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## RESEARCH ARTICLE

### Relationship between Positive Attitude and Marital Separation: The US Evidence

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#### ABSTRACT

**Objective:** The study tests the hypothesis that positive attitude of an individual influences his/her decision for marital separation negatively. It extends this analysis to investigate whether these two variables may affect each other simultaneously. Finally, it examines whether the marital separation decision of men differs from that of women.

**Methods:** Using two samples from the National Longitudinal Survey of Youth, 1979 (NLSY79), a longitudinal data set from the United States, the study estimates marital separation equation by probit in both cross-sectional and longitudinal frameworks. To test for the presence of a simultaneous relationship between positive attitude and marital separation, the study further estimates these two equations by an appropriate two-stage probit procedure. In addition, the study estimates these equations for males and females separately and draws interesting conclusions.

**Results:** Results obtained by single-equation methods under both cross-sectional and longitudinal frameworks indicate that positive attitude is a significant covariate of an individual's marital separation decision regardless of whether he/she is a younger adult or a mature adult. Following Maddala's two-stage probit procedure, the study further demonstrates that an individual's marital status and positive attitude are simultaneously related among mature adult women only. The evidence of a recursive relationship between these two variables in both younger and mature adult samples indicate to a large extent that positive attitude may in fact have a causal effect on marital separation. The study further finds the evidence that covariates of marital separation and positive attitude differ significantly between men and women.

**Conclusion:** Evidence of a strong negative correlation between positive attitude and marital separation demonstrated in this study indicates that any policy to improve the attitude of an individual may have a favorable effect on marital relationship.

## I. Introduction

A long line of research in the literature attributes marital separation or divorce to a number of economic and non-economic factors. In an earlier study, Cleek and Pearson have demonstrated that causes of divorce differ between men and women, and that divorce depends on an interrelationship between different groups of predictors.<sup>3</sup> Reviewing a large number of previous studies, Amato (p. 651-652) lists a number of demographic, economic and interpersonal factors that predict divorce.<sup>1</sup> The demographic and economic predictors highlighted in this review include, marrying as a teenager, being poor, experiencing unemployment, having a low level of education, living with one's future spouse or another partner prior to marriage, having a premarital birth, bringing children from a previous union into a new marriage (especially among mothers), marrying someone of a different race, being in a second- or higher order marriage, and growing up in a household without two continuously married parents. The interpersonal predictors further include, domestic violence, frequent conflict, infidelity, the number of perceived relationship problems, a weak commitment to marriage, and low levels of love and trust between spouses. A different line of research attributes marital instability to poor mental health, psychiatric disorder and depression.<sup>5,7,23</sup>

Recently, with the help of a study done by the National Center for Biotechnology Information (NCBI), Gabbi Shaw has reported in *INSIDER* broadly eleven leading causes of divorce.<sup>17</sup> The study interviewed several men and women who were included in a Prevention and Relationship Enhancement Program (PREP) that focuses on teaching conflict resolution and communication skills before they were married. Fourteen years after the PREP took place, the study surveyed 31 women and 21 men, who ended up divorced, to learn about the causes of their marital separation. The eleven most common reasons ranked by *INSIDER* based on this survey are: (1) lack of commitment (75%), (2) infidelity (59.6%), (3) too much conflict and argument (57.7%), (4) getting married too young (45.1%), (5) financial problems (36.1%), (6) substance use (34.6%), (7) domestic violence (23.5%), (8) health problems (18.2%), (9) lack of support from family (17.3%) and (10, 11) religious differences, and no or little premarital education (13.3%).

Most studies in the literature examining marital separation identify one or more of the above factors as the primary cause of divorce.

None of them, however, considers the role of an individual's poor character skill, such as attitude, that can act as a stimulant for marital separation. Note that individuals vary in their character skills and consequently the ability to handle stressful situations in life differs from person to person. For example, an individual with a positive attitude towards life can deal with difficult situations better than someone whose attitude is negative. Such a person therefore may be able to resolve the marital conflicts in a more acceptable way to both partners and thus may avoid divorce. Due to the positive nature of these individuals, they may be able to lead married lives in harmony, preventing in the first place the very possibility of a divorce.

Numerous studies in the literature have shown that individuals with positive attitude are happier in life and enjoy higher levels of job satisfaction than those with poor attitude.<sup>11,13,14</sup> Several other studies have also demonstrated that positive attitude improves an individual's economic performance.<sup>12,15,22</sup> Since both material and psychological well-being reduce the stress on marital relationship, individuals with positive attitude may be less likely to face marital separations in their lives than those with poor attitude. In a different context, Umberson claims that different personal attributes affect social relationships including marital relationship.<sup>21</sup> In fact, Kim and McKenry have listed self-esteem, a positive personal characteristic, as an important covariate of marital relationship.<sup>6</sup> Mastekaasa has further demonstrated that it is the psychological well-being of an individual that acts as a strong predictor of marital dissolution.<sup>10</sup>

A study examining the factors responsible for divorce should not therefore ignore this important characteristic "psychological well-being" represented by different character skills including one's "positive attitude to life." The current study estimates "marital separation" equation with "positive attitude" as one of its covariates and finds a significant negative relationship between these two variables. Although earlier studies have considered "attitude towards marriage" as a determinant of marital separation,<sup>24</sup> none of the studies to our knowledge has explored the possibility that a general "positive attitude to life" may act as a shield against marital conflict and divorce. The current study for the first time tests this hypothesis, and thus makes a contribution to the literature.

It is important to note that while affecting marriage favorably, positive attitude may also be

influenced by the quality of one's marital life. In a different context, Horwitz et al have shown that negative and positive aspects of partner relationship affect mental health of young married people, which in turn may affect their attitude.<sup>4</sup> For example, a harmonious married life without much conflict may in fact promote happiness in the family and thus may improve the attitude of the couple towards life. In other words, stable marriage and positive attitude of an individual may affect each other simultaneously in the same period. Any attempt to examine the relationship between marital separation and individual's attitude should not therefore ignore this possibility of a simultaneous relationship while estimating these equations. No earlier study estimating marital separation equation to our knowledge has considered this possibility. The current study does that and for the first time tests our second hypothesis that marital separation and positive attitude are related to each other simultaneously. By doing so, it makes an additional contribution to the literature.

It is important to note that emotional benefits of marriage apply equally to males and females.<sup>18</sup> However, causes of divorce are known to be significantly different between men and women.<sup>3</sup> Consequently, the study further estimates both marital separation and positive attitude equations separately for males and females and draws interesting conclusions. The next section outlines estimation methods that include the test strategy. This section also introduces data used in this study. Section 3 reports the estimation results and Section 4 presents a detailed discussion of our findings. The concluding section briefly summarizes our main results and presents a few precautionary notes for the readers.

## II. Methods

### A. Estimating Equations

The marital status of an individual in most data sets is available as a categorical variable from which we can easily generate a binary marital separation (MS) variable. Thus,

$$(1) \quad MS_i = 1, \text{ if the } i^{\text{th}} \text{ individual is divorced;} \\ \text{and} = 0, \text{ otherwise.}$$

With cross-sectional data, this marital separation equation can be estimated by probit with positive attitude (PA) as one of the explanatory variables. Sign and statistical significance of PA in this MS equation would indicate whether or not marital

separation is related to positive attitude. The quality of this estimate can be improved further if the data from the same individuals are available over several time periods. In the presence of such a longitudinal data, the MS equation can be estimated by fixed effect probit method which controls for the unobserved individual heterogeneities and thus provides more efficient estimates.

To estimate both marital separation and positive attitude equations in a simultaneous equations framework, as proposed in this study, we have to first examine the nature of these two variables available in our data set. The current study uses data from the National Longitudinal Survey of Youths, 1979 (NLSY79), a longitudinal data set from the United States. This survey provides information on both marital status and attitude in a few selected years only as categorical variables. To estimate both equations simultaneously by an appropriate statistical procedure available in the literature, we have to generate suitable binary variables from their categorical counterparts. The variable marital separation (MS) is already defined in equation (1). In the same manner, the variable positive attitude (PA) can be defined as follows:

$$(2) \quad PA_i = 1, \text{ if the } i^{\text{th}} \text{ individual claims to have} \\ \text{a positive attitude to life; and} = 0, \\ \text{otherwise.}$$

To estimate equations (1) and (2) with binary dependent variables, we use the two-stage probit procedure suggested by Maddala (Model 6, page 246) for which we further redefine the binary variables as follows<sup>9</sup>:

$$(3) \quad MS_i^* = 1, \text{ if } MS_i^* > 0 \\ (4) \quad MS_i^* = \beta_0 + X_{1i}\beta_1 + \beta_2 PA_i^* + \epsilon_{1i} \\ (5) \quad PA_i^* = 1, \text{ if } PA_i^* > 0 \\ (6) \quad PA_i^* = \alpha_0 + X_{2i}\alpha_1 + \alpha_2 MS_i^* + \epsilon_{2i},$$

where  $MS_i^*$  and  $PA_i^*$  are latent endogenous variables that generate  $MS_i$  and  $PA_i$  defined in equations (3) and (5), respectively.  $X_{1i}$  and  $X_{2i}$  are row vectors of characteristics of the  $i^{\text{th}}$  individual that are related respectively to his/her marital separation status and attitude.  $\beta_1$  and  $\alpha_1$  are column vectors of parameters of appropriate dimensions. Equations (4) and (6) define the simultaneous relationship between marital separation ( $MS_i^*$ ) and positive attitude ( $PA_i^*$ ) proposed in this study.

