

# Understanding Infidelity: Correlates in a National Random Sample

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Infidelity is a common phenomenon in marriages but is poorly understood. The current study examined variables related to extramarital sex using data from the 1991–1996 General Social Surveys. Predictor variables were entered into a logistic regression with presence of extramarital sex as the dependent variable. Results demonstrated that divorce, education, age when first married, and 2 “opportunity” variables—respondent’s income and work status—significantly affected the likelihood of having engaged in infidelity. Also, there were 3 significant interactions related to infidelity: (a) between age and gender, (b) between marital satisfaction and religious behavior, and (c) between past divorce and educational level. Implications of these findings and directions for future research are discussed.

Infidelity<sup>1</sup> occurs in a reliable minority of American marriages. Conservative estimates from recent national surveys indicate that between 20% and 25% of all Americans will have sex with someone other than their spouse while they are married (Greeley, 1994; Laumann, Gagnon, Michael, & Michaels, 1994; Wiederman, 1997). Moreover, there is some evidence that infidelity is also detrimental to many relationships. A survey of couple therapists demon-

strated that clinicians view infidelity as one of the most difficult problems to treat in therapy and one of the most damaging issues for a relationship (Whisman, Dixon, & Johnson, 1997). In addition, some couple therapists have estimated that 50%–65% of couples in their clinical practices are in therapy as the result of infidelity (Glass & Wright, 1988; Humphrey, 1983, as cited in Glass & Wright, 1988).

Yet, research on infidelity has not been commensurate with its prevalence and impact on American relationships. In fact, before the 1990s, there were no reliable estimates of the frequency of infidelity in American marriages. Most of the research that has been conducted has explored variables that might be related to and influence infidelity. However, much of this

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While the manuscript was in preparation, Neil S. Jacobson passed away on June 2, 1999. He was a great advisor, mentor, and friend and is deeply missed.

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<sup>1</sup> A wide variety of terms have been used in the research literature to refer to infidelity. Depending on the specific features of their study, researchers have used such varying terms as nonmonogamy, extradyadic involvement, extramarital coitus, and polyamory. For the present article, we used the terms *infidelity* and *extramarital sex* to refer to sex with someone other than one’s spouse while one is married. When it seemed appropriate in describing other research, we used the terms that the study authors had used.

literature has suffered from serious methodological problems. Many researchers have failed to include samples in which infidelity has actually taken place, either using a vignette presented to college students (e.g., Kitzinger & Powell, 1995; Mongeau & Schulz, 1997; Parker, 1997; Sprecher, Regan, & McKinney, 1998) or having participants rate their future likelihood of engaging in infidelity (e.g., Buss & Shackelford, 1997; Shackelford & Buss, 1997). Of the researchers who have included participants who have engaged in infidelity, several have not used random samples, calling into question the generalizability of their findings (e.g., Blumstein & Schwartz, 1983; Glass & Wright, 1985; Spanier & Margolis, 1983). Finally, researchers who have used random samples with cases of infidelity have not used a multivariable modeling strategy in predicting infidelity (e.g., Greeley, 1994; Laumann et al., 1994; Wiederman, 1997; for two recent exceptions, see Træen & Stigum, 1998, and Treas & Giesen, 2000). When the relationship between potential predictors and infidelity is not assessed in a single model, important issues such as interactions among predictors, multicollinearity, and the combined influence of multiple predictors cannot be assessed.

The present study addressed each of these methodological concerns. The data used in our analyses were derived from a nationally representative sample involving a percentage of individuals who engaged in infidelity. Furthermore, the data were analyzed in a single regression model, allowing interactions among predictors and controlling for the joint influence of multiple predictors. Thus, the present study attempted to replicate some of the findings from the previous infidelity literature using a more rigorous method. The variables considered did not represent an exhaustive list of variables from the previous literature, but they did represent some of the significant domains—demographic, relationship, and environmental—that previous research has explored.

Keeping in mind the limitations of previous research just noted, a number of factors have demonstrated a relationship to infidelity. These include age (Greeley, 1994; Træen & Stigum, 1998), education (Amato & Rogers, 1997; Træen & Stigum, 1998), history of divorce (Wiederman, 1997), religiosity (Amato & Rogers, 1997; Bell, Turner, & Rosen, 1975; Ed-

wards & Booth, 1976; Hurlburt, 1992), and length of relationship (Bell et al., 1975; Glass & Wright, 1977; Spanier & Margolis, 1983). In addition, gender, relationship satisfaction, and opportunity are particularly notable for the attention—and, to some extent, the empirical support—they have received in the literature (Blumstein & Schwartz, 1983; Greeley, 1994; Laumann et al., 1994; Træen & Stigum, 1998; Treas & Giesen, 2000).

Gender has been the most commonly studied variable in extramarital behavior. The typical finding has been that more men than women have engaged in infidelity (Greeley, 1994; Laumann et al., 1994; Wiederman, 1997). Furthermore, men report a greater number of liaisons (Lawson & Samson, 1988; Spanier & Margolis, 1983) and express greater interest in infidelity (Buunk & Bakker, 1995; Seal, Agostinelli, & Hannett, 1994; Thompson, 1984).

Some researchers have found evidence that men and women engage in different types of infidelity. For example, Spanier and Margolis (1983) investigated the experiences of recently separated and divorced individuals in which either the research participant or the ex-spouse had had an affair. Women who had been involved in an affair tended to be more emotionally involved with their affair partners than the men who had been involved in an affair (40.5% of women vs. 11.5% of men reported that their most recent extramarital relationship was a “more long-term love relationship”), and the involved women also reported greater feelings of guilt. Similarly, Glass and Wright (1985) showed that men are more likely than women to have “sexual-only” affairs, and women are more likely than men to have “emotional-only” affairs.

