becomes clear that divorce is not an option, divorce options would not shape allocation outcomes. This situation would fall well short of violent coercion, but might also tend to depress the effects of economic determinants of decision-making power.

The joint utility maximization takes into consideration the threatpoints and the psychological standing of the members:

$$\mathrm{Max}U = [U^{\mathrm{h}} - \tau^{\mathrm{h}}]^{(1-\psi)} \times [U^{\mathrm{w}} - \tau^{\mathrm{w}}]^{\psi}$$

In this equation it is clear that the parameter ψ weights the spouses' relative decision-making power, and affects the allocation equilibrium.

This model is essentially the same as that of Chen and Woolley (2001), except that the parameter ψ here is explicitly understood as a characteristic of relative psychological standing or respect within the relationship.

Individual utilities are a function of private (x_{h}, x_{w}) and public (q) goods:

$$U^{\mathrm{h}} = U^{\mathrm{h}}(x_{\mathrm{h}}, q)$$

$$U^{\mathrm{w}} = U^{\mathrm{w}}(x_{\mathrm{w}}, q)$$

As long as the parties stay married, there is a single budget constraint, which limits total expenditure on public and private goods to be less than total income ($I_{\mathrm{h}} + I_{\mathrm{w}}$). Prices are p_{h}, p_{w}, and p_{q} for the price of the husband's private goods, the wife's private goods, and the public good, respectively:

$$p_{\mathrm{h}}x_{\mathrm{h}} + p_{\mathrm{w}}x_{\mathrm{w}} + p_{\mathrm{q}}q = I_{\mathrm{h}} + I_{\mathrm{w}}$$

Income arises out of a set of decisions (not explicitly modeled here) on hours of labor supply (H_{h} and H_{w}), together with the wage of each spouse (w_{h}, w_{w}):

$$I_{\mathrm{h}} = H_{\mathrm{h}} \cdot w_{\mathrm{h}}$$

$$I_{\mathrm{w}} = H_{\mathrm{w}} \cdot w_{\mathrm{w}}$$

Divorce-based threat points are a function of prices, wages and marriage-market factors (M):

$$\tau^{\mathrm{h}} = \tau^{\mathrm{h}}(p_{\mathrm{h}}, p_{\mathrm{q}}, w_{\mathrm{h}}, w_{\mathrm{w}}, M)$$

$$\tau^{\mathrm{w}} = \tau^{\mathrm{w}}(p_{\mathrm{w}}, p_{\mathrm{q}}, w_{\mathrm{h}}, w_{\mathrm{w}}, M)$$

The model can then be solved for the optimal level of investment in the public good, as a function of wages, prices, M and the parameter of psychological balance:

$$q* = q(p_{\mathrm{h}}, p_{\mathrm{w}}, p_{\mathrm{q}}, w_{\mathrm{h}}, w_{\mathrm{w}}, M, \psi)$$

An implication of the model is that, for $\psi = 0$ or $\psi = 1$, the marginal effect of marriage market factors on the outcome will be zero,

$$\frac{\partial q*}{\partial E} = 0 \quad \text{if} \psi \in \{0, 1\}$$

Moreover, the marginal effect approaches zero as ψ approaches 0 or 1.

This model is not formally tested by the empirical analysis here, and an empirical test would be difficult to implement without more detailed information on marital quality. However, the empirical results are consistent with the theoretical model if one accepts the assumption that the degree of conflict in a marriage is a proxy for the psychological imbalance (ψ) within it. This assumption seems reasonable. It is possible that high-conflict marriages would be marriages of relative psychological balance, with ψ close to .5. However, it seems implausible that marriages of psychological imbalance, with ψ close to 0 or to 1 and characterized by violence or threats of violence, would be free of conflict. While conflict is not perfectly correlated with the theoretical measure of psychological imbalance, it is sufficiently conceptually analogous to serve as a useful proxy.

In summary, the results tend to support the conclusion of the existing literature, with several important new insights. First, here as in the vast majority of previous work, the household generally is shown not to follow a unitary model. Factors that affect marriage market conditions, particularly state divorce laws, significantly contribute to whether children obtain needed mental health treatment. As has been shown in other contexts, for specialty mental health care, children do best when mothers have relatively more decision-making power. This effect occurs in the context of a nationally representative sample of mothers in their 30's in the United States.

Second, the findings here suggest that the degree of conflict within the marriage may be an important factor in determining the nature of household decision-making. In marriages characterized by little arguing and a lot of calm discussion, divorce laws help determine outcomes. Not so in marriages characterized by much arguing and little discussion, implying an erosion of mutual respect. In contrast, sex ratios seem to be more influential in high-conflict marriages.

There are two potential policy implications for those wanting to improve mental health outcomes for children: improve women's status or change men's preferences. The majority of previous literature has focused on economic or social constraints while treating the household as a single, unified decision-making unit. This analysis suggests that for many—but not all—households this approach may be unsuitable. For many households women and men appear to have divergent preferences and appear not to speak with a single voice about whether to seek mental health treatment. If so, then this analysis suggests that an important complement to traditional approaches to enhancing treatment uptake would be to sensitize men to the importance of mental health treatment.

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