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Burning the Candle at Both Ends: Extramarital Sex as a Precursor of Marital Disruption

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Abstract

This study examines several aspects of the association between engaging in extramarital sex and the disruption of one's marriage. In particular: is there a differential effect on disruption depending on the gender of the perpetrator? Is the effect of infidelity primarily due to its negative impact on marital quality and one's resistance to divorce? Are there characteristics of marriages that condition the effect of infidelity? Panel data on 1621 respondents followed from 1980 – 2000 in the Marital Instability Over the Life Course survey were utilized to answer these questions. Interval-censored Cox regression analysis revealed several noteworthy findings. Reports of problems due to extramarital involvement were strongly related to marital disruption, even holding constant the quality of the marriage. Although men were about three times more likely to be the cheating spouse, there was no difference in the effect of an affair on the marriage according to gender of the cheater. Approximately 40% of the effect of extramarital sex on disruption is accounted for by the mediating factors. Two moderators of infidelity's positive effect on disruption were found: the effect was substantially stronger for very religious couples, but weaker when the wife was in the labor force.

Keywords

extramarital sex; marital disruption; longitudinal study; Cox regression; marital quality

My candle burns at both ends; It will not last the night; But ah, my foes, and oh, my friends – It gives a lovely light!

-Edna St. Vincent Millay, "First Fig"

Despite the near-universal endorsement of the norm of fidelity in marriage (Treas & Giesen, 2000), national survey data suggest that as many as a quarter of respondents have engaged in extramarital sex (EMS) at some juncture in their marriage (Atkins, Baucom, & Jacobson, 2001; Atkins & Kessel, 2008; Blumstein & Schwartz, 1983; Forste & Tanfer, 1996; Treas & Giesen; Whisman & Snyder, 2007). The violation of this norm, when discovered, has a severe impact on marital life. Extramarital affairs have been cited as a reason for marital separation by 31% of men and 45% of women (Atwood and Seifer, 1997). And infidelity has been found to be the most commonly reported reason for divorce, as well as the single strongest proximal determinant of divorce in survival analyses (Amato & Previti, 2003; Amato & Rogers, 1997). Despite the existence of numerous studies on the topic, several questions remain unanswered about the impact of EMS on the course of a marriage. For example, does it have a differential effect, depending upon whether the husband, the wife, or both spouses engage in this behavior? Is the damage inflicted by EMS largely realized through its effect on marital satisfaction, intensity of conflict, or companionate activity? And

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perhaps most importantly, what factors influence whether a marriage characterized by the revelation of EMS disrupts, as opposed to remains intact?

In this study I address these issues. In the process I attempt to remedy problems that have hampered many prior efforts. Much previous work on the topic of EMS has employed a particular year of the General Social Survey to study the phenomenon (e.g. Atkins et al., 2001; Atkins & Kessel, 2008; Burdette, Ellison, Sherkat, & Gore, 2007; Wiederman, 1997). Given that these data are strictly cross-sectional, it is not possible to examine the ways in which EMS affects the risk of disruption using them. Moreover, it is not even clear that any EMS reported in these studies pertains to the current marriage (Atkins et al.). Other studies that attempt to address the influence of EMS on relationships or the factors that condition such influence have often been based on very small and highly localized samples (e.g., Buunk, 1987; Charny & Parnass, 1995). In contrast, I take advantage of a national probability-based, six-wave panel study of U.S. marriages followed over 20 years' time. The dataset is unique in embedding a question about EMS in a sequence of queries about problem behaviors in the marriage. These were asked in each wave of the study. This facilitates a prospective approach in which the reporting of EMS in a given wave can be examined as a predictor of the state of the marriage in the next wave or waves. Additionally, there is a sufficient number of EMS reports to parse out the differential effects of EMS according to gender of the perpetrator. First, however, I fashion a set of hypotheses based on relevant theory and past research on this understudied topic.

Theoretical Considerations

The Meaning of, and Motivation Behind, Extramarital Sex

Not all extramarital involvements are problematic. Although an uncommon arrangement, spouses sometimes agree not to be sexually exclusive. Witness the marriage of Edna St. Vincent Millay, the Pulitzer Prize-winning poet who openly had multiple love affairs with both men and women and celebrated her daring sexuality in popular verse (Milford, 2001). Other married people join "swinging" clubs with the purpose of meeting similarly open-minded couples who are willing to exchange spouses for sex (Bartel, 1971). And some couples, although not openly endorsing infidelity, may nevertheless share an understanding that discreet liaisons with others can be forgiven (Blumstein & Schwartz, 1983). These exceptions notwithstanding, the majority of married persons expect their spouses to be sexually exclusive. For example, Treas and Giesen's (2000) analysis of the 1992 National Health and Social Life Survey revealed that 99% of respondents both expected their spouses to have sex only with them and assumed that their spouses had the same expectation. It is EMS that is a violation of such expectations and that precipitates marital distress when discovered that is the subject of the current study.

Given the universality of proscriptions against EMS, how does a substantial minority of the marital population become entangled with other sexual partners? Entering into adulterous affairs is rarely anyone's goal at the outset of a marriage. Scholars suggest, instead, that EMS is the result of "...an unfolding definitional process whereby a rationale for the activity is created over a period of time" (Allen et al., 2005, p. 114). Although behavior is often easily governed, feelings are not. During the course of routine activities we may meet others who are sexually attractive to us. Whether anything more than mild flirtation develops depends upon motivation and opportunity. People may be motivated to engage in EMS by needs that go unfulfilled in their own marriage. For example, they may be dissatisfied with their sexual or emotional relationship with the spouse. Or they may want to "even the score" because the relationship is imbalanced in terms of the exchange of resources (Prins, Buunk, & VanYperen, 1993). On the other hand, an opportunity for EMS must also present itself.

There must be a willing partner whose attractiveness outweighs the potential risks undertaken in such a venture.

A promising theory concerning the motivation for EMS is the *intimacy vs. passion* argument proffered by Baumeister and Bratslavsky (1999). Their thesis rests on the notion that intimacy and passion cannot both be maximized at the same time. In a long-term intimate relationship, such as marriage, the waxing of intimacy inevitably leads to the waning of passion. They define intimacy as involving the "mutual disclosure of personal information resulting in an empathic, sympathetic, mutual understanding that enables each person to feel that the other understands him or her" (Baumeister & Bratslavsky, p. 51). In contrast, passion is defined as strong feelings of attraction for the other, characterized by "physiological arousal and the desire to be united with the other person in multiple senses" (Baumeister & Bratslavsky, p. 52). The crux of their argument is that passion is proportional to the first derivative of intimacy with respect to time. It develops slowly in the first stages of mutual acquaintanceship. As there is more and more self-disclosure by both parties to a relationship, the rapid increase in mutual understanding and revelation of emotions generates a particularly intense degree of passion. However, over time, as in marriage, there are fewer and fewer new revelations about the other to be discovered. And after a long enough time, there is very little about the spouse that is not already well understood. When the flow of new information slows to a trickle, the slope of intimacy with respect to time is flat, and passion dies. The allure of an extramarital relationship is the opportunity it can offer for the rekindling of passionate arousal.

Impact of EMS on Divorce

Although there is a large literature on the causes of divorce, far fewer studies exist on the role that EMS plays in relationship disruption. To date, the most systematic study of the effect of EMS on marital stability using a national probability sample has been undertaken by Amato and colleagues (Amato & Previti, 2003; Amato & Rogers, 1997; Previti & Amato, 2004). They utilized the survey of Marital Instability Over the Life Course (Booth, Johnson, Amato, & Rogers, 2003), a longitudinal panel study conducted between 1980 and 2000. This is one of the few datasets known to ask a question about EMS in each wave of the study. The authors found that, among 208 respondents interviewed about their reason for divorcing, infidelity was given by both genders as the most common reason. Nonetheless, women were more likely than men to mention this as the reason. In survival analyses of marital disruption, the authors found EMS to have the strongest effect in a predictor set that included spending money foolishly, drinking or using drugs, jealousy, having irritating habits, and moodiness (Amato & Rogers). On the other hand, the authors also found that divorce proneness was a significant predictor of engaging in EMS (Previti & Amato, 2004). Other work has been of limited generalizability, due to being based on other cultures or small, localized samples within the U.S. Betzig's (1989) analysis of a cross-cultural data bank showed adultery to be the most frequent cause of divorce across 160 different societies. Several other causes listed were also either directly or tangentially connected to adultery, including cruelty (often due to a wife's adultery), disobedience, disrespect, cospouse conflict, elopement, and lack of virginity. Charny and Parnass' (1995) analysis of a convenience sample of practicing therapists found that over 85% of marriages characterized by affairs either ended or continued only in a dysphoric state thereafter.

Gender Differences

Although both men and women engage in EMS, there are nevertheless some gender differences in its enactment. For example, men are more likely to engage in the behavior: Allen and colleagues' (2005) review concludes that 22–25% of males vs. 11–15% of females have ever engaged in EMS, according to published studies. According to Barta and

Kiene's (2005) college-student informants, men's affairs are primarily driven by a need for sexual excitement and variety. Their likelihood of extradyadic involvement is not dependent upon their satisfaction with their primary partner. Women, on the other hand, are more likely to be unfaithful due to unhappiness with the primary partner. And their infidelity is more often motivated by the fulfillment of emotional, instead of sexual, needs. Similar gender differences have also been found among married respondents (Glass & Wright, 1992). Women's affairs tend additionally to be motivated by inequity in marriage, a factor that appears not to precipitate men's EMS (Prins, Buunk, & VanYperen, 1993).

Less evidence is available concerning a possible differential impact of men's vs. women's EMS on a marriage. The cross-cultural evidence suggests that a wife's adultery puts a marriage at risk of dissolution more often than a husband's (Betzig, 1989). Theorizing from an evolutionary psychology standpoint, sexual infidelity is more "costly" when committed by wives than husbands due to the danger that she will be impregnated with another man's child. The husband might therefore invest substantial resources in someone who is not his progeny (Shakelford, Buss, & Bennett, 2002). Whether this is a real concern in the context of the effectiveness of modern-day contraception is not clear. Nevertheless, men have been found to be approximately three times more likely than women to say that a partner's sexual intercourse with another person was more upsetting than a partner's emotional attachment to that person (Shackelford, et al.). Men also find it more difficult than women to forgive sexual vs. emotional infidelity and are more likely to say they would break up in response to sexual vs. emotional infidelity (Shackelford, et al.). In light of the foregoing, and in view of women's EMS involving both a stronger emotional connection to the extradyadic partner and dissatisfaction with the spouse, I expect that wives' EMS will have a stronger effect than husbands' on the risk of marital disruption.

Mechanisms Through Which EMS Precipitates Disruption

Previti and Amato (2004) is one of the only studies that has examined the mediators of the effect of EMS on divorce. They found that part of the impact of EMS on the odds of disruption was accounted for by a reduction in marital satisfaction and an increase in divorce proneness. Extramarital sexual involvements represent a violation of trust and may therefore dramatically alter a partner's perception of the offending spouse (Buunk, 1987). Because of the secrecy surrounding affairs (Richardson, 1988), their revelation typically comes as a shock. Suddenly the adulterer is not who he or she appeared to be, but is found to be leading a "double life." This disturbance in the marital system (Papero, 1990) can have several ramifications, including a reduction in the quality of the marriage, a more favorable outlook on divorce, and possibly a wife's enhanced participation in the labor force to establish financial independence in the event of a breakup (Teachman, 2010a) *I expect that the impact of EMS will therefore be mediated by a lowering of marital satisfaction and the amount of time the couple spends together, an escalation of conflict to the point of violence, a more favorable attitude toward divorce, and the movement of unemployed housewives into the labor force.*

Factors that Condition the Impact of EMS on Disruption

Very little theory or research has addressed what might moderate the impact of EMS on the course of a marriage. One of the few exceptions is the work of Buunk (1987). He compared two samples of married and cohabiting couples, all of whom had experienced extradyadic sexual involvement by one or both partners. The breakup group (22 couples) was matched on several demographic characteristics with the control group (22 couples), who remained together. He found that the most important factor discriminating the two groups was the quality of the primary relationship: The breakup group was significantly higher on both relationship dissatisfaction and relationship conflict, compared to the controls.

Unfortunately, as the study was retrospective, it was not possible to determine whether the tenor of the primary relationship was exogenous or endogenous to the experience of EMS. In particular, as acknowledged by the author, it was also possible that the breakup couples attributed greater dissatisfaction and conflict to their recalled relationships to justify having left them.

Building upon this work, as well as the extensive literature on factors associated with marital disruption, I consider a number of potential moderators of the effect of EMS. According to Levinger's (1976) typology of the forces affecting disruption, individuals who experience greater attractions to a marriage and more barriers to leaving it are more likely to remain married, all else equal. The quality of a marriage represents its primary attraction for most individuals. Following Buunk (1987), therefore, *I expect that those with higher pre-existing marital quality or whose marital quality is not as affected by the EMS, compared to others, will have a lower risk of disrupting*. Similarly, those who have been married longer or who have children present have more invested in their marriages (Rusbult & Martz, 1995) and their loss in the event of disruption represents a barrier to divorce. *I expect that EMS will have a weaker impact on disruption if there are children present and the longer the couple has been married at the beginning of observation.*

The extent to which EMS is a violation of deeply held moral convictions influences how traumatic its revelation is to the "victimized" spouse. Those who are very religious, those who are less sexually permissive, and those with a more idealistic view of marriage are most likely especially traumatized by the experience. These observations motivate the following hypotheses. I expect EMS to have a stronger effect on disruption among the very religious. Of course, it is also possible that EMS will have a weaker effect on the risk of divorce for the very religious. Many religions, with Christianity being perhaps the most striking example, place special emphasis on the forgiveness of transgressions (Mahoney, 2005; Mahoney, Pargament, Murray-Swank, & Murray-Swank, 2003). Those who adhere to this principle should therefore make more of an effort to forgive the offending spouse in order to heal their marriage. As all hypotheses are tested using two-tailed significance levels, I will let the data adjudicate which of these competing hypotheses regarding religiosity has more support. Because premarital cohabitors were more sexually permissive than noncohabitors in the 1980s (DeMaris & MacDonald, 1993), I expect EMS to have a weaker effect on disruption among those who cohabited with the future spouse before getting married. Individuals who have been married at least once before or those whose parents have divorced should have a less idealistic conception of marriage than those without such experiences. Hence, EMS should have a weaker effect on the risk of disruption for those with a history of previous divorce or parental divorce. Minorities may also have a less idealized view of marriage because their divorce rates are higher than for Whites (Orbuch, Veroff, Hassan, & Horrocks, 2002; Phillips & Sweeney, 2005; Teachman, 2002, 2010b). I therefore expect that EMS will have a weaker effect on disruption for minorities.

Those who are more accepting of divorce as a solution to marital difficulties should be more receptive to terminating their marriages upon the discovery of EMS. *I expect that EMS will have a stronger effect on divorce, then, among those with a greater tolerance for divorce.* EMS may well precipitate couples' seeking the help of a marital counselor or therapist. Such therapy may then offset the distress induced by the experience and help the couple to cope with it. Hence, *I expect that guidance received by professional counselors will buffer the effect of EMS.* Finally, wives who are in the labor force have an independent means of economic support in the event the marriage were to end. Accordingly, wives' employment and income have been found to elevate the risk of marital disruption, especially among unhappy couples (Schoen, Astone, Rothert, Standish, & Kim, 2002; Teachman, 2010a). Because of the larger social network created by being in the work force, working wives are

also less psychologically isolated than their stay-at-home counterparts. In view of this, *I* anticipate that EMS will have a greater effect on disruption when the wife is employed outside the home.

Control Variables

Finally, included in the current analysis are control variables that have been found in previous research to be predictors of marital disruption (Amato, 2010; Lehrer, 2008; Lehrer & Chiswick, 1993; Schoen, et al., 2002; Teachman, 2002). These include Catholic religious affiliation, educational attainment, family income, age at marriage, and respondent gender.

Method

The Data

Data are taken from the survey of Marital Instability over the Life Course (Booth, et al., 2003). This is a panel study of individuals in the continental U.S. between the ages of 18 and 55 in 1980, with a telephone, who were married and living with the spouse. The sample was selected using a random-digit-dialing cluster technique, with a second random procedure determining whether to interview the husband or wife. Data were collected via telephone interviews and mail-back questionnaires. Follow-up re-interviews were conducted in 1983, 1988, 1992, 1997, and 2000. The initial sample consisted of 2,033 respondents, which represents a 65% response rate among eligible households. The percent of each previous panel that was successfully re-interviewed in the five successive follow-ups was: 78, 84, 89, 90.3, and 90.2, respectively. By 2000 only 962 of the original respondents remained in the study. Hence, attrition was greatest in the first follow-up interview, and then decreased in subsequent waves. The most common sources of attrition were refusal and inability to locate the respondent (Booth et al.).

Two subsamples of the dataset were used for the current study. The unrestricted sample consists of the 1621 respondents who had valid information on the state of the original (1980) marriage in at least the first (1983) follow-up interview, and who did not have missing data on the 1980 question regarding EMS (see below for a description of this item). All tabled statistics are based on this sample. A second subsample, the *restricted* sample, was employed for performing sensitivity analyses, based on limitations connected with the unrestricted sample. This latter sample consisted of the 1291 respondents who reported that they had never experienced EMS in 1980, that they were still in the original marriage by 1983, and who had valid information on the state of the original marriage in at least the second (1988) follow-up interview. The restricted sample represents a more pristine dataset for the current problem. The restriction that marriages not have been subject to EMS before 1983 made it is possible to use several pre-existing characteristics of the marriage, such as 1980 marital quality, wife's employment, and so forth, as potential moderators of EMS's effect. However, this restriction also severely limited both the number of disruptions and the number of EMS cases, with an attendant loss of statistical power. In the unrestricted sample, there are 184 marriages characterized by EMS and 323 marital disruptions. For the restricted sample, these numbers become 91 and 183, respectively. The additional limitations imposed to arrive at the restricted sample also create added sample selectivity, resulting in a greater danger of selection bias. It turns out, however, that results are largely the same (with one exception, to be discussed below) using either subsample. However, because of the greater power and generality afforded by the unrestricted sample, I focus on those results for most of this paper. This study differs from that of Previti and Amato (2004), which examined the effect of EMS on divorce using the same dataset, in a number of key ways. First, Previti and Amato used the restricted sample described above but with fewer cases (1123) because they did not include the year 2000 survey wave. Additionally, whereas they examined EMS

occurring in either 1983 or 1988, I captured EMS occurring any time between 1980 and 1997 and modeled it as a time-varying covariate. Finally, they did not examine whether any factors conditioned the effect of EMS on disruption.

Measures

The outcome variable is the log hazard of disruption in a given time interval. Individual marriages were considered to have disrupted if the respondent reported, in any survey wave from 1983 through 2000 that he or she had separated from or divorced the spouse, or that he or she was remarried. Individuals who reported being widowed were considered right-censored in the survey wave in which widowhood was reported. Individuals who were lost to follow-up were considered censored in the last wave in which their marriage was intact. Although it is possible to calculate time to disruption in years (see, e.g., Amato & Rogers, 1997; Previti & Amato, 2004), information on the timing of EMS is limited to its occurrence being reported in a given survey wave. This also applies to several other time-varying covariates of importance, such as wife's employment status and marital quality. For consistency, therefore, I treat the data as interval-censored and apply an appropriate model (see below) that is robust to interval length.

Independent variables consist of both time-varying and time-invariant factors. All timevarying factors are lagged by one wave to avoid endogeneity problems. Hence, reports of EMS or marital quality associated with disruption in 1983 were taken from 1980, and so forth. This also means that all time-varying covariates are based on the survey waves from 1980 through 1997. All time-invariant covariates are taken from the 1980 survey.

The occurrence of EMS is a time-varying covariate. It was assessed with the following question: "I'd like to mention a number of problem areas. Have you had a problem in your marriage because one of you..." followed by several potential problem choices, including "Has had a sexual relationship with someone else?" Response choices were "no," "yes, spouse," yes, self," or "both." For most analyses, this was collapsed into a dummy variable coded 1 for any EMS engaged in by either spouse and 0 for no EMS reported. Certain analyses, however, utilized more gendered versions of the variable, with dummies distinguishing his EMS from her EMS. These are discussed, in turn, below. As previously acknowledged (DeMaris, 2009; Previti & Amato, 2004), the incidence of EMS is most likely underestimated by this item. A report in the affirmative requires that respondents be aware of the EMS, experience problems because of it, and be willing to acknowledge it to the interviewer. Although this item has been used as a measure of "infidelity" in previous work using these data (Amato & Previti, 2003; Amato & Rogers, 1997; Previti & Amato), its wording precludes the conclusion that it is tapping "cheating," per se. Answers to the item may also reflect a nonexclusive sexual arrangement that was initially acceptable to both spouses, but nevertheless eventuated in problems for the marriage. Most affirmative responses probably do reflect sexual infidelity, however. I therefore use EMS interchangeably with such terms as "cheating" and "infidelity" throughout this paper.

Several other covariates are also time-varying measures. *Counseling about marital problems* is based on the respondent's report of whether either spouse talked with relatives, friends, or a counselor about problems in the marriage. This is admittedly a very imprecise measure of the receipt of professional counseling, but to the extent that such counseling was received, it is reflected in this variable. *Preschool child at home* and *school-age child at home* are dummies tapping the presence of children of different ages in the home. *Family income in thousands* is a continuous family-income measure. *Occurrence of intimate violence* is a measure of the intensity of conflict, and, therefore, of marital quality. It is a dummy reflecting the respondent's report that the marriage has been characterized by spouses slapping, hitting, pushing, kicking, or throwing things at one another. *Wife is employed* is a

dummy variable reflecting either part-time or full-time employment of the wife. Two other covariates are also measures of marital quality. *Marital interaction scale* is a summated scale of five items reflecting how often spouses do such things as eating the main meal together or go shopping together. Alpha reliabilities across waves range from .63 to .70. *Marital satisfaction scale* is an 11-item scale using items reflecting the respondent's degree of satisfaction with various aspects of the marriage, such as the extent of understanding received from the spouse, the extent of agreement about things, and so forth. Alpha reliabilities across waves range from .87 to .90. *Tolerance of divorce* is a six-item scale measuring the respondent's approval of divorce. A typical item is "The personal happiness of an individual is more important than putting up with a bad marriage." Alpha reliabilities range from .62 to .67 across waves.

All other covariates are time-invariant. Years married in baseline survey is the number of years the respondent had been married when originally surveyed in 1980. Ever separated due to marital troubles, also a measure of marital quality, is a dummy identifying respondents who had experienced a marital separation due to conjugal discord. Cohabited before marriage is a dummy identifying respondents who had lived with the current spouse before getting married. Minority respondent is a dummy for respondents who identified their race as other than non-Hispanic White. (A measure of spouse's race was not available until the 1983 wave.) Either spouse's parents have divorced is a dummy flagging respondents for whom either their or the spouse's parents had divorced. *Couple is very religious* is a dummy identifying "very religious" couples. This assessment is based on three questions asked of the respondent: two asked how much the respondent's beliefs influenced his or her daily life and how much the spouse's beliefs influenced his or her daily life. The third asked how often husband and wife attended church together. Very religious couples were those in which the respondent reported that religious beliefs influenced both spouses' lives "very much" and that the couple attended church together weekly or more. First marriage for both spouses is a dummy flagging marriages that were the first for both spouses. Both spouses are Catholic is a dummy identifying marriages in which both spouses were Catholic. Male respondent is a dummy identifying the husband as the respondent to the survey. Husband's education and wife's education are each coded in years of schooling completed. Respondent's age at marriage is the respondent's age in years at the current marriage. All continuous predictors, whether time-varying or invariant, were centered around their sample means with the exception of number of years married, which has a meaningful zero.

Statistical Model

I modeled the log hazard of marital disruption using the interval-censored proportionalhazards model (Hosmer & Lemeshow, 1999). In that marital duration until disruption is theoretically continuous, the data can be conceptualized as having been generated by the Cox model. However, when survival times are grouped into intervals, an appropriate estimator of the underlying model is the complementary log-log regression function applied to person-period data. Respondents contribute observations to this dataset for as many intervals as they are still at risk of disruption after 1980, for a maximum of five observations per person. The dependent variable in the analysis is a binary indicator of disruption, coded 0 for all observations except the one in which disruption occurs, in which case it is coded 1. Censored cases are coded 0 throughout. This resulted in a total of 5606 observations for analysis. Consistent with the unconstrained hazard function of the Cox model, time intervals were represented by dummies in the model, with the first (1980 - 1983) interval as the reference category. Estimators are arrived at using maximum likelihood. Measures of fit designed for logistic regression, such as the Hosmer-Lemeshow statistic are not appropriate for this technique (Hosmer & Lemeshow). However, I present two R-squared analogs for the analyses: R_{GSC}^2 , the Cox and Snell measure recommended by Allison (2010), although I use

the normed version (DeMaris, 2002), and R_{PM}^2 , the measure recommended by Choodari-Oskooei and colleagues (Choodari-Oskooei, Royston, & Pamar, in press), designed for the Cox model. *Years married in baseline survey* is included in all models to adjust for left truncation, following the practice of others using these data (Amato & Rogers, 1997; Previti & Amato, 2004).

Addressing Missing Data

Missing-data problems were by no means severe. The greatest percentage of missing data was for wife's employment status in 1980, with 10.3% of cases missing values on this variable. The second-greatest percent missing was for income in 1997, with 5.3% of cases missing values. This was initially handled by simple replacement of missing data with sample means (or modes, for categorical variables), specific to gender and time interval, where appropriate. Nevertheless, all models displayed in the table below were re-estimated using multiple imputation (Allison, 2002) to replace missing data. With one slight exception (noted in the table footnotes), coefficients and significance levels were unchanged from the simpler procedure. I also employed several ancillary wald and nested Chi-squared statistics to test for coefficient differences in the analyses. These were not compatible with multiple imputation, as test statistics cannot be legitimately averaged over replicated analyses (Paul Allison, personal communication). Therefore, for consistency in the statistical treatment of the data, results using the simpler imputation strategy are presented throughout this paper.

Evaluating Sample-Selection Bias

Selectivity created by missing data on EMS or on marital status in subsequent waves could not be addressed using either multiple imputation or the sample-selection model advocated by Heckman (1979). Many of the focal independent variables, such as EMS or marital quality measures, were time-varying covariates that were automatically missing for those not followed up after 1980. Instead, I relied on a regression of sample inclusion status on the model covariates that were measured in 1980 (not shown) to assess the potential for selfselection to bias the results. Of the original 2033 respondents in MILC, 17 observations were missing data on EMS in 1980 and were dropped from this analysis. Of the remaining 2016 respondents, 1621 were included in the unrestricted sample (inclusion status = 1) and 395 were excluded (inclusion status = 0). Missing data on the regressors were replaced by simple mean/mode imputation. A logistic regression model for inclusion status showed that nonminorities, more educated respondents, more religious respondents, and those who had gotten marital counseling were more likely to be included in the analytic sample. Of note, however, is that neither EMS nor marital quality indicators nor the two interaction terms that emerged in later analyses (see below) were significant predictors of inclusion. Therefore, although selectivity bias may be distorting the effects of some model predictors (e.g. religiosity, marital counseling) other focal variables in the analysis, such as EMS and marital quality, do not appear to be so affected.

Results

Sample Characteristics

Table 1 presents descriptive statistics for all study variables. A few characteristics are worthy of commentary. About 20% of marriages disrupted after 1980. This is somewhat low, considering that approximately 50% of all marriages break up today (Cherlin, 2009). However, it is not that surprising given attributes of this sample. Over 80% of marriages were the first for both spouses (first marriages experience a lower disruption rate than higher-order ones [Schoen et al., 2002]), and the average marriage had already lasted almost 13 years when respondents were first interviewed. The rate of occurrence of EMS, at 11.4%,

is not very high, and is perhaps suppressed due to underreporting. Of the 184 cases of EMS reported, 120 reflected husband's EMS, 42 cases wife's EMS, and 22 cases both spouses' EMS (not shown in Table 1). Thus, husbands were close to three times more likely than wives to be the extramaritally involved party. About 12% of marriages had experienced a separation due to marital difficulties, while 15.2% of spouses had cohabited before marrying. Approximately 19% of marriages contained "very religious" spouses. Approximately half of the risk periods show marriages "receiving counseling" at some point. How much of this is from clinicians or other professionals is uncertain. Just over a quarter of risk periods are characterized by intimate aggression. On the other hand, marriages appear reasonably happy, with marital interaction and satisfaction scales' means both not much more than one standard deviation from their maximums, suggesting left-skewed distributions.

Multivariable Results

Table 2 presents interval-censored Cox regression coefficients for a series of models of disruption. Model 1, the "zero-order" model, shows the effect of EMS on the log hazard of disruption to be substantial. Marriages reporting problems due to extramarital involvement have hazards of disruption that are elevated by a factor of exp(1.328) = 3.77. That is, the hazard of disruption associated with EMS is almost four times the magnitude of marriages without such problems. The pattern of the dummy coefficients contrasting subsequent follow-up periods with the first suggests a declining hazard. However, this may well be the product of unmeasured heterogeneity (Teachman, 2011). Not surprisingly, the longer the marriage had endured by the baseline survey, the lower the hazard of disruption at any time.

Does it matter who does the cheating? In models not shown here I substituted dummies for husband's EMS vs. wife's and both spouses' EMS—the latter both in one category due to small cell sizes. Both coefficients were very significant. Although the coefficient for his EMS was larger than for hers/both (1.411 vs. 1.169, respectively), a wald test revealed no significant difference between the effects. In another model, I used three dummies, representing his EMS, her EMS, and both spouses' EMS. Again, all three coefficients were very significant. The coefficients were, respectively, 1.411, 1.115, and 1.269. But, as before, testing suggested no significant differences among the three coefficients. According to the evidence so far, at least, it does not appear to matter which gender is involved in extramarital sex. An elevated risk of disruption is the consequence in any case.

Model 2 adds the block of primarily demographic controls to the equation, but excludes EMS. Three of these factors are significant predictors of disruption. Having separated in the past due to marital troubles is associated with an elevated risk of disruption, whereas being in a first marriage is associated with a reduced risk. Counseling with others about marital problems, contrary to expectation, is associated with a significantly enhanced risk of disruption. However, this is in all likelihood a "stress mobilization" effect (Cummings & Pargament, 2010, p. 32). That is, marriages that are in the most distress tend both to trigger counseling and to eventuate in disruption. Model 3 adds EMS again to the equation. Its effect is diminished but still highly significant, and represents an increase in the hazard of disruption by a factor of $\exp(.89) = 2.44$, net of control variables. Having separated and being in a first marriage are no longer significant predictors of disruption. Some of their influence on disruption is apparently due to their association with the likelihood of being involved in EMS. The effect of counseling is also reduced, but still significant.

Model 4 adds the mediating variables tapping marital quality, tolerance of divorce, and wife's employment. Three have significant effects on the risk of disruption. Hence, that risk is enhanced when the wife is employed, but reduced the greater the time spent in joint activities by the spouses and the greater respondents' marital satisfaction. The effect of EMS

is reduced by about 42% with the mediators in the model. According to the test devised by Clogg and colleagues (Clogg, Petkova, & Haritou, 1995), the reduction in its coefficient is very significant, suggesting that some of the effect of EMS is realized via its effect on the mediating variables. Nevertheless, the effect of EMS is still quite significant in this model. Its coefficient of .513 suggests that even controlling for the quality of the marital bond, tolerance of divorce, and wife's employment, the occurrence of EMS brings about a 67% increase in the hazard of disruption. In this model, once again, I tested whether any difference obtained in the effect of EMS, depending upon gender of the perpetrator (not shown). As before, no differences were observed in the strength of the EMS effect, regardless whether it was he, she, or both spouses who were extradyadically involved.

Following this model I tested for the interaction effects hypothesized above between all covariates in Model 4 and EMS. Only two such terms were significant, and these are shown in Model 5. As is evident, both religiosity and wife's employment moderate the effect of EMS on disruption. In particular, EMS has a significantly stronger adverse effect on marital stability among very religious, as opposed to not very religious, couples. And, contrary to expectation, wife's employment buffers the effect of EMS; that is, EMS has a less damaging effect when the wife is employed vs. unemployed. To assess whether gender of perpetrator could be confounding the effect, I re-tested the interaction between EMS and wife employment after distinguishing his EMS from her/both spouses' EMS. Both interaction effects were negative, and there was no significant difference between them. This suggests that the aforesaid interaction effect is invariant to gender of the perpetrator. R-squared analogs in this final equation suggest a model with modest predictive power. Figure 1 displays predicted survival functions based on Model 5 for eight groups, distinguished by whether or not EMS was reported, the wife was employed, and the couple was very religious. The top four curves are all for marriages without EMS; the bottom four are for those with EMS. The highest survival function is for marriages without EMS that are very religious and in which the wife is unemployed. The lowest survival curve is for the same characteristics except with the occurrence of EMS.

Sensitivity Analyses with the Restricted Sample

The finding that wife's employment buffers rather than exacerbates the effect of EMS was puzzling. However, the measure of her employment in the unrestricted sample is contemporaneous with the report of problems due to EMS. It is possible in some cases that her employment is a *response* to difficulties precipitated by the revelation of infidelity. In that case, participation in the labor force could afford a needed respite from tensions in the home and facilitate coping with marital distress. In view of this, I re-investigated the research questions using the restricted sample described above (see Method section). In this instance, all time-varying covariates, such as wife's employment, marital quality, and so forth, could be parsed into their pre-EMS (1980) states vs. their time-varying, and therefore contemporaneous-with-the-EMS, states. The results were, for the most part, unchanged, except that the interaction of EMS with being very religious was not significant. The notable exception to a congruence in results was that the interaction between EMS and wife's 1980 employment was significant, and in the expected direction. That is, the elevation in the risk of disruption associated with EMS was significantly stronger if the wife was employed in 1980, consistent with expectation. In contrast, the interaction of EMS with wife's contemporaneous employment was in the opposite direction: wife's contemporaneous employment buffered the impact of EMS. Although not significant, most likely due to a decrease in power, this interaction term, whose value was -.699, was virtually identical to that shown in Model 5 in Table 2 (-.712). A wald difference-of-coefficients test (not shown) verified that the pre-existing vs. contemporaneous wife-employment interaction effects in the restricted analysis were significantly different.

Discussion

Extramarital sexual involvement has the potential to be very destructive to marriages and families. Although studies of EMS abound, far fewer have considered the effect of this behavior on the course of a marriage. The point of this investigation was to test several hypotheses regarding the impact of extramarital sexual involvement on marital disruption. Special contributions of the current study include, among other things, an examination of a variety of factors expected to condition the impact of EMS on disruption. Given the dearth of research on this topic, the hypotheses that were either not supported or flatly contradicted are as informative as those that received support.

The occurrence of EMS was associated with nearly a four-fold risk in disruption at the outset. However, this effect was reduced to about a two-and-a-half-fold increase in risk after controlling for demographic factors such as race, education, income, and such attributes. Consistent with expectation, the effect was also mediated to some extent by the link between EMS on the one hand, and marital quality, violent conflict, the tolerance for divorce, and a wife's employment, on the other. Nevertheless, even holding constant the quality of the marriage, there is a two-thirds increase in the risk of disruption if EMS is reported. Hence, regardless of how well-adjusted the marriage appears to be, extramarital sexual involvement extracts a cost on marital stability. It was anticipated that wives' EMS would have a stronger effect on disruption than husbands'. This was not supported. It does not matter who the perpetrator is; the elevation in the risk of disruption that ensues is the same. This last result is consistent with Previti & Amato's (2004) analysis of these data.

Of greatest surprise was that so few factors were seen to condition the effect of EMS on disruption. And this was confirmed using the restricted sample, in which pre-existing characteristics of the marriage could be employed as moderators. Regardless of how satisfactory the marriage had been, how long the couple had been married, how disapproving of divorce the respondent was, whether outside counseling had been received, or whether there were young children in the household, the damaging effect of EMS was the same. The one moderating factor that did operate as expected was being very religious. The effect of EMS was substantially stronger among very religious couples, compared to their not very religious counterparts. This is consistent with the elevated sense of descration experienced by the religious regarding the breach of such a strongly held moral principle (Mahoney, 2005).

On the other hand, that EMS had a weaker effect when the wife was employed was contrary to expectation, and defies easy explanation. The analysis showed countervailing trends, depending upon the timing of wife employment. The effect of EMS was exacerbated if she was employed before it was reported, but buffered if her employment was contemporaneous with the report of EMS. Although this latter result was contrary to hypothesis, it does not contradict any previous research, as no other studies have examined this issue. To my knowledge, this is the first study to consider how wife's employment might moderate the impact of EMS on marital stability. I have speculated that EMS could precipitate a wife's entry into the labor force, and that this respite from the home could facilitate coping with EMS' aftermath. Nevertheless, more research is needed on this topic before such speculation can be given any credence.

This study is limited in several ways, largely pertaining to the measurement and context of EMS. In all likelihood, this behavior was underreported. To the extent that underreporting is systematically dependent on respondent attributes, the effect of EMS in this study, as well as its interactions with other factors, could be biased. Even were the tendency to underreport EMS randomly distributed, the measure used in this study is problematic. As it is couched in

terms of problems created for the marriage, it excludes affairs that are either tolerated or as yet undiscovered.

The measure of undergoing counseling for marital problems was also severely constrained. Rather than having a separate series of questions about the respondent's exposure to professional marriage counseling, counselors were only one category of confidants referenced in a single item. In that undergoing professional counseling could prevent EMS from leading to marital disruption, more information about this form of professional intervention needs to be included in future studies.

That the effect of EMS is not entirely accounted for by the mediators examined in the study points to an additional weakness in the data. In particular, nothing is known about the extradyadic partner, and, more importantly, the attractiveness of that person as an alternative to the current spouse. Regardless of the quality of the marriage, a very attractive alternative could easily lead the extramaritally involved spouse to exit the marriage. In order to better understand this phenomenon, future national surveys would need to include more detailed queries about the extradyadic partner in extramarital affairs. This is a sensitive issue that some respondents would refuse to comment on. But the potential gain in understanding of the manner in which EMS affects the course of a marriage makes its inclusion worthwhile.

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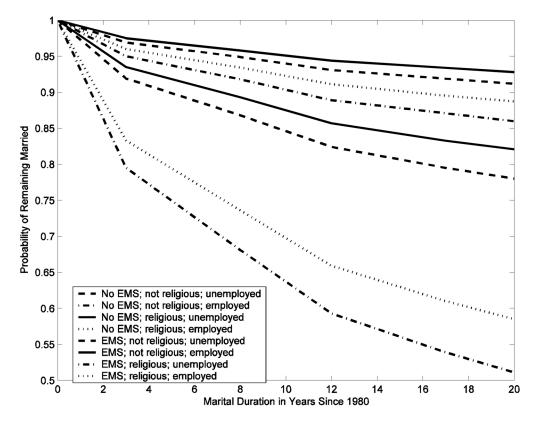
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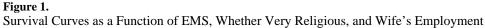


Table 1

Descriptive Statistics for Study Variables

Variable	Range	М	SD
Outcome ^a			
Marriage Disrupted	0–1	.199	.400
Time-Invariant Predictors ^a			
Years Married at Baseline Survey (1980)	0–38	12.859	9.201
Ever Separated Due to Marital Troubles	0–1	.117	.321
Cohabited Before Marriage	0-1	.152	.359
Minority Respondent	0-1	.094	.292
Either Spouse's Parents Have Divorced	0-1	.265	.442
Couple is Very Religious	0–1	.186	.389
First Marriage for Both Spouses	0-1	.811	.392
Both Spouses Are Catholic	0-1	.207	.405
Male Respondent	0–1	.397	.489
Husband's Education	1–26	13.953	2.948
Wife's Education	0–25	13.319	2.310
Respondent's Age at Marriage	14–53	22.737	5.077
Time-Varying Focus Variable ^b			
Occurrence of Extramarital Sex	0-1	.114	.317
Time-Varying Predictors ^C			
Counseling About Marital Problems	0–1	.507	.500
Preschool Child at Home	0-1	.239	.426
School-Age Child at Home	0-1	.530	.499
Family Income in Thousands	2.5-65	38.492	16.916
Occurrence of Intimate Violence	0–1	.268	.443
Wife is Employed	0–1	.682	.466
Marital Interaction Scale	5-20	15.214	2.931
Marital Satisfaction Scale	11–33	28.064	4.111
Tolerance of Divorce	6–24	14.086	2.398

^{*a*}Measured in Baseline (1980) survey; statistics are based on N = 1,621 respondents.

 b Measured from 1980–1997, statistics are based on N = 1,621 respondents.

^{*C*}Measured from 1980–1997; statistics are based on N = 5,606 person-periods.

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Table 2

Interval-Censored Cox Regression Estimates (Standard Errors) for Effects of Model Covariates on the Risk of Marital Disruption

Explanatory Variable	Model 1	Model 2 b	Model 3 b	Model 4 b	Model 5 b
Intercept	$-1.989^{***}(0.113)$	-2.170^{***} (0.234)	-2.184^{***} (0.236)	-2.329^{***} (0.279)	-2.417^{***} (0.288)
Wave 1988	-0.274 (0.145)	$-0.325^{*}(0.148)$	$-0.365^{*}(0.149)$	$-0.412^{**}(0.153)$	$-0.395^{**}(0.152)$
Wave 1992	-0.278 (0.155)	$-0.404^{*}(0.172)$	-0.450^{**} (0.172)	-0.470^{**} (0.176)	$-0.507^{**}(0.177)$
Wave 1997	$-0.640^{***}(0.186)$	-0.738^{***} (0.212)	$-0.815^{***}(0.213)$	$-0.871^{***}(0.217)$	-0.872^{***} (0.217)
Wave 2000	$-1.271^{***}(0.253)$	-1.386^{***} (0.283)	-1.453^{***} (0.283)	-1.474^{***} (0.288)	-1.487^{***} (0.289)
Years Married at Baseline Survey (1980)	$-0.064^{***}(0.007)$	$-0.055^{***}(0.009)$	-0.057^{***} (.009)	-0.062^{***} (.009)	-0.062^{***} (.009)
Occurrence of Extramarital Sex	1.328^{***} (0.137)		$0.890^{***}(0.146)$	$0.513^{***}(0.152)$	$0.980^{***}(0.287)$
Ever Separated Due to Marital Troubles		0.492^{***} (0.146)	$0.366^{*}(0.148)$	0.265 (0.154)	0.295(0.154)
Cohabited Before Marriage		0.202 (0.142)	0.196 (0.142)	0.173 (0.146)	0.160 (0.146)
Minority Respondent		0.065 (0.187)	-0.012 (0.189)	-0.099(0.190)	-0.099 (0.191)
Either Spouse's Parents Have Divorced		0.172 (0.121)	0.104 (0.122)	0.156 (0.124)	0.154 (0.124)
Couple is Very Religious		$-0.393^{*}a$ (0.189)	-0.321 (0.189)	-0.070 (0.194)	-0.227 (0.216)
First Marriage for Both Spouses		-0.477^{**} (0.159)	-0.418^{**} (0.160)	-0.312 (0.165)	-0.303 (0.165)
Counseling About Marital Problems		$0.794^{***}(0.137)$	0.697*** (0.139)	$0.320^{*}(0.147)$	$0.311^{*}(0.146)$
Preschool Child at Home		-0.047 (0.133)	-0.022 (0.133)	-0.015 (0.139)	-0.025 (0.139)
School-Age Child at Home		0.207 (0.078)	0.206 (0.118)	0.099 (0.121)	0.086 (0.120)
Occurrence of Intimate Violence				-0.109 (0.129)	-0.097 (0.129)
Wife is Employed				$0.325^{*}(0.139)$	$0.486^{**}(0.161)$
Marital Interaction Scale				$-0.064^{**}(0.022)$	$-0.064^{**}(0.022)$
Marital Satisfaction Scale				-0.118^{***} (0.014)	$-0.117^{***}(0.014)$
Tolerance of Divorce				0.019 (0.025)	0.021 (0.025)
Occurrence of Extramarital Sex \times Couple is Very Religious					$1.223^{**}(0.472)$
Occurrence of Extramarital Sex \times Wife is Employed					-0.712* (0.322)
Likelihood-Ratio χ^2	189.344^{***}	238.657***	271.102***	423.440^{***}	434.466 ^{***}
R^2_{csc}	0.093	0.117	0.132	0.204	0.209

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	Model 1	Model 2 <i>b</i>	Model 3 b Model 4 b	Model 4 b	Model 5 b
R_{PM}^2		.348	.363	.423	.437
a^{d} Not quite significant ($p < .052$) when employing multiple imputation.	on.				

^bThe model also controls for spouses' educational attainment, family income, gender of respondent, respondent's age at marriage, and whether both spouses are Catholic.

 $^{**}_{p < .01.}$ $_{p < .05.}^{*}$

p < .001.