However, recent research suggests that the differences between the sexes in rates of infidelity may be decreasing (Greeley, 1994; Laumann et al., 1994; Thompson, 1983; Wiederman, 1997; see Parker, 1997, for a recent study that failed to reveal gender differences). Oliver and Hyde (1993) conducted a meta-analysis in which they examined gender differences in sexuality. In summarizing research exploring gender differences in infidelity, they reported a significant trend involving year of data collection, suggesting that the differing rates of infidelity for men and women are becoming more similar in younger cohorts. In separate research

involving survey data, Wiederman (1997) reported that men and women less than 40 years of age showed no differences in their reported infidelity. Taking these findings together, it is clear that gender plays a central role in infidelity but that the conjoint impact of age and gender on infidelity should be examined.

Another possible correlate of infidelity that researchers have explored is the quality of the primary relationship. In reviewing 10 studies of infidelity, Thompson (1983) proposed a "deficit model" to explain infidelity in which deficiencies in the primary relationship play a central role in precipitating and sustaining infidelity. Only 1 study of the 10 that he reviewed failed to reveal a significant relationship between marital satisfaction and infidelity. Thompson estimated that characteristics of the marriage (e.g., low satisfaction and low sexual frequency) reliably account for 25% of the variance in infidelity. Analogue studies with young, married couples have shown that marital conflict may make a couple more susceptible to an extramarital affair (Buss & Shackelford, 1997); relationship dissatisfaction may increase the desire to become involved in infidelity (Prins, Buunk, & Van-Yperen, 1993); and partners believe that low marital satisfaction will lead to an affair (Wiederman & Allgeier, 1996).

Nonetheless, not all studies have shown a relationship between infidelity and relationship dissatisfaction. In their large-sample survey of American couples, Blumstein and Schwartz (1983) failed to find a relationship between infidelity and marital satisfaction, sexual satisfaction, or sexual frequency. In addition, Spanier and Margolis (1983) found that quality of marital sex was unrelated to occurrence of extramarital sex (EMS) in their sample of recently separated and divorced respondents. Moreover, some couple therapists also support the idea that infidelity does not automatically imply a poor primary relationship (Elbaum, 1981; Finzi, 1989).

There is some evidence that other variables may moderate the association between relationship dissatisfaction and infidelity. Glass and Wright (1985) showed that "sexual-only" affairs are less likely to be related to marital dissatisfaction than "combined-type" affairs that include both sexual and emotional components. These researchers found that women were more likely to have emotional-only or

combined-type affairs. Consequently, there was a stronger association between relationship satisfaction and infidelity for women than for men. Glass and Wright (1985) suggested that there are different reasons for affairs, and thus relationship distress may be important in some cases but not others.

Whereas gender and marital satisfaction have been the most commonly studied factors in research on infidelity, another variable that has been shown to be related to infidelity in more than one study is opportunity (Blumstein & Schwartz, 1983; Greeley, 1994; Maykovich, 1976; Træen & Stigum, 1998). Opportunity is a construct reflecting individuals' variability in access and desirability to other people. Perceived opportunity has been used to explain the gender difference in rates of infidelity; men have historically been in the workforce in greater numbers than women, leading to more contact with other people and an increased potential for infidelity (Greeley, 1994; Schwartz & Rutter, 1998). This view of opportunity may explain the closing gender gap in rates of infidelity as greater numbers of women enter the workplace.

However, Thompson (1983) noted that there are some methodological problems in studies measuring opportunity. Some studies have simply inquired whether or not the individual has had the opportunity to engage in infidelity (Johnson, 1970). This "either-or" question is biased in that individuals who have engaged in infidelity will necessarily answer yes. This strategy does not explore degree of opportunity, and it is difficult to see opportunity for infidelity as being either present or absent. It is also not clear that separate studies are referring to the same construct when they discuss opportunity. Investigators have operationalized opportunity as number of days traveling in a year (Træen & Stigum, 1998); liberalism, religiosity, and employment (Maykovich, 1976); occupational status and use of prostitutes (Greeley, 1994); strong views on personal independence (Blumstein & Schwartz, 1983); and early sexual experience, religious attendance, and work requirements (Treas & Giesen, 2000). It is not surprising that "opportunity," so variably defined, has not consistently received empirical support.

As noted earlier, the present study had two primary goals. First, we sought to improve on

the methodological shortcomings of past studies by using a national, random sample and a multivariable modeling strategy. Second, we attempted to replicate findings from the previous literature. In particular, we explored the association of gender, marital satisfaction, and opportunity with infidelity in a model containing other demographic variables (i.e., age, length of marriage, previous divorce, religious behavior, and education). Related to our primary variables of interest, we expected that men would report more EMS than women but that this association would be weaker among younger cohorts. Also, the likelihood of EMS was expected to increase with greater opportunity and lower marital satisfaction. On the basis of previous research on infidelity, we also had several secondary hypotheses. Specifically, we expected to find that infidelity would be more likely among (a) those in longer marriages, (b) less religious couples, (c) more highly educated individuals, and (d) individuals previously divorced.

## Method

### *Participants*

The data for this study were drawn from the General Social Surveys (GSSs) conducted by the National Opinion Research Center at the University of Chicago. The surveys were begun in 1972 and, since 1994, have been conducted every other year with approximately 3,000 participants. Surveys are based on structured interviews that last approximately 90 min. Each survey involves a national, cross-sectional sample of noninstitutionalized, English-speaking individuals 18 years of age or older in the continental United States. The four surveys conducted from 1991–1996 included a question regarding EMS. Specifically, respondents were asked whether they had “ever had sex with someone other than your husband or wife while you were married?” We included in our analyses all participants who were married at the time of the interview and answered this question, yielding a sample size of 4,118. Of these participants, 544, or 13.3%,<sup>2</sup> reported having had EMS, and 3,574, or 86.7%, reported never having had sex with another person while they were married. Survey response rates for 1991, 1993, 1994, and 1996 were 78%, 82%, 78%, and 76%, respectively (for more information on the sampling characteristics of the GSS, see Davis & Smith, 1996).

### *Measures*

All of the variables used in the analyses were taken from questions included in the 1991 to 1996 GSSs (Davis & Smith, 1996).

*Marital satisfaction.* Marital satisfaction was measured through a single item: “Taking all things together, how would you describe your marriage? Would you say that your marriage is very happy, pretty happy, or not too happy?” Whereas it would have been preferable to have a multi-item, well-standardized measure of marital adjustment, such measures are not feasible in large, multipurpose surveys. However, there is reason to believe that even a single-item assessment of marital happiness can provide meaningful information about the respondent’s overall feelings about the relationship. For instance, the frequently used Dyadic Adjustment Scale (DAS; Spanier, 1976) includes a single item rating happiness with the relationship. Previous investigations have demonstrated that this one item is highly correlated with overall DAS scores (Goodwin, 1992).

*Opportunity.* For the purpose of this study, we operationalized opportunity as a set of variables that might increase contact with other people or material means that might facilitate infidelity. We attempted to address opportunity through two variables included in the GSS. The first opportunity variable we used was the respondent’s income. There were two reasons for thinking that an individual’s income may reflect his or her opportunity for infidelity. In some instances, carrying on a clandestine relationship requires some financial means, and thus greater income may facilitate EMS. Second, money is often equated with power, and wealthy individuals may be more appealing to potential extramarital partners. The GSS measured respondents’ income using 21 income brackets ranging from \$0–\$1,000 to more than \$75,000. The original scale included many more brackets for lower incomes. We collapsed the original scale into 12 income brackets of approximately \$5,000 increments.

The second opportunity variable we used in our analysis was a composite measure of the work status of the survey respondent and his or her spouse. In general, individuals in the workforce have greater contact with other people, and several researchers have viewed people’s work status as a measure of their opportunity for infidelity (Greeley, 1994; Maykovich, 1976). Furthermore, examining the combination of individuals’ and their spouse’s work status is one manner of assessing power in the relationship. Situations in which one partner is working and the other partner is not may reflect unequal power in the relationship and greater opportunity for infidelity for the working partner. In the original survey, partici-

<sup>2</sup> The reason for the somewhat lower rate of infidelity in the present sample as compared with other national surveys (Greeley, 1994; Laumann et al., 1994; Wiederman, 1997) is that our analyses were restricted to individuals who were married at the time of the survey.

pants' and spouses' work status was coded into one of eight categories: working full time, working part time, temporarily unemployed, unemployed, retired, in school, homemaker, or other. We collapsed these eight categories into *employed* (full or part time)<sup>3</sup> and *not employed* (all other categories) and then combined respondent and spouse scores. This yielded a categorical work status variable with four levels: both respondent and spouse employed, respondent employed but spouse not employed, spouse employed but respondent not employed, and neither respondent nor spouse employed.

*Other variables.* The GSS has used more than 100 separate questions through the years to try to understand Americans' religious beliefs and behaviors. We were interested in a measure of religious behavior that might serve as a general marker for the importance of religion to the individual. In accordance with this purpose, we used the following question from the GSS: "How often do you attend religious services?" There were nine possible answers ranging from "Never" to "More than once a week." Several demographic variables were entered in the analysis, including gender, age, whether the respondent had ever been divorced, and the respondent's educational level (e.g., less than high school, high school, junior college, college, graduate). To evaluate whether the length of the relationship might affect the probability of infidelity, we also included in our analysis participants' age when they were first married.

## Results

### Missing Data

The GSS involves a core set of questions that are included in every survey and asked of every respondent. Other "rotating" questions are asked of two thirds of respondents in a given year, and questions change over the years as modules of rotating questions are included and dropped. Participants' age when they were first married was a rotating question, thus creating a sizable portion of missing data for that variable. Moreover, some respondents failed to answer all of the questions. Percentages of missing data for each variable and for the total analysis are displayed in Table 1.

We addressed the potential impact of missing data through several means. First, following the recommendation of Cohen and Cohen (1983), we created a dummy variable indicating, for each participant, whether she or he had any missing data. This variable can be used to test whether individuals with missing data are more likely to report infidelity. If there is an associ-

Table 1  
*Percentages of Missing Data by Predictor Variable*

Variable	Missing data (%)
Sex	0.0
Work status	0.0
Age	<0.1
Educational degree	0.1
Previous divorce	0.4
Marital satisfaction	0.5
Religious behavior	1.7
Income	31.6
Age when first married	47.2
Total	9.1

ation between missing data and the dependent variable, this is a particularly difficult problem, and analyses of the data are almost certainly biased (Greenland & Finkle, 1995). In the present study, there was not an association between missing data and the dependent variable,  $\chi^2(1) = 1.51, p = .22$ , indicating that a data imputation procedure might be appropriate. In addition to the multiple imputation procedure described subsequently, we analyzed our final model using only cases without any missing data ( $N = 1,413$ ). The results were very similar to those that we found using multiple imputation, with somewhat reduced power because of the smaller sample size.

Although there is no universally accepted method for handling missing data, multiple imputation is a procedure that has been demon-

<sup>3</sup> Some readers may wonder why full-time employment and part-time employment were combined, in that these two categories could be viewed as different levels of opportunity. We chose to combine the categories for two reasons. One issue is parsimony. If each spouse is classified in one of three ways (working full time, working part time, or not working), this would yield nine combinations; the findings from such a variable would be confusing to interpret. Another issue is the wording of the question. Survey respondents were asked to identify themselves as working either full time or part time. There is probably a great deal of heterogeneity within each category in the number of hours of work and contact with other people. Because the GSS does not contain a direct measure of contact with others resulting from work (or otherwise), we believed that it was more conservative to combine full-time and part-time workers to indicate individuals who were working at all as compared with those who were not.

strated to be superior to many alternatives (for reviews, see Greenland & Finkle, 1995; Little, 1992; Schafer & Olsen, 1998). Using only cases with complete data (the default in many statistical packages) can be very inefficient because participants missing a single piece of information are excluded from the entire analysis. However, replacing missing values with means or regression estimates underestimates the true variability in the population, leading to an inflated Type I error rate (see Greenland & Finkle, 1995; Little, 1992). Multiple imputation creates  $n \geq 2$  complete data sets, using the existing data and replacing missing values with estimates sampled from distributions based on the variables with missing data. Statistical analyses are then conducted on the  $n$  data sets and averaged for a final estimate (for information on how analyses are combined across the  $n$  data sets, see Schafer & Olsen, 1998). In simulation studies and practical applications, multiple imputation has been shown to produce unbiased parameter estimates from the missing data (Greenland & Finkle, 1995; Schafer & Olsen, 1998).

In applying multiple imputation, a statistical assumption must be made about why the data are missing. There are three potential assumptions that can be made about the missing data. Data can be considered (a) missing completely at random, in which the missing data can be considered a random subset of the sample; (b) missing at random or ignorable, in which missing values may depend on other variables in the analysis; or (c) nonignorable, in which the missing data depend on the dependent variable or do not depend on any variables in the analysis. For practical purposes, the missing at random assumption is usually reasonable; essentially, the assumption is that missing values have some relationship with other variables in the analysis (for a review of multiple imputation assumptions, see Greenland & Finkle, 1995, or Schafer & Olsen, 1998). We assumed that our missing data were missing at random and created 10 data sets on which to run our analyses. For all of our statistical analyses, including multiple imputation, we used the Hmisc and Design libraries of functions in S-PLUS Version 4.5, Release 2 for Windows (Harrell, 1999a, 1999b; MathSoft, 1997).

### *Previous Divorce and Timing of the Infidelity*

One of the difficulties in using the GSS to explore correlates of infidelity is the phrasing of the question about EMS. Because the question asks whether participants have "ever" had sex with someone other than their spouse, it is unclear when the EMS occurred; it may be ongoing, or it may have occurred many years ago. Particularly worrisome for the present study is the possibility that the EMS happened during a previous marriage, which would make interpretation of the marital satisfaction variable confusing. Thus, it is possible that an unknown percentage of divorced participants engaged in infidelity during a previous marriage.

Ideally, we would like to know the exact percentage; however, the GSS does not provide any data about when the infidelity occurred. It may be that a great percentage or relatively few of the divorced participants engaged in infidelity before their current relationship; this is impossible to determine conclusively. However, it is possible to test whether the effects of our model depend on participants' divorce status. Moreover, for the present study, the crucial point regarding the timing of the EMS is whether divorced individuals whose EMS may have occurred in a previous marriage demonstrate radically different effects in regard to our predictor variables—in particular, the marital satisfaction variable—or whether they are more or less similar to individuals whose EMS occurred during their present marriage.

To investigate this possibility, we conducted an analysis of our variables, including an interaction term between divorce and every other term in our model. These divorce interaction terms would indicate whether the effects of the other predictors depended on participants' divorce status. There was a single significant interaction between divorce and educational degree, likelihood ratio  $\chi^2(1) = 10.20, p < .005$ . The remainder of the divorce interaction terms were not significant, including the Divorce  $\times$  Marital Satisfaction term. Thus, although there was probably an unknown percentage of divorced individuals who had EMS during a previous marriage, they did not appear to substantially alter the other effects. The Divorce  $\times$  Education interaction term was included in the main analyses so that it would not bias any of the other findings.

### Logistic Regression

We modeled the relationship between EMS and our predictor variables using multivariable logistic regression. Because we were not testing specific theories regarding EMS, we used a model-building approach in the data analysis. Initially, we entered all main effects and all two-way interactions to create a full model and then assessed the fit of various reduced models using the log-likelihood chi-square, removing nonsignificant terms (Agresti, 1996; Hosmer & Lemeshow, 1989). Because previous literature suggested that age may have a nonlinear association with EMS (Greeley, 1994; Wiederman, 1997), we allowed our continuous variables (age, age when first married, religious behavior, and income) to have curvilinear associations with EMS. Researchers typically use polynomials (i.e., quadratic, cubic, and so forth) to model curvilinear responses. However, the "fit" of polynomials has been shown to depend on degree and type of curvilinearity (Seber & Wild, 1989).

An alternative way to fit nonlinear associations is through the use of spline functions (Harrell, 1997; Harrell, Lee, & Pollock, 1988). Splines are smoothing functions that do not require a priori specifications about shape. Several "knots" are specified over the range of the predictor variable, and the splines are smooth polynomials between knots. There must be a minimum of three knots to allow for nonlinearity, and by reducing the number of knots, nonlinearity can be tested through a log-likelihood chi-square with degrees of freedom equal to the number of reduced knots (Harrell, 1997). For the current analyses, we modeled continuous variables using restricted cubic spline fits with five knots placed evenly across the range of the predictor variables. We entered categorical variables (gender, previous divorce, educational level, marital satisfaction, and work status) into the regression equation using treatment contrasts in which subsequent levels of the variable were compared with a reference category.

All main effects of predictor variables were significant in the range of  $p < .05$  to  $p < .0001$ . Two interactions in addition to the Divorce  $\times$  Education term were retained, one between age and gender ( $p < .0001$ ) and another between marital satisfaction and religious behavior ( $p < .05$ ). Residual analyses and tests for linearity using the spline fits demonstrated that age and

age when first married had curvilinear relationships with the probability of EMS. Income showed a two-stage relationship: Among participants with incomes up to \$30,000, there was no association between income and EMS; among participants with incomes greater than \$30,000, there was a positive, linear association between income and EMS. Religious behavior and educational level, an ordinal variable, demonstrated linear relationships with the probability of EMS. Table 2 reports odds ratios, confidence intervals for odds ratios, and significance levels for a model with main effects and a model including interactions.

Typically, in multiple regression analyses, the model  $R^2$  value is reported to indicate the total amount of variance that the model explains. However, because the dependent variable in logistic regression is dichotomous,  $R^2$  values can depend heavily on the percentages of the two categories in the dependent variable and will tend to underrepresent the true proportion of explained variance (see Agresti, 1996; Christensen, 1997; Mittlböck & Schemper, 1996). An index that is similar to  $R^2$  and can be computed in logistic regression is the probability of concordance index  $c$ , which has been shown to represent the area under a receiver operating characteristic curve (Harrell, 1997). Here this index was a measure of how well the model discriminated between those who had had EMS and those who had not had EMS; a value of .5 would represent no ability to discriminate, and a value of 1 would represent perfect discrimination. The  $c$  value for our model was .745, representing a moderate ability of our model to discriminate between survey participants on the basis of their reported infidelity.

Similar to past research, we found that men reported more EMS than women but that this relationship was strongly dependent on the age of the individual. Men 55–65 years of age at the time of the survey were the most likely to report infidelity, and men older and younger than this cohort were less likely. It is important to note that these findings indicate that this cohort of men was more likely to have engaged in infidelity at any time in their lives, not necessarily between 55 and 65 years of age. Similarly, women 40–45 years old at the time of the survey were the most likely to have ever had EMS, with women older and younger than this cohort less likely to have had EMS. Further-

Table 2  
*Logistic Regression Analysis of Variables Associated With Extramarital Sex (N = 4,118)*

Variable	Main effects model		Model with interactions	
	OR	95% CI for OR	OR	95% CI for OR
Sex (female vs. male)	2.64****	2.09–3.34	1.83****	1.24–2.70
Age	1.41*	1.06–1.86	0.66****	0.42–1.04
Educational level	1.32**	1.09–1.61	1.09**	0.87–1.38
Religious behavior	0.71***	0.59–0.85	0.56****	0.43–0.72
Previous divorce (no vs. yes)	1.95****	1.58–2.42	1.63****	1.29–2.05
Income	1.32**	1.05–1.66	1.32**	1.05–1.67
Work status	LR $\chi^2(3) = 11.21^{**}$		LR $\chi^2(3) = 10.18^{**}$	
Respondent works–spouse home vs. both work	0.81	0.62–1.05	0.76	0.58–1.00
Respondent works–spouse home vs. spouse works–respondent home	0.86	0.61–1.21	0.79	0.56–1.12
Respondent works–spouse home vs. neither work	0.51	0.34–0.76	0.52	0.35–0.79
Marital satisfaction	LR $\chi^2(2) = 63.76^{****}$		LR $\chi^2(2) = 69.91^{****}$	
Very happy vs. pretty happy	1.88	1.54–2.29	2.00	1.63–2.46
Very happy vs. not too happy	3.97	2.49–6.33	4.40	2.71–7.12
Age when first married	0.52****	0.38–0.70	0.52****	0.38–0.71
Sex $\times$ Age			LR $\chi^2(4) = 27.85^{****}$	
Marital Satisfaction $\times$ Religious Behavior			LR $\chi^2(2) = 7.42^*$	
Previous Divorce $\times$ Education Level			LR $\chi^2(1) = 11.23^*$	

*Note.* For continuous variables, odds ratios are based on the interquartile range of the variable. For categorical variables, the odds ratio is the odds of extramarital sex of the second category listed relative to the first category listed. The likelihood ratio chi-square is listed on the first line of categorical variables. OR = odds ratio; CI = confidence intervals; LR = likelihood ratio.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . \*\*\*\*  $p < .0001$ .

more, the findings indicate that women and men 45 years of age and younger do not differ in regard to occurrence of EMS (see Figure 1).

Marital satisfaction showed a strong association with EMS. Respondents who reported that their relationships were “pretty happy” and “not too happy” were two and four times more likely, respectively, to have reported EMS than respondents who reported that they were “very happy” with their relationships. However, there was also a significant interaction between marital satisfaction and religious behavior. Considered by itself, religious behavior showed a negative association with EMS, such that those who never attended religious services were 2.5 times more likely to have had EMS than those who attended religious services more than once a week. The interaction between religious behavior and marital satisfaction is displayed in Figure 2, in which separate lines represent the three categories of marital satisfaction plotted against attendance at religious services and the proba-

bility of EMS. The different slopes of the marital satisfaction lines demonstrate that those who reported “pretty happy” or “not too happy” marriages showed little or no effect of their religious behavior and that individuals in “very happy” marriages showed a strong effect of their religious behavior.

Both of our opportunity variables showed a significant relationship with EMS. The categorical variable combining respondent and spouse work status showed that respondents reported less EMS when neither partner was employed than for the other three categories. The combination in which respondents were working but spouses were not working was the most indicative of EMS but was significantly different only from the case in which both spouses were at home. With respect to respondents' income, we found that income was not associated with EMS among survey participants earning up to \$30,000 per year. However, participants earning more than \$30,000 per year showed a positive

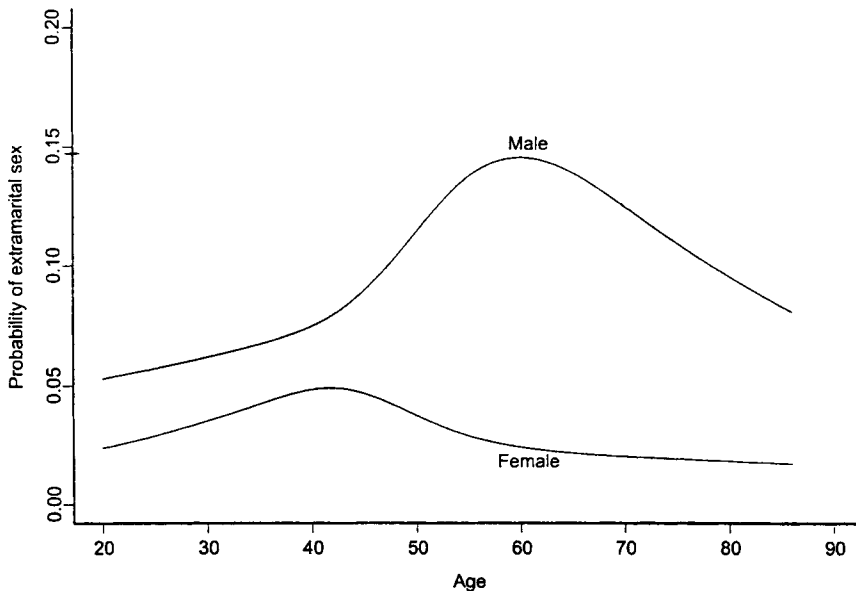


Figure 1. Probability of extramarital sex by age and gender.

relationship between their income and reported EMS. Survey respondents earning \$75,000 or more per year were more than 1.5 times as likely to have had EMS as survey respondents earning up to \$30,000 per year.

Participants' education showed an increasing linear association with EMS, such that the more highly educated an individual, the greater the likelihood of her or him having had EMS. Participants with graduate degrees were 1.75 times more likely to have had EMS than participants with less than a high school education. Past divorce was also a strong predictor of EMS; respondents who had been divorced were almost two times more likely to report EMS at some point during their lives than were respondents who had never been divorced. As noted earlier, there was also a significant interaction between education and divorce. The association between increasing education and infidelity appeared only for respondents who had been divorced.

Finally, respondents who were first married at a young age showed a much higher likelihood of EMS. Specifically, respondents who were first married at 16 years of age or younger were the most likely to report EMS. Likelihood of EMS decreased steadily as age at which participants were first married increased. Survey respondents who were married at 16 years of age

were almost four times more likely to report EMS than those who were first married at 23 years of age (see Figure 3).

### Discussion

Infidelity is a common problem in marriages. Although much has been written about infidelity in the popular press and media, research on the topic has been slow to accumulate. Given the difficulty of obtaining information on this sensitive matter, many previous investigations have encountered a variety of methodological difficulties. The current study investigated basic factors of individuals and relationships that might be associated with EMS, and we improved on past research by using a multivariable modeling procedure and a nationally representative sample.

Two variables that we considered indexes of opportunity for EMS, income and employment status, were both significantly related with infidelity. The association between respondent's income and EMS was in the hypothesized direction. The positive relationship between income and infidelity for participants earning more than \$30,000 per year shows that financial means are related to the likelihood of infidelity. The fact that there was no effect for those respondents earning up to \$30,000 may reflect a

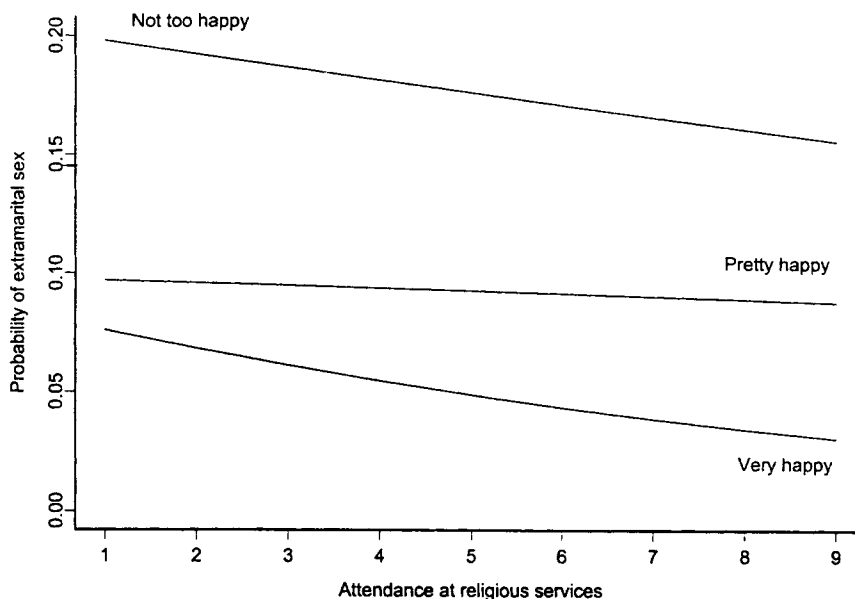


Figure 2. Probability of extramarital sex by marital satisfaction and religious behavior (1 = never attend religious services, 9 = attend religious services more than once a week).

“floor effect.” That is, if a certain level of financial resources facilitates EMS, then falling below \$30,000 might not provide the necessary means, and earning more than \$30,000 might facilitate EMS. For example, with increasing income, it might be easier to hide the costs of entertainment or other expenses incurred as a result of being with a third person. Also, income might not be the critical variable itself; instead, it might be a marker of something else that contributes to infidelity. For example, individuals with higher incomes might be considered to have higher status, to travel more, or to interact professionally with more appealing individuals. Also, the highest income category in the GSS is “more than \$75,000 per year.” Measuring incomes above \$75,000 may strengthen the finding from the current sample.

The employment status variable combined information about opportunity and power within the primary relationship. This variable, a combination of respondents’ and their spouse’s employment status, also was a significant predictor of EMS. We hypothesized that the situation in which the respondent worked and the spouse was at home would yield the greatest report of infidelity. This condition involved the largest disparity between spouses in terms of status, income, and contact with other people.

Survey respondents who worked and whose spouses did not were the most likely to report infidelity. However, this category was significantly different only from the category in which neither spouse worked; the comparisons with the other two categories were trends. Both partners being at home might be a protective factor in that it provides less opportunity for either person to engage in EMS. Overall, there appears to be some support for opportunity and discrepancy in relationship power and their influence on infidelity.

Whereas these two variables conceived as opportunity had modest effects, other findings were more striking. Gender has been one of the most prominently studied variables in research on infidelity. Our results confirm that, on average, greater percentages of men report EMS, but there was an important interaction between gender and age. The interaction showed that men 55–65 years of age at the time of the survey were the most likely to have ever had EMS, and men in older and younger groups were less likely to report EMS. Women showed a similar pattern, with the highest level of EMS for the cohort 40–45 years old and reduced likelihoods for older and younger women. Furthermore, women and men 45 years of age and younger

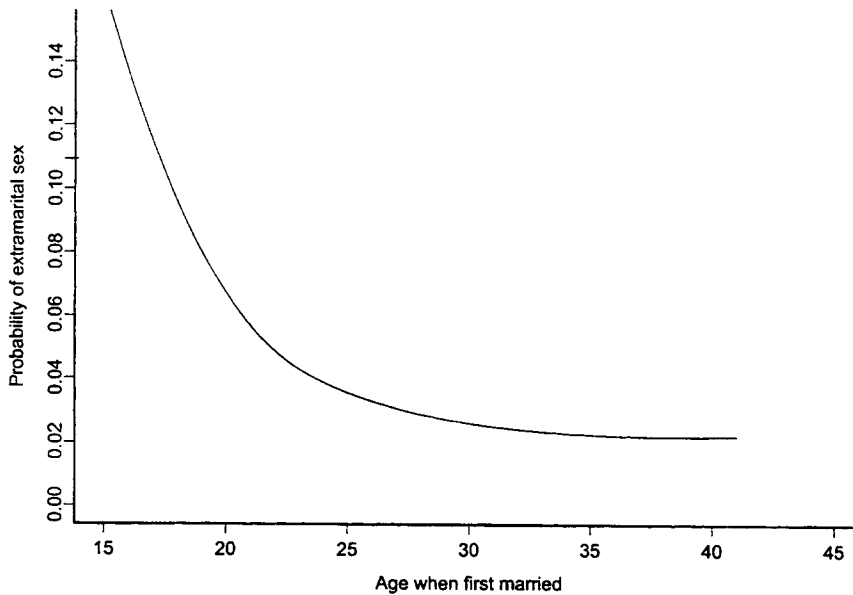


Figure 3. Probability of extramarital sex by age when first married.

did not differ in their reports of EMS, similar to other recent findings (Wiederman, 1997).

Given that this was a cross-sectional investigation, it is not possible to disentangle cohort from developmental effects. That is, the findings might indicate that, among men and women born more recently, the likelihood of infidelity is the same for both genders and will continue to be the same as they age (a cohort effect). However, it also is possible that, as the current cohort of young men becomes older, their chance of infidelity will increase relative to that of women. If this is true, then younger cohorts of men and women will demonstrate different rates of EMS at some point in the future. Longitudinal methods are the only way of completely distinguishing between cohort and developmental effects.

However, there is reason to believe that cohort effects account for some of the gender and age differences. The fact that the oldest men in the survey reported less EMS than men between 55 and 65 years of age would be difficult to explain from a purely developmental view. The wide discrepancy between 60-year-old men and women may reflect a sexual double standard in that cohort. Several writers have noted that our culture has judged men's and women's sexuality very differently (Schwartz & Rutter, 1998; Sprecher & McKinney, 1993). Historically, a

man's sexual escapades, such as premarital sex and infidelity, were more tolerated and perhaps encouraged relative to the same behavior by a woman.

Younger men and women reported similarly low levels of EMS. Again, considering the cross-sectional nature of the study, it is impossible to disentangle developmental and cohort effects. However, we suspect that the similar patterns observed in younger participants were, at least in part, due to cultural influences. One of the major structural changes in our society over the past 20 years has been the growing percentage of women in the workforce (England & Browne, 1992). Combining this fact with the significant effects of employment and financial resources on infidelity, it seems likely that the similar rates of EMS among men and women less than 45 years of age are due in part to women's greater presence in the workforce and the opportunity for infidelity that comes along with it.

The results also confirm previous research indicating that relationship satisfaction is powerfully related to infidelity (Buss & Shackelford, 1997; Prins et al., 1993; Thompson, 1983; Wiederman & Allgeier, 1996). Participants who reported that they were "not too happy" with their marriage were almost four times more likely to report EMS than those participants

who responded that they were "very happy" with their marriages. It is interesting to note that respondents who reported their marriages as "pretty happy" were twice as likely to report EMS as those in very happy marriages. This suggests that the association between relationship satisfaction and infidelity exists on a continuum, and it is not only those people in unsatisfying relationships who are at greater risk for EMS.

The findings also indicated a significant interaction between marital satisfaction and religious behavior in predicting infidelity. Taken alone, survey respondents who frequently attended religious services were less likely to report EMS than those respondents who never attended religious services. However, the interaction between religious behavior and marital satisfaction clarifies that, for the "pretty happy" and "not too happy" groups, there was little or no effect of religious behavior on infidelity. It may be that in happy marriages, religious values can bolster one's commitment to the primary relationship. However, when the primary relationship is less than ideal, the dissatisfaction with the relationship may "override" religious values. Most religious institutions would hope that, during difficult and trying times in a marriage, religious involvement would protect the partners from infidelity. In the current sample, this did not appear to be the case. Instead, religious behavior appeared to be most important among couples who already were very happy in their relationships. It should be noted that the interaction of marital satisfaction and religious behavior was a modest predictor of EMS, considering the sample size. Clearly, more research, and especially replication, is needed to explore this intriguing intersection of marital satisfaction, religious behavior, and infidelity.

Another interesting finding was the effect of participants' age when they were first married in predicting infidelity. This variable was included in the analysis as an exposure variable; people who have been married longer have had more time to engage in EMS, and several studies have shown that length of marriage is related to infidelity (Bell et al., 1975; Glass & Wright, 1977; Spanier & Margolis, 1983). However, this reasoning would have predicted a linear and decreasing relationship between age when first married and EMS. Our findings are consistent

with this hypothesis insofar as those participants who were married at the youngest ages reported the most EMS. The likelihood of infidelity dropped very quickly as age when first married increased from 13 years (the youngest reported in the GSS) to 23 years. In fact, participants who were married at 16 years of age or younger were 4.5 times more likely to report infidelity than were respondents who were married at 23 years of age. Furthermore, survey respondents who were first married at 23 years of age and older showed no difference in their reports of infidelity.

This great increase in EMS for individuals first married in their teens may reflect the circumstances of these marriages. To the extent that these marriages began as a result of teenage pregnancy or to the extent that the young couple had to contend with parental disapproval or other hardships associated with marriage at a young age, we might expect more marital problems and infidelity. Also, people who marry in their middle teens may be representative of those who are impulsive in intimate relationships, leading both to earlier marriages and to involvement with other people. However, these interpretations are purely speculative.

There are some limitations to our findings. For example, viewing EMS in terms of whether it has ever occurred ignores the level of involvement. Thus, an individual who has a single sexual encounter and feels remorse and guilt afterward is treated similarly to someone who seeks out multiple affairs over long stretches of time. Several therapists who have written about infidelity place great importance on the type of infidelity (Brown, 1991; Pittman & Wagers, 1995). In our analyses, all infidelity was treated equally.

Furthermore, because of the wording used in the GSS, infidelity is defined as sex with someone other than one's spouse while married. This broad wording limits the findings in several ways. As noted earlier, the phrasing of the question leaves the time frame for the infidelity open, including the possibility that the EMS occurred in a previous relationship. Moreover, the results demonstrated that there may be some differences based on whether the participant has been divorced. In particular, there was a significant interaction between divorce and education. The wording of the question about infidelity also excludes couples who are not married

but in a committed relationship, as well as same-sex partners. Finally, it is unclear how participants interpreted "sex" in the question. Presumably, most survey respondents would equate this with sexual intercourse; however, it also may be construed to mean sexual acts other than intercourse, and it is impossible with the current data to know what meaning the participants gave to "sex."

Another confound of the current study that has similarly been a problem for all infidelity research is the retrospective nature of the study. This quality of the research design makes it impossible to know about the temporal order of our predictors and the EMS or whether the EMS may have influenced some of our predictors (most notably, whether the respondent had ever been divorced). As we have commented elsewhere, the lack of longitudinal research on infidelity is problematic for researchers interested in the causes of infidelity and is clearly an area of research to be addressed in the future (Atkins, Dimidjian, & Jacobson, 2001).

#### Implications for Application and Public Policy

Whereas the findings from the current investigation must be interpreted conservatively, there are implications from these findings for intervening with couples preventively. Many couples are involved in programs designed to prepare them for marriage and to prevent marital distress. It would be premature to use these findings to warn couples that certain factors are implicated in infidelity (e.g., the cause-effect relationship is not established), but clinicians working with couples preventively could incorporate these findings with other results to help couples develop ways to safeguard their marriage. For example, couples in which one person works outside of the home and the other does not might be vulnerable to developing relationships with an imbalance in power, esteem, and opportunities for the working partner to affiliate more with other adults. Clinicians should not use these findings to advocate for certain career patterns such as dual-career relationships, but couples with one working partner might give particular attention to how to maintain a sense of equality in power and control in the marriage and develop strategies to interact with other individuals and couples together.

Similarly, some couples might develop a

standard that being "pretty happy" in their relationships is realistic and is all that can be anticipated. In the current investigation, such individuals were more likely to have engaged in infidelity. Consequently, couples might be encouraged to set high standards for their marriage and work to make these standards a reality. This suggestion is consistent with the results of Baucom, Epstein, Rankin, and Burnett (1996), who found that couples with very high standards for their marriages were the most satisfied. Furthermore, couples who are not happy in their relationship might believe that participating in organized religious activities can help to safeguard their marriages. In the current investigation, only people who were in happy marriages and were involved in frequent religious activities were less likely to engage in infidelity. This is no endorsement or repudiation of organized religion, but the findings suggest that there is no substitute for developing a strong relationship between the two partners. Thus, although not using the current findings to frighten couples in a preventive setting, we hope that our results can be incorporated into a larger set of findings in the marital area to help couples thoughtfully consider how to create strong, healthy relationships that are less vulnerable to the pain and difficulty that often accompany infidelity.

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