Spousal Communication and Contraceptive Use in Rural Nepal: An Event History Analysis

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Abstract

This study analyzes longitudinal data from couples in rural Nepal to investigate the influence of spousal communication about family planning on their subsequent contraceptive use. The study expands current understanding of the communication–contraception link by (a) exploiting monthly panel data to conduct an event history analysis, (b) incorporating both wives' and husbands' perceptions of communication, and (c) distinguishing effects of spousal communication on the use of four contraceptive methods. The findings provide new evidence of a strong positive impact of spousal communication on contraceptive use, even when controlling for confounding variables. Wives' reports of communication are substantial explanatory factors in couples' initiation of all contraceptive methods examined. Husbands' reports of communication predict couples' subsequent use of male-controlled methods. This analysis advances our understanding of how marital dynamics—as well as husbands' perceptions of these dynamics—influence fertility behavior, and should encourage policies to promote greater integration of men into family planning programs.

Changes in marital relations have been identified as important factors in theories of fertility decline (Freedman 1979; Caldwell 1982; Caldwell, Reddy, and Caldwell 1983; Lesthaeghe 1983; Lesthaeghe and Wilson 1986; Cleland and Wilson 1987; Chesnais 1992; Thornton 2001; Thornton 2005). Most research on marital relationships comes from European and American populations; empirical research on marital dynamics and their associations with fertility in the poor countries of Asia, Africa, and Latin America is sparse. The aim of this study is to improve understanding of how one marital dynamic—spousal communication— influences fertility behavior in a non-Western setting undergoing demographic transition.

Although demographic studies of fertility historically focused exclusively on women, researchers of fertility behavior are recognizing increasingly that decisions regarding childbearing do not lie solely with women, but rather with both spouses. As a result, the use of matched data from couples is growing in popularity in reproductive health studies (Becker 1996). Spousal communication concerning fertility and family planning— particularly husbands' and wives' differential reports of communication—has emerged as a topic of interest. Studies of husband–wife communication demonstrate a strong positive association between spousal communication and contraceptive use (Salway 1994; Archarya and Sureender 1996; Lasee and Becker 1997; Kamal 1999; Feyisetan 2000; Wolff, Blanc, and Ssekamatte-Ssebuliba 2000; Balaiah et al. 2005; Klomegah 2006; Kaggwa, Diop, and Storey 2008). These studies improve the analytical model of the relationship between communication and contraceptive use by incorporating both spouses' perceptions of communication. Most of these studies rely on cross-sectional data, however. This limits the ability to make causal inferences because whether communication preceded contraceptive

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use is unknown. Findings from the few spousal-communication studies that use panel data may be biased by high sample attrition between waves of data collection and the exclusion of husbands' reports (Bawah 2002; Sharan and Valente 2002).

The present study advances this literature by examining this topic using longitudinal data from the Chitwan Valley Family Study (CVFS) in rural Nepal, a rich dataset that allows for a fundamental methodological advance. Baseline measures of spousal communication as reported by both husbands and wives are linked with detailed long-term (nine-year) follow-up measures of contraceptive use (recorded monthly), and sample attrition is low (less than 5 percent). These data provide a unique opportunity to employ event history methods to estimate the impact of husband–wife communication on their subsequent use of contraception. This prospective study design allows for inquiry into the causal nature of the relationship between spousal communication and fertility limitation.

This study also expands on current research by examining the effects of spousal communication on the use of four contraceptive methods: male sterilization, female sterilization, Depo-Provera, and condoms. Distinguishing how each spouse's perception of communication is related to different fertility-limiting behaviors enriches our understanding of the influence of spousal communication on fertility limitation. The result is a comprehensive documentation of the relationship between spousal communication and contraceptive use in the context of dramatic social change.

Chitwan Valley in Nepal is an excellent setting to examine marital dynamics and fertility behavior for two reasons. First, marital relationships in rural Nepal are undergoing rapid changes. Recently, dramatic social, economic, and institutional changes have brought about a cultural shift in the nature of marital relationships, with new emphasis on the close emotional bond between husbands and wives (Hoelter, Axinn, and Ghimire 2004), and thus substantial change in husband–wife relationships. Second, the population of rural Nepal only recently began a transition to widespread use of contraception (Axinn and Yabiku 2001). Thus, this setting provides an ideal context for examining the relationship between spousal communication and the spread of contraceptive use.