Under the assumption that error terms in equations (4) and (6) follow normal distributions, both equations along with equations (3) and (5) are estimated simultaneously by Maddala's two-stage probit procedure. Under this procedure, first we obtain the following reduced form equations:

$$(7) \quad MS_i^* = \pi_{10} + X_i\pi_{11} + u_{1i},$$

$$(8) \quad PA_i^* = \pi_{20} + X_i\pi_{21} + u_{2i}.$$

$X_i$  is the row vector of all individual characteristics contained in either  $X_{1i}$  or  $X_{2i}$  or both. In the first stage, equations (7) and (8) respectively with equations (3) and (5) are estimated by probit. These first-stage coefficients are used to predict the variables  $PA_i^*$  and  $MS_i^*$  that replace the latent right-hand-side variables in equations (4) and (6), which are then estimated by a second-stage probit. The asymptotic variance-covariance matrices of these two stage estimators are derived in Maddala (page 246).<sup>9</sup> Sign and statistical significance of  $\beta_2$  and  $\alpha_2$  would indicate whether or not these two variables are simultaneously related and affect each other negatively.

## B. Data and Variables

To test the two hypotheses proposed in this study, we drew two samples from the NLSY79. NLSY79 is a longitudinal data set from the United States that started in 1979 with 12,686 youths and young adults aged between 14 and 21. It was continued annually until 1994 and biennially thereafter. This longitudinal data set reports the information on the respondent's attitude in three surveys: 1980, 1987 and 2006. The respondents in 1980 were aged between 15 and 22. Very few of them were married, and consequently this group was eliminated from our study that tests relationship between positive attitude and marital separation. The 1987 survey consists of individuals aged between 22 and 29, and the 2006 sample includes individuals who are aged between 41 and 48. A large percentage of them were married, and consequently these two surveys were used to test the hypothesis proposed in this study.

Since the study focuses on the marital separation, we limited our investigation to those

who were married or divorced. The dependent variable in the marital separation equation is a binary variable, which assumes the value 1, if the respondent is divorced. The variables that are likely to influence an individual's marital separation decision are presence of own children (Own Child), presence of a partner outside marriage (Other Partner), age of marriage (Marriage Age), presence of health problem (Health Problem), level of education (Years of Schooling), employment status (Employed), and whether or not the individual was raised in an intact family until the age of 18 (Intact Family).<sup>1,16</sup> The marital separation decision may differ between men and women,<sup>3</sup> and also between whites and non-whites. Consequently, we included two binary variables Male and White in the set of explanatory variables. House ownership (Own House) and size of the family (Family Size) may discourage marital separation and therefore are included as covariates in this regression. Attendance in religious services (Religious Attendance) may have some cushioning effect on the marital separation decision and therefore is controlled in this regression. Since this variable was not available in our chosen survey years, we used religious attendance in 1982 for the 1987 sample and religious attendance in 2000 for the 2006 sample. As hypothesized in this study, the decision to divorce may be related to the attitude of the individual (Positive Attitude) and consequently this variable is included as a covariate in this regression.

All the variables mentioned in the above paragraph were used to estimate the marital separation equation in both cross-sectional as well as longitudinal frameworks. After eliminating missing values from all these variables, we obtained a sample of 5730 observations from the 1987 survey and a sample of 6135 observations from the 2006 survey. To control for the unobserved individual heterogeneities, we further estimated the marital separation equation by fixed effect method for which we created a balanced panel of 3844 observations from both 1987 and 2006 surveys. These 3844 individuals have responses to all the variables just mentioned in both 1987 and 2006 surveys. They are defined in Table 1, which also reports their means and standard deviations.

**Table 1:** Variable Definitions, Their Means and Standard Deviations.<sup>a</sup>

Variables	Definitions	Means	
		1987	2006
Separated	= 1, if the respondent is divorced and separated	0.1956 (0.396)	0.2860 (0.452)
Other Partner	= 1, if the respondent has another partner outside marriage	0.0380 (0.185)	0.0575 (0.233)
Marriage Age	= Age at the marriage	21.0532 (2.922)	24.2672 (5.764)
Own Child	= Number of own children	1.2745 (1.135)	2.1581 (1.357)
Employed	= 1, if the respondent is employed	0.7249 (0.446)	0.8140 (0.389)
Health Problem	= 1, if the respondent has health problems	0.0356 (0.185)	0.1371 (0.344)
Intact Family	= 1, if the respondent was raised in an intact family until the age of 18	0.5789 (0.494)	0.5925 (0.491)
Years of Schooling	= Completed years of schooling	12.9352 (2.829)	14.0890 (3.084)
Male	= 1, if the respondent is male	0.4243 (0.494)	0.4725 (0.499)
White	= 1, if the respondent is white	0.7560 (0.429)	0.6844 (0.465)
Religious Attendance	= 1, if the respondent attended religious services at least one a month	0.4564 <sup>b</sup> (0.498)	0.6411 <sup>c</sup> (0.479)
Family Size	= Number of individuals in the family	3.2841 (1.409)	2.9321 (1.538)
Own House	= 1, if the respondent owns a house	0.3958 (0.489)	0.7651 (0.424)
Positive Attitude	= 1, if the respondent has a positive attitude to oneself and others	0.9642 (0.186)	0.9584 (0.199)
Sample Size		5730	6135

<sup>a</sup> Quantities in parentheses are standard deviations.

<sup>b</sup> Attended religious services during the year 1982.

<sup>c</sup> Attended religious services during the year 2000.

In our proposed simultaneous equations model, the dependent variable in the attitude equation is positive attitude, which assumes the value 1 when the respondent agrees to the statement, "I have a positive attitude towards myself." The independent variables in this equation include Years of Schooling, Health Problem, Employed, and Own Child. We also included Male, White, Family Size, Religious Attendance that may have influence on an individual's attitude. The other variables, such as Other Partner, Marriage Age and Intact Family that are included in the marital separation equation, are excluded from the attitude equation to ensure identification of both equations. This helps us overcome the problem of

singularity of variance-covariance matrices that often arises when estimating simultaneous equations with binary dependent variables. When we included these variables in attitude equation, the model although converged yielded statistically insignificant coefficients for those variables. In addition, coefficients of most of the other variables lost their statistical significance when they are included, indicating variable misspecification and consequently we had no choice but to exclude them from the attitude equation.

Since home ownership (Own House) is likely to positively affect an individual's self-esteem and attitude, this variable is included in the attitude

equation while being excluded from the marital separation equation for the purpose of identifying both equations. It is important to note that home ownership may affect an individual's attitude but is less likely to affect his/her marital separation decision which depends mostly on family related factors, such as Other Partner, Marriage Age and Intact Family upbringing. All these variable restrictions guarantee identification of both equations, especially when they are estimated simultaneously. In addition, as hypothesized in this study, an individual's attitude may be affected by

whether he/she is separated or divorced, and consequently this variable (Separated) is included in the attitude equation as a covariate.

### III. Results

First, we estimated the marital separation equation separately from 1987 and 2006 samples to identify whether there is any difference in the marital separation behavior among younger adults and mature adults. These results are reported in the first two columns of Table 2.

**Table 2:** Cross-sectional and Longitudinal Probit Estimates of Marital Separation Equations.<sup>a</sup>

Variables	1987 Sample	2006 Sample	1987-2006 Panel (Fixed Effect)	
			Coefficients	Partial Effect <sup>b</sup>
Constant	2.9700*** (0.245)	1.3722*** (0.173)		
Other Partner	2.5331*** (0.198)	1.2087*** (0.084)	2.5876*** (0.236)	1.0323*** [0.000]
Marriage Age	-0.1090*** (0.009)	-0.0152*** (0.004)	-0.0605** (0.019)	-0.0241*** [0.0013]
Own Child	0.0798*** (0.026)	0.0346** (0.016)	0.1138*** (0.045)	0.0454** [0.0108]
Employed	0.0272 (0.051)	-0.0532 (0.950)	-0.1156 (0.115)	-0.0461*** [0.000]
Health Problem	0.0259 (0.115)	0.1303** (0.061)	0.0458 (0.152)	0.0183*** [0.000]
Intact Family	-0.0211 (0.046)	-0.0728* (0.040)	-0.1514 (0.097)	-0.0604*** [0.000]
Years of Schooling	-0.0154* (0.009)	0.0018 (0.007)	-0.0231 (0.023)	-0.0092 [0.324]
Male	-0.0781 (0.048)	-0.2360*** (0.041)	-0.5199*** (0.104)	-0.2074*** [0.000]
White	-0.2715*** (0.051)	-0.3786*** (0.043)	-0.4024*** (0.153)	-0.1606*** [0.000]
Religious Attendance	-0.1122** (0.046)	0.1732*** (0.042)	-0.0735 (0.101)	-0.0293*** [0.000]
Family Size	-0.2587*** (0.019)	-0.3463*** (0.015)	-0.7166*** (0.034)	-0.2859*** [0.000]
Own House	-1.0774*** (0.057)	-0.8528*** (0.045)	-2.4413*** (0.141)	-0.9739*** [0.000]
Positive Attitude	-0.1908* (0.108)	0.0952 (0.095)	-0.4010* (0.237)	-0.1599*** [0.000]
Sample Size	5730	6135	3844	
Log Likelihood	-2044.95	-2681.64	-969.99	

<sup>a</sup> Quantities in parentheses and squared brackets are standard errors and p-values, respectively.

<sup>b</sup> Partial effect for a dummy variable in fixed effect model is  $E\langle Y|X, D = 1 \rangle - E\langle Y|X, D = 0 \rangle$ . Econometric software LIMDEP (Greene, 2016) reports p-values only for these partial effects.

\*\*\* (\*\*, \*) Significant at 1 (5, 10) percent level.

As expected, presence of another partner outside marriage enhances the chances of divorce for both younger (1987 survey) as well as mature (2006 survey) adults. Interestingly, presence of own children also increases this probability in both 1987 and 2006 samples. Although the reason is not clear, it may be attributed to fair divorce laws in recent years that render childcare less complicated for both parents after divorce. Individuals who marry at a lower age are more likely to be divorced than those who marry at a later age, and this is true for both younger and mature adults. Home ownership and living in larger families lower the probability of divorce in both samples. Interestingly, whites and males are less likely to be divorced than their identical non-white and female counterparts. Although the male coefficient in the 1987 sample is not statistically significant at a desired level, the importance of this variable with a p-value of 0.1032 cannot be ignored completely in this sample.

It is interesting to note that some variable coefficients in 1987 survey differ significantly from those in the 2006 survey in their signs and significance levels. Although presence of long-term health problems increases the probability of divorce among both younger and mature adults, this variable is statistically significant among mature adults only. This is not surprising because older people are more likely to develop major health problems than younger adults. Intact family upbringing until the age of 18, on the other hand, lowers the probability of divorce among both mature and younger adults, but is statistically significant among mature adults only.<sup>1</sup> Interestingly, attendance in religious services in recent past lowers the divorce probability of younger adults, whereas it increases this probability among mature adults. Although the reason is not clear, it may be attributed to stronger influence of religious services on younger people than on mature adults.

The variable of interest in this study is Positive Attitude. Interestingly, this variable assumes a statistically significant negative coefficient in the younger adult sample, and an insignificant coefficient in the mature adult sample. In other words, when we estimate the marital separation equation in a cross-sectional framework, our hypothesis that a positive attitude is likely to lower the probability of marital separation is valid among younger adults only and not among mature adults. As mentioned earlier, cross-sectional estimates are subject to omitted variable bias resulting from unobserved individual heterogeneities. Consequently, we re-estimated the same marital

separation equation from the 1987-2006 panel which consists of same individuals observed in both periods. These fixed effect probit estimates of the marital separation equation are reported in the third column of Table 2. Fourth column of this table reports the partial effects of different variables on the probability of marital separation.

It is interesting to note that fixed effect estimation yields result very similar to those under cross-sectional estimation. Presence of another partner outside marriage and own children enhance the probability of divorce, whereas larger family size and house ownership lower it. Whites, males, and those married at a later age are less likely to be divorced than otherwise identical non-whites, females and those married too early, respectively. It is interesting to note that the partial effects of almost all variables under fixed effect estimation are statistically significant even though their estimated coefficients are not. Since exclusive effect of an independent variable on the dependent variable in a non-linear regression model is measured more accurately by its partial effect than the actual variable coefficient, roles of variables with statistically significant partial effects should not be underestimated even though their coefficients are not statistically significant. (The partial effects of variables in the first two columns of Table 2 can be obtained from the author on request). Following this criterion, we find that presence of long-term health problems increases the probability of divorce, whereas employed status, intact family background and religious attendance in recent past lower this probability. Finally, positive attitude emerges as one of the significant covariates of the probability of divorce when the same individual is observed first as a younger adult and later as a mature adult. As expected, positive attitude lowers this probability and thus acts as a shield against the likelihood of marital separation. The results in Table 2 are quite standard in the literature and thus these estimates are expected to be reliable.

The above results indicate that under traditional one-way estimation, positive attitude, as hypothesized in this study, lowers the probability of marital separation regardless of whether this equation is estimated in a cross-sectional or a longitudinal framework. These estimates, however, do not take into consideration whether or not marital separation and positive attitude are related to each other simultaneously. Following Maddala's two-stage probit procedure discussed in Section 2, we estimated both these equations simultaneously. The results obtained from both 1987 and 2006 samples are reported in Table 3.

**Table 3:** Two-Stage Probit Estimates of Marital Separation and Positive Attitude Equations.<sup>a</sup>

Variables	1987 Sample		2006 Sample	
	Marital Sep.	Positive Attitude	Marital Sep.	Positive Attitude
Constant	9.2738*** (2.967)	0.5801*** (0.221)	5.5451*** (1.154)	1.1541*** (0.221).
Other Partner	3.6831** (1.478)	—	0.4219 (0.383)	—
Marriage Age	-0.2095*** (0.079)	—	-0.0142 (0.015)	—
Own Child	-0.0991 (0.191)	-0.0286 (0.039)	0.0294 (0.067)	0.0071 (0.025)
Employed	1.6855** (0.744)	0.2351*** (0.071)	0.5973** (0.286)	0.1526** (0.078)
Health Problem	-2.0585* (1.113)	-0.3009** (0.141)	-1.6670*** (0.480)	-0.4227*** (0.081)
Intact Family	-0.2552 (0.330)	—	-0.3050* (0.172)	—
Years of Schooling	0.5493** (0.224)	0.0803*** (0.013)	0.1127*** (0.041)	0.0268** (0.011)
Male	0.8593* (0.476)	0.1326* (0.072)	1.0310*** (0.322)	0.2754** (0.068)
White	-0.0194 (0.383)	0.0619 (0.077)	-0.9304*** (0.206)	-0.1959*** (0.076)
Religious Attendance	0.5849 (0.420)	0.1077 (0.069)	0.4373** (0.185)	0.0899 (0.067)
Family Size	-0.4268*** (0.146)	-0.0017 (0.037)	-0.1486* (0.079)	-0.0013 (0.041)
Own House	—	0.2464** (0.101)	—	0.0899 (0.105)
Positive Attitude	-6.9990** (2.602)	—	-4.0232*** (0.893)	—
Separated	—	0.0862 (0.061)	—	-0.1400 (0.089)
Sample Size	5730	5730	6135	6135
Log Likelihood	-2046.48	-832.59	-2682.14	-985.73

<sup>a</sup> Quantities in parentheses are standard errors.  
\*\*\* (\*\*, \*) Significant at 1 (5, 10) percent level.

It is interesting to note that the coefficient of positive attitude assumes a statistically significant negative coefficient in marital separation equations in both 1987 and 2006 samples when they are estimated by two-stage procedure, whereas it was statistically significant in the 1987 sample only when estimated by the traditional one-stage procedure. This provides additional support to our claim that individuals with positive attitude are less likely to have marital separation than those with a poor attitude regardless of whether they are younger adults or mature adults. Clearly, this variable is an important covariate of marital separation and should not therefore be ignored when estimating this equation. Interestingly, this

conclusion, which is already established in the literature, remains disguised, especially in the 2006 mature adult sample, when we ignore the endogeneity of positive attitude in marital separation equation. It is revealed when we recognize this endogeneity and thus it justifies the use of our two-stage estimation procedure.

The findings in the positive attitude equations are quite different. The variable marital separation is not statistically significant in any sample. This confirms that positive attitude as an explanatory variable may be endogenous in marital separation equation, but both these variables are not necessarily simultaneously



related. In other words, decision to divorce, as predicted earlier, is influenced clearly by the individual's positive attitude, whereas attitude of the individual, contrary to our expectation, is not necessarily influenced by divorce decision during the same time period, especially when we estimate these equations from the whole sample. Thus, instead of a simultaneous relationship as predicted earlier in this study, we find a one-way relation in which positive attitude emerges as a significant covariate of the marital separation decision of both younger and mature adults. This does not however reduce the importance of our two-stage estimation because it is only through this procedure that we could find additional support for our original hypothesis that marital separation decision is negatively related to an individual's positive attitude. For the remainder of our analysis therefore we focus on two-stage estimation results only.

It is interesting note that the two-stage estimation results in Table 3 provide an additional insight into the relationship between attitude and marital separation. As expected, positive attitude emerges as a significant covariate of an individual's marital separation decision regardless of whether he/she is a younger adult or a mature adult. This variable, however, is not influenced simultaneously by the individual's marital separation decision. Evidence of this recursive relationship between these two variables has an interesting causal interpretation.<sup>19,20</sup> It indicates that positive attitude may in fact have a causal effect on marital separation decision, and thus may be used as a policy instrument. At the least, the study confirms that decision to divorce is strongly correlated with the attitude of the individual. Such a strong correlation, even in the absence of a causal connection, has enough predictive value,<sup>2</sup> and thus has important policy implications. It suggests that any policy to improve the attitude of an individual may have a favorable effect on his/her marital relationship.

Sign and significance of coefficients of other variables in both marital separation and positive attitude equations have interesting interpretation. Employed status promotes positive attitude among both younger as well as mature adults. However, it enhances the chances of their separation in case of a marital conflict. This is not surprising because employment is associated with higher self-esteem that improves attitude, whereas it ensures financial independence that makes divorce less burdensome. Years of schooling improves an individual's attitude in both younger adult and mature adult samples. On the other hand,

it makes them more likely to separate when there is a conflict. As expected, presence of health problems affects attitude negatively. Interestingly, however, it acts as a deterrent against marital separation. Although the reason for this is not clear, it may be attributed to physical and financial dependence of the individual with health problem on spouse, which makes him/her grateful to the partner for the priceless assistance he/she receives, and thus it prevents possible marital conflicts and a desire for separation.

House ownership improves the attitude of the individual among younger adults. Among mature adults, however, this variable is not statistically significant. Presence of another partner outside marriage enhances the chances of divorce among younger adults, but not among mature adults. Similarly, age of marriage is negatively related to the probability of divorce, especially among younger adults. This is not surprising because marriage requires mental maturity, which develops, as an individual grows older.<sup>1</sup> Interestingly, in the mature adult sample, we find that individuals raised in intact family at least until the age of 18 are less likely to divorce than those who grew up in one-parent family. This clearly demonstrates the role of parents in influencing the future marital relationship of their children during their growing up period.<sup>1</sup> Note that a larger family lowers the probability of divorce, whereas it does not have any significant impact on the attitude of the individual. Interestingly, the probability of separation is lower among whites in the mature adult sample only. However, their attitude in general is worse than that of non-whites. In contrast to one-stage estimation results in Table 2, two-stage estimates in Table 3 further indicate that males are more likely to divorce than their otherwise identical female counterparts, although they have in general a better attitude than women. Interestingly, this finding is valid for both younger and mature adults. Most of these results are quite standard in the literature. Our results based on our proposed two-stage estimation procedure therefore are quite reliable.

### **Role of Gender**

Statistical significance of the gender variable in both marital separation and attitude equations of Table 2 clearly indicates that factors affecting divorce and attitude may differ between men and women.<sup>3</sup> To verify this, we estimated both equations following the two-stage procedure separately for men and women from both younger

adult (1987) and mature adult (2006) samples. These results are reported in Table 4 and Table 5.

**Table 4:** Two-Stage Probit Estimates of Marital Separation and Positive Attitude Equations for Males.<sup>a</sup>

Variables	1987 Sample		2006 Sample	
	Marital Sep.	Positive Attitude	Marital Sep.	Positive Attitude
Constant	8.7077*** (2.698)	0.2516 (0.323)	4.2287** (0.787)	1.1675*** (0.381)
Other Partner	1.9355 (1.273)	—	1.3940*** (0.305)	—
Marriage Age	-0.2990*** (0.098)	—	-0.0067 (0.014)	—
Own Child	-0.1602 (0.167)	-0.0089 (0.057)	0.0135 (0.058)	0.3655** (0.162)
Employed	1.3368* (0.757)	0.3509*** (0.126)	0.0624 (0.254)	0.1937 (0.149)
Health Problem	-1.8457 (1.169)	-0.4664* (0.258)	-1.0788*** (0.327)	-0.4678*** (0.139)
Intact Family	-0.4261 (0.337)	—	-0.2248 (0.156)	—
Years of Schooling	0.4032* (0.204)	0.1097*** (0.023)	0.0614* (0.032)	0.0328* (0.018)
White	-0.0597 (0.353)	0.0909 (0.125)	-0.6139*** (0.174)	-0.1837 (0.119)
Religious Attendance	-0.0094 (0.298)	-0.0042 (0.116)	0.1438 (0.164)	0.0054 (0.113)
Family Size	-0.3235*** (0.115)	0.0003 (0.052)	-0.3263*** (0.064)	0.0601 (0.078)
Own House	—	0.2694* (0.159)	—	0.3655* (0.162)
Positive Attitude	-3.9952** (1.701)	—	-2.1811*** (0.450)	—
Separated	—	0.0645 (0.095)	—	0.0087 (0.142)
Sample Size	2431	2431	2899	2899
Log Likelihood	-808.21	-293.92	-1084.12	-331.69

<sup>a</sup> Quantities in parentheses are standard errors.  
\*\*\* (\*\*, \*) Significant at 1 (5, 10) percent level.

**Table 5:** Two-Stage Probit Estimates of Marital Separation and Positive Attitude Equations for Females.<sup>a</sup>

Variables	1987 Sample		2006 Sample	
	Marital Sep.	Positive Attitude	Marital Sep.	Positive Attitude
Constant	11.6850* (6.882)	0.8497*** (0.277)	9.7591* (5.171)	1.2704*** (0.257)
Other Partner	6.4274* (3.797)	_____	-1.2532 (1.532)	_____
Marriage Age	-0.1044 (0.126)	_____	-0.0282 (0.038)	_____
Own Child	-0.0656 (0.398)	-0.0499 (0.058)	0.0435 (0.167)	0.0194 (0.034)
Employed	2.0394 (1.469)	0.1789** (0.087)	1.1132 (0.791)	0.1643* (0.096)
Health Problem	-2.4023 (2.106)	-0.2291 (0.169)	-3.1297 (1.946)	-0.3856*** (0.1031)
Intact Family	-0.0863 (0.626)	_____	-0.3088 (0.406)	_____
Years of Schooling	0.6519 (0.443)	0.0636*** (0.017)	0.1993 (0.132)	0.0262** (0.013)
White	-0.0633 (0.722)	0.0449 (0.098)	-1.3713** (0.612)	-0.2318* (0.101)
Religious Attendance	1.4121 (1.212)	0.1740** (0.086)	0.8771 (0.541)	0.1411 (0.087)
Family Size	-0.6231* (0.354)	-0.0022 (0.054)	0.0249 (0.229)	-0.0303 (0.048)
Own House	_____	0.2425* (0.135)	_____	-0.0936 (0.136)
Positive Attitude	-10.4058 (6.672)	_____	-7.4534* (4.047)	_____
Separated	_____	0.1057 (0.079)	_____	-0.2455** (0.117)
Sample Size	3299	3299	3236	3236
Log Likelihood	-1214.74	-535.06	-1561.75	-650.73

<sup>a</sup> Quantities in parentheses are standard errors.  
\*\*\* (\*\*, \*) Significant at 1 (5, 10) percent level.

It is important to note that simultaneous relationship between marital separation and positive attitude hypothesized in this study does not hold for males in Table 4. Such a relationship, however, exists among mature adult women in Table 5. In other words, for adult women, positive attitude, while influencing their divorce decision, is also influenced by their probability of divorce. The hypothesis introduced in this study that marital separation and positive attitude may be related to each other simultaneously thus remains valid in this sample and cannot therefore be rejected completely.

It is interesting to note that the covariates of marital separation, as expected, differ

significantly between men and women in both younger adult and mature adult samples. Marriage at a later age discourages divorce among male younger adults but have no significant impact on female younger adults and all mature adults. Presence of another partner outside marriage increases the divorce probability among mature adult men and younger adult women. This variable, however, is not statistically significant in younger male and mature female samples. Although presence of long-term health problem lowers the probability of divorce in all samples, it is statistically significant among male mature adults only. More years of schooling influences the divorce decision of both male younger adults and mature adults positively, whereas it has no significant

influence in the female samples. Finally, a larger family reduces the chances of divorce among all males and younger females, whereas it is not statistically significant in the mature female sample. These findings clearly support the evidence from earlier studies that the decision to divorce differs between men and women regardless of whether they are younger adults or mature adults.<sup>3</sup>

It is interesting to note that the variables which influence attitude also differ between men and women, and between younger adults and mature adults. Having own children in the household improves the attitude of mature adult men only. For all women and younger men, this variable is not statistically significant. Presence of long-term health problem has a negative effect on the attitude of all men and older women. For younger women, it is not statistically significant. Employment improves the attitude of all women and younger men. Although positive, this coefficient for mature adult men is not statistically significant at a desired level. Interestingly, white mature adult women have a poor attitude compared to their otherwise identical non-white counterparts. This conclusion, however, is not valid for male younger or mature adults and female younger adults. House ownership improves the attitude of all men and younger adult women only. For mature adult women, this variable is not statistically significant. Finally, as expected, more years of schooling improves the attitude of everyone regardless of their gender and age.

#### IV. Discussion

The results reported in the above section highlights the importance of several important issues that call for further discussion. As expected, presence of a partner outside marriage is found to be detrimental to the stability of marriage and thus it highlights the importance of loyalty among partners for maintaining a lasting marital relationship. Marriage at an early age seems to be another factor that promotes divorce. A stable marital relationship requires mental maturity of both partners. Such maturity, however, grows with age. The study thus highlights the importance of marriage at an age when both partners are ready to pursue a lasting relationship. Appropriate counselling at an appropriate age to discourage extra-marital relationship and early marriage may thus lower the probability of marital separation. Note that presence of a larger family and home ownership are found to lower the probability of divorce, and thus the role of family in promoting stable marital relationship through appropriate counselling cannot be underestimated.

As expected, positive attitude is found to lower the probability of divorce regardless of the estimation method used, and thus it acts as a shield against the likelihood of marital separation. Evidence of a recursive relationship between marital separation and positive attitude obtained under the two-stage estimation procedure proposed in this study indicates that positive attitude may have a negative causal effect on marital separation decision, and thus may be used as a policy instrument to lower the incidence of divorce. Any policy to improve the attitude of an individual may in fact have a favorable effect on his/her marital relationship.

One of the primary contributions of this study is to examine the simultaneous relationship between marital separation and positive attitude. This relationship, however, is found to exist among mature adult women only. In other words, positive attitude, while influencing the divorce decision of older adult women, is also influenced by their probability of divorce. The hypothesis of a simultaneous relationship between marital separation and positive attitude introduced in this study cannot therefore be rejected completely. In fact, it is this simultaneous relationship that led to our proposed two-stage estimation which confirms the presence of a recursive relationship with causal implications mentioned in the above paragraph.

Our results indicate that some of the variables which influence probability of divorce and attitude differ significantly not only between men and women, but also between younger adults and mature adults. These results may thus provide guidance to researchers and policy makers to design appropriate policies for improving attitudes of individuals and thereby lowering chances of marital separation among men and women of all age-groups.

#### V. Conclusion

With a view to testing whether the marital separation status of an individual is related to his/her attitude to life, we drew two samples from the NLSY79 – one for younger adults and the other for mature adults. Using traditional single equation estimation methods in both cross-sectional and longitudinal frameworks, we first demonstrate that positive attitude is an important covariate of an individual's marital separation decision. Exclusion of this variable from the set of covariates may therefore result in biased estimates. Further, by implementing Maddala's two-stage probit

procedure we verified whether these two variables are related to each other simultaneously. Our results indicate that a simultaneous relation between marital separation and positive attitude remains valid among mature adult women. These two-stage estimates also provide further support to our original hypothesis that positive attitude is a significant covariate of an individual's marital separation decision regardless of whether he/she is a younger adult or a mature adult. By estimating both marital separation and positive attitude equations separately for men and women, the study further confirms the earlier finding that the covariates of marital separation differ significantly between men and women.

We conclude with a few precautionary notes. First, the variable restrictions in both marital separation and positive attitude equations under our two-stage estimation was necessary for the identification of both equations. Some of these restrictions were also imposed to avoid singularity of the variance-covariance matrix of variable coefficients. With a different variable specification and different identifying restrictions, both equations of our simultaneous equations model may be estimated more efficiently, and consequently our results should be interpreted with caution. Second, the results obtained in this study are based on the US data. They are also from an earlier period. We had no choice but to use this data from the NLSY79 because positive attitude is a very rare variable which is hardly available in most widely used recent data sets. Use of data from more recent periods and from other cultures may yield different results. Our findings, although standard in the literature, should not therefore be generalized to other cultures. Finally, this study examines the correlation

between positive attitude and marital separation, and by no means claims with certainty the presence of a causal connection. Although due to the evidence of a recursive relation we have conjectured the possibility of a causal relation, it is not conclusive without further tests. Other evidence is necessary to make such a strong claim. The findings of this study should therefore be carefully interpreted. Note, however, that the study at least confirms the presence of a strong correlation between positive attitude and marital separation, which itself has enough predictive value that calls for important policy proposals.<sup>2</sup> The importance of the findings of this study should not therefore be underestimated.

**Conflict of Interest:**

The author has no competing interests to declare that are relevant to the content of this article.

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