Spousal Communication and Contraceptive Use

This study examines the frequency of communication specific to family planning, as opposed to broader partner interchange, in order to focus on the communication most likely to directly affect contraceptive use. Attention is focused solely on communication between spouses, as opposed to including communication between nonmarital sexual partners, because historically sex outside of marriage has been rare in Nepal.

Communication may affect contraceptive use through several mechanisms. First, it is helpful for transforming attitudes into the physical act of using contraceptives. Communication regarding desired family size may enable a couple to reach agreement about limiting fertility. This particular communication alone will not necessarily lead to lower fertility, however; agreement about fertility intentions must be translated into physical behavior to actualize these intentions (Beckman 1983). Additional communication may enable husbands and wives to exchange practical information about contraceptive methods. Once contraceptives are obtained, close communication may help sexual partners use them effectively and consistently.

Second, spousal communication may lower the "psychic costs" of contraceptive use. Psychic costs are the social-psychological forces that bring about negative judgment of contraceptives, causing emotional stress and thus discouraging contraceptive use. Individuals who are inclined to use contraception may not do so if they perceive disapproval

from spouses, their extended family, or society. Spousal communication may reduce these psychic costs if one partner conveys a favorable attitude toward contraception, reinforcing that its practice is a socially acceptable behavior. Furthermore, because effective and sustained practice of contraception requires communication about sexual intercourse, couples may incur psychic costs if the discussion about intercourse violates the social norms of modesty and privacy concerning sexual matters (Beckman 1983). Because premarital intercourse is virtually nonexistent in rural Nepal, spouses may feel timid when talking about intercourse or contraception. Overcoming shyness about, or cultural taboos against, discussing sexual intercourse could lower the psychic costs of contraceptive use.

Third, communication may lower the demand for children. The landmark study in Puerto Rico by Hill, Stycos, and Back (1959) produced the following conceptual framework. The extent to which spouses have similar preferences regarding family size and family planning is called concurrence. Concurrence can be attributed either to coincidentally similar preferences (concordance) or to mutually recognized agreement based on explicit discussion (consensus). In a setting where strong shared social norms support a certain level of fertility, concurrence between spouses is more likely to be attributed to coincidentally similar views rather than to explicit discussion (Hill, Stycos, and Back 1959; Yaukey, Griffiths, and Roberts 1967; Coombs and Fernandez 1978). In such cases, individuals base behavior on these internalized norms or on assumptions about their partners' attitudes. This pattern of concurrence based on chance alone is more likely to occur in settings where high demand for children is a widely shared, unspoken understanding (Beckman 1983). Because little variation of opinions on fertility is present in this type of setting, little need exists for explicit discussion or decision making about the issue. Therefore, concordance between partners is probably associated with high demand for children and low levels of contraceptive use.

Consensus, or mutually recognized agreement based on explicit discussion, may affect fertility differently than concordance, by helping to lower demand for children. As social norms of high fertility become less universal, more need for explicit decisions regarding childbearing may arise. In fact, in settings where partners communicate little about their desired family size, spouses might be overestimating each other's demand for children. Spousal communication makes possible the reaching of agreement on intentions for child spacing and family size, perhaps leading to consensus regarding the goal of a small-sized family.

Data and Methods

Data were drawn from the Chitwan Valley Family Study, which used a systematic probability sample of 171 neighborhoods in the western part of the Chitwan Valley in south central Nepal. Neighborhoods are defined as clusters of approximately 5 to 15 households. In 1996, all individuals aged 15–59 living in the selected neighborhoods were interviewed. Spouses living elsewhere were also interviewed. The overall response rate for this survey was 97 percent, or 5,271 completed interviews. A wide array of demographic, economic, social, and attitudinal information was collected, including indicators of marital relationship dynamics. Identical interviews were conducted separately with husbands and with wives. All interviews were conducted in Nepali, Nepal's most common language.

Since February 1997, a prospective panel study of demographic events has been maintained for 151 of the original neighborhoods. These neighborhoods include 4,632 individuals interviewed in the original study and provide the full contextual and ethnic heterogeneity found in the original study design. Interviewers visit each household monthly to record detailed information about contraceptive events for all respondents interviewed in 1996,

including those who moved out of the study area. Over time, the monthly demographic-event registry has maintained the extraordinarily high response rate of 96 percent. This response rate helps ensure that attrition from the panel will not seriously threaten the validity of analyses based on these data. Prospective measures of respondents' contraceptive use were analyzed for a total of 108 months, from February 1997 through January 2006.

The sample for this analysis includes only married women aged 15–34 at the 1996 baseline interview, and their spouses. Couples with no children born were restricted from the sample because couples are considered to be at risk of using contraceptives after the birth of their first child. Furthermore, respondents who were sterilized or whose spouse was sterilized at baseline were excluded from the sample. Respondents using Depo-Provera at baseline were excluded from models estimating the effects of communication on Depo-Provera use, and respondents using condoms at baseline were excluded from models estimating the effects of communication on condom use. I focused on respondents who were not using the contraceptive method being examined at the start of the study period for two reasons: to ascertain the effects of spousal communication on the start of the contraceptive method use, and to mitigate the potential selection bias that respondents who are current contraceptive users may discuss family planning more frequently with their spouses. These restrictions resulted in a final matched sample of 536 wives and 536 husbands who were interviewed.[1] Analyses were run separately for women and men to explore gender differences in the effects of reports of communication on contraceptive use.

Measures of spousal communication are limited to those collected at baseline (1996) because these preceded measures of respondents' contraceptive use. Examining the effects of marital relationship dynamics measured at one point in time depicts them as unvarying, even though patterns of communication in a marital relationship can change over time. Updated measures of these dynamics gathered subsequent to baseline would reduce the measurement error caused by recording this situation only once. Reduced error in the measurement of spousal communication, however, would yield even stronger effects; therefore, these estimates of the effects of communication can be considered conservative. Interaction effects between time duration and each independent variable of interest were tested for in the model because the effects of husband–wife dynamics may wane over time. No significant interaction effects were identified; thus, the final models include main effects only.[2]

Reliance on observational study designs incurs the risk of endogeneity—the possibility that unobserved variation produces observed associations—which is perhaps the greatest obstacle to understanding the relationship between spousal communication and contraception. Theoretically, it is possible that persons with a high preceding propensity to practice contraception are also most likely to discuss it with their spouses. As with all research based on observational study designs, random assignment of spousal communication is not possible; instead the analysis must control for factors that influence both spousal communication and contraceptive use. Fortunately, the CVFS includes uncommonly rich measures of prior conditions known to predict the propensity to practice contraception (Axinn and Barber 2001; Axinn and Yabiku 2001; Brauner-Otto, Axinn, and Ghimire 2007). Furthermore, using measures of communication taken before respondents' contraceptive use ensures that only contraceptive use occurring after the measurement of communication is examined. This proper temporal ordering helps to provide new insights

[1]Three women whose husbands were not interviewed were dropped because these women do not differ on any of the explanatory factors used in the analysis from the women whose husbands were interviewed, and because having a husband who was interviewed had no effect on contraceptive use.
[2]To ensure that results were not particular to the 108-month time frame, the models were re-estimated using only 72 months of data. Varying the time duration produced virtually identical results.

into the causal nature of the relationship between spousal communication and contraceptive use.[3]

Fertility Limitation

The dependent variables of interest are the initiation by the couple of use of each of four contraceptive methods commonly used in this setting. Because sterilization accounts for the majority of births averted in Nepal, the influence of spousal communication on male sterilization (vasectomy) and female sterilization (tubal ligation) was examined. Although residents historically have demonstrated a strong preference for permanent contraceptive methods, a variety of reversible methods has become available, and their use is gradually increasing. Therefore, the influence of spousal communication on first use of Depo-Provera (an injectable) and on first use of the male condom was also examined.[4]

For each of the four methods examined, time-varying dichotomous variables were coded as 1 the first time the respondent (or spouse) used the method during the prospective time period, and as 0 otherwise. In each model, person-months lived after first method use were excluded from the analysis. Among couples in this sample, at some time during the 108 months of panel data 29 percent used male sterilization, 10 percent used female sterilization, 37 percent used Depo-Provera, and 13 percent used condoms. (Of course, some couples who used Depo-Provera or condoms might later be sterilized.)

Spousal Communication

Communication in the marital dyad is generally defined as the frequency of discussion between spouses, as reported by one or both partners (Beckman 1983). Two questions allowed me to construct an ordinal measure of communication about family planning for each spouse: "How often do you and your (husband/wife) discuss how many children to have: often (3), sometimes (2), or never (1)?" and "How often do you discuss contraceptive methods with your (husband/wife): often (3), sometimes (2), or never (1)?" These items were significantly correlated with each other for both wives' reports ($r = 0.48$, $p < 0.0001$) and husbands' reports ($r = 0.45$, $p < 0.0001$); the two measures were averaged separately for wives and husbands to create an overall measure of family planning discussion from the perspective of each spouse.[5]

Controls

To specify the models properly, the analyses control for various respondent characteristics that may be confounders between the independent variables of interest and the likelihood of contraceptive initiation. All control measures come from the 1996 baseline interview. Experiences with previous childbearing and preferences for future childbearing are expected to have consequences for contraceptive use. Previous childbearing is controlled for using a measure of number of children ever born by 1996, with the expectation that the presence of

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[3]Individuals may anticipate future contraceptive use before they discuss it with their spouses, and thus may be more inclined to initiate such communication. Full ability to implement contraception may only be achieved, however, after transitioning from anticipation to discussion. Thus, this temporal ordering is appropriate for studying the relationship between spousal communication and contraceptive use.

[4]The dependent variable could be assigned in a number of ways. I estimated models of alternative definitions of fertility limitation in order to test the sensitivity of the results. These models produced little change in the estimated effects of spousal communication. For example, when first use of any of the five methods historically used to stop childbearing (IUD, Norplant®, Depo-Provera, husband sterilization, wife sterilization) was considered as the dependent variable, the coefficients for effects did not differ substantively from those presented in the study. When the dependent variable was further aggregated to include first use of any contraceptive method (including both permanent methods and temporary methods such as oral contraceptives or condoms), the coefficients for effects remained similar to, although slightly weaker than, those presented in the study.

[5]Spouses' perspectives on family planning discussion were correlated ($r = 0.24$, $p < 0.0001$). The aim of this study, however, was to document separate effects of these reports on contraceptive use, not to explore concordance in spouses' reports.

children will increase contraceptive use by creating greater need.[6] Similarly, child mortality —measured as the number of children who had died by 1996—is controlled for, with the expectation that parents will respond to the loss of children by "replacing" them, which would decrease contraceptive use (Wolpin 1998). Previous studies suggest that both wives' and husbands' fertility preferences play a role in contraceptive use (Dodoo 1998; Mason and Smith 2000). Therefore, preference to stop childbearing is controlled for, with the expectation that respondents expressing this attitude will be more inclined to use contraceptives. I used the question, "Would you like to have more children?" and coded a dummy variable as 1 if the respondent answered "no," and 0 if "yes." Spouses' preferences for no more children are highly correlated ($r = 0.64$, $p < 0.0001$), so these were combined into a control for both spouses preferring no more children.

Wives' participation in selecting husbands was controlled for because a shift from "arranged" to "choice" marriages has been theorized to engender fertility change (Goode 1964; Caldwell 1982; Rindfuss and Morgan 1983). I conceptualized differences in the way marriages are contracted as a continuum rather than as a dichotomy between "arranged" or "choice" because variability exists between these two extremes (Rindfuss and Morgan 1983). An ordinal scale coded from 1 to 5 was constructed to measure the extent to which wives had choice in selecting their spouses, with 1 indicating that parents/relatives completely arranged the marriage, and 5 indicating that the respondent chose her spouse completely by herself (Ghimire et al. 2006).[7]

Measures of education and household wealth were used as socioeconomic controls. I controlled for whether wives or husbands received any schooling before marriage, because education consistently has been shown to affect reproductive behavior (Caldwell 1982; Axinn 1993; Axinn and Barber 2001).[8] Because much of the Nepalese economy is not monetized, a measure of wealth focusing on house-plot ownership was employed. Such ownership can be a source of long-term affluence, affording residents the opportunity to grow fruits and vegetables for home use and to conduct businesses (such as small stores) that would otherwise require rental property. House-plot ownership was measured with a dichotomous variable coded as 1 if the household owns the land on which the couple's home is built, and as 0 otherwise.[9]

Spouses' ages were controlled for because contraceptive use has increased dramatically over time (Axinn and Barber 2001). For each spouse, a dichotomous indicator of being in the younger age group (15–24 at the baseline survey) was included. The older age group is the reference category (wives aged 25–34 and husbands aged 25–56 at baseline).

Ethnic group, which in Nepal is related to religion, was also controlled for. The wife's reported ethnic group was used to represent the couple's ethnic group because 97 percent of husbands reported the same ethnicity as their wives. Five dichotomous indicators of ethnicity were used (Upper Caste Hindu, Lower Caste Hindu, Newar, Hill Tibeto-Burmese, and Terai Tibeto-Burmese) because of these groups' diverse propensities to use contraceptives (Axinn and Barber 2001). Upper Caste Hindu status is the omitted category; effects of belonging to the other ethnic groups are relative to this group.[10] Accessibility of

[6]The effect of the number of sons ever born by 1996 was not statistically significant and was not included in the models.
[7]I also tried classifying participation in spouse selection dichotomously, testing both wives' and husbands' reports. I tried one measure coded as 1 if the respondent had any say in the choice of spouse, and as 0 if the respondent had no say. I also tried a measure coded as 1 if the respondent had complete say in the choice of spouse, and as 0 otherwise. This did not change the results.
[8]Measuring education as a continuous variable—number of years of schooling for each spouse—instead of dichotomously did not alter the results.
[9]Also tested as another potential indicator of wealth was whether the household had electricity. This measure had no impact on contraceptive use.
[10]Interaction effects between ethnicity and each measure of communication were not statistically significant.

contraceptives was controlled for by including a continuous variable measuring the number of minutes required to walk to the nearest health post.

Finally, time since the baseline interview was controlled for with a counter variable measuring years (precise to the month) and with the counter variable squared.[11] These measures parameterize the baseline hazard of contraceptive use, which conforms to a quadratic curve in which the hazard rises during the early years and declines in later years. The means and standard deviations of these variables are presented in Table 1.

Estimation Technique

Event history analysis was used to model the risk of adopting each contraceptive method over time. Because this event is measured monthly, the transition to practicing contraception is conceptualized in discrete time rather than in continuous time. To estimate the discrete-time hazard models, I used logistic regression in the form:

$$\ln[p/(1-p)] = \alpha + \sum (\beta_k)(X_k), \tag{1}$$

where p is the monthly probability of beginning contraceptive use, $p/(1-p)$ is the monthly odds of first contraceptive use occurring, α is a constant term, β_k represents the effects parameters of the explanatory variables, and X_k represents the explanatory variables in the model. This approach to discrete-time estimation of the hazard model is described in detail elsewhere (Allison 1982, 1984). Coefficients in a logit model indicate the change in the log-odds of first contraceptive use for a unit change in the explanatory variables. To facilitate interpretation of the coefficients, I report the exponentiated log-odds coefficients, or the odds ratios, which are interpreted as the amount by which the monthly odds of first contraceptive use are multiplied for a unit change in the explanatory variable. Odds ratios equal to 1 represent no effect, odds ratios greater than 1 represent positive effects, and odds ratios less than 1 represent negative effects.

Because the CVFS employed a clustered sampling strategy, with several individuals living in the same neighborhood, a multilevel discrete-time hazard model was used. Research demonstrates that this modeling strategy is suitable to these data because it accounts for their hierarchical structure (Barber et al. 2000). Estimates are calculated using the GLIMMIX macro for SAS according to the approach described by Barber and colleagues (2000). Thus, the results are properly specified for the multilevel nature of these data.

Results

Results from the multivariate models of contraceptive use are presented in Table 2. For each type of contraceptive method, the relative weight of the husband's versus the wife's report of communication in predicting the couple's use of contraception was examined.

Both wives' and husbands' perceptions of spousal communication influence the odds of husbands being sterilized. Model 1 shows that each unit increase in the measure of family planning discussion from the wife's perspective increases the monthly odds of husband sterilization by 79 percent. Model 2 shows that for each additional unit increase in the

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[11]The models were re-estimated controlling for marital duration at the baseline interview. Two different ways to measure marital duration were tested: a continuous measure of years since marriage, and a dummy variable indicating whether the couple had been married for more than five years. Neither of these measures substantially changed the results. Furthermore, because marital duration is negatively correlated with being in the younger age group, including this control deflates estimates of the effects of younger age on contraceptive use. Similarly, because marital duration is positively correlated with number of children ever born, including it inflates estimates of the effects of number of children ever born on contraceptive use. Nonetheless, estimates of the effects of spousal communication remain virtually the same whether or not the control for marital duration is included in the models.

measure of family planning discussion from the husband's perspective, the monthly odds of husband sterilization increase by 30 percent.

The same models were also run with female sterilization as the outcome. Model 3 shows that as wives report more frequent family planning discussion, the monthly odds of their being sterilized are increased by 60 percent. Model 4, however, reveals no evidence to suggest that the husband's report of family planning discussion significantly affects the likelihood of his wife's being sterilized.

The same models with use of Depo-Provera indicate a similar discrepancy between effects of husbands' versus wives' reports of communication. Model 5 shows that wives' reporting of more frequent discussion about family planning increases the subsequent monthly odds of using Depo-Provera by 49 percent. The effect of husbands' reports of family planning discussion is insignificant, however, as shown in Model 6.

Finally, both wives' and husbands' perceptions of spousal communication increase the odds of condom use. Model 7 shows that as wives report more frequent family planning discussion, the monthly odds of condom use increase by 45 percent. Model 8 indicates that the coefficient for husbands' reports of family planning discussion is large and significant; for each additional unit increase in the measure of family planning discussion from the husband's perspective, the monthly odds of condom use increase by 106 percent.

Several of the control variables in these models have large and significant effects on the odds of contraceptive use. For example, women in the younger age group are more likely to be sterilized and to have a husband who gets sterilized than women slightly older. Moreover, wives' education strongly increases couples' condom use, as is consistent with previous research (Gubhaju 2009). The effects of ethnicity appear to be conditioned by the specific type of contraceptive method examined. For example, Lower Caste Hindus and Hill Tibeto-Burmese have lower odds of using male sterilization than do Upper Caste Hindus, yet both have higher odds of using Depo-Provera, net of other controls.

Discussion

One prominent finding to emerge from these analyses is the consistent effect of wives' perceptions of the frequency of spousal communication concerning family planning on contraceptive use. Estimates consistently show that wives' reports of more frequent communication increase the odds of using each type of contraceptive method examined: male sterilization, female sterilization, Depo-Provera, and condoms. Another finding is that husbands' reports of communication are stronger predictors of the male-controlled methods examined than of the female-controlled methods. Estimates show that husbands' reports of more frequent communication increase the odds of male sterilization and condom use; however, the models reveal no evidence to suggest that husbands' reports significantly affect the likelihood of female sterilization or Depo-Provera use. Clearly, the use of male-controlled methods depends on the cooperation of husbands. Husbands who perceive themselves as more involved in family planning discussions may be more willing to share the responsibility for controlling fertility. Husbands who report frequent discussion of family planning with their wives may also be more informed about the benefits and side effects of male contraceptives and, therefore, may be less reluctant to use them, compared with other husbands.

Husbands' reports of spousal communication predict condom use more strongly than they predict male sterilization. This difference may be explained by various potential intervening mechanisms. Discussions about family planning may have greater influence on men who desire to space births than on men who desire to stop childbearing, thus encouraging use of

reversible methods. The difference may also reflect the more recent availability of condoms, compared with sterilization. More discussions may be necessary in order for husbands to receive enough information about condoms to deem them an acceptable new method. The difference may also result from the greater user knowledge and involvement required by condoms, compared with surgical procedures such as sterilization that do not require user knowledge to be effective.

The husbands' reports of spousal communication compared with the wives'—despite being weaker predictors of all method types examined except condoms—do not change the substantive interpretation of Table 2. Overall, these findings show strong support for the hypothesis that husband–wife communication increases the pace of subsequent transition into practice of contraception. This result may indicate that family planning communication enhances couples' ability to transform attitudes toward contraceptive use into action, or that such communication lowers psychic costs of contraceptive use. Communication might also lower couples' demand for children, or some other intervening mechanisms may be at play. Whatever the cause, these results are consistent with the conclusion that increased spousal communication regarding family planning significantly influences subsequent fertility-limiting behavior.

Conclusion

This study highlights the important independent role played by spousal communication in the transition to use of contraception in a setting in which, until recently, fertility limitation has been minimal. Results are consistent with the predictions that spousal communication about family planning increases subsequent contraceptive use, even when controlling for other factors known to predict contraception.

The study exploited monthly panel data to conduct an event history analysis. This longitudinal design is a fundamental methodological advance that helps provide new insights into the causal nature of the relationship between spousal communication and fertility limitation. In previous studies, the effects of communication on contraceptive use are measured at the same time or shortly thereafter (Mukherjee 1975; Salway 1994; Archarya and Sureender 1996; Lasee and Becker 1997; Kamal 1999; Feyisetan 2000; Balaiah et al. 2005; Klomegah 2006; Kaggwa, Diop, and Storey 2008). Spousal communication, measured in this analysis before respondents began to use contraceptives, exerted significant influence on subsequent contraceptive use.

The strong independent influence of communication demonstrated here has important policy implications. A great deal of previous research focusing on husband–wife communication and contraceptive use examines African settings (Salway 1994; Lasee and Becker 1997; Feyisetan 2000; Bawah 2002). Such research has often suggested that family planning program managers have taken for granted that women play the primary role in making contraceptive decisions, and that this neglect of men and marital interactions has hampered the ability of programs to increase contraceptive prevalence and reduce fertility levels (Mbizvo and Adamchak 1991; Ezeh 1993; Salway 1994). In the South Asian region, high fertility persists despite long-standing promotion of family planning by the government and international assistance agencies in order to ease poverty and improve standards of living. The neglect of men's roles in contraceptive behavior could be limiting the success of family planning programs in South Asia as well, and facilitating spousal communication concerning family planning may serve as an important policy corrective (Mahmood and Ringheim 1997; Sharan and Valente 2002).

The finding that both wives' and husbands' perceptions of communication play a role in the adoption of contraception suggests that policies aimed at reducing high population growth

rates should integrate men into family planning programs. Wives have been found to be the principal source of information for husbands about fertility limitation (Ringheim 1993). Programs may be more effective in reducing fertility if they recognize the importance of wives as transmitters of information about male methods to their husbands. Activities aimed at providing individuals with information to transmit to their partners may increase men's propensity to initiate contraceptive use. Programs facilitating and enhancing couples' communication skills may be useful. Information promoting family planning should directly target men, who can then participate in discussions regarding their wives' or their own contraceptive adoption. The finding that husbands' perceptions of greater frequency of family planning discussion predict couples' use of male-controlled methods may be especially relevant to policymakers implementing public programs to encourage the use of such methods as vasectomy or condoms.

One potential limitation of this study is that it does not account for social-network factors. Previous research has documented the importance of interpersonal communication among siblings or peers in shaping fertility behavior (Kohler 1997; Kincaid 2000; Godley 2001; Kohler, Behrman, and Watkins 2001; Avogo and Agadjanian 2008; Benefo 2010). Some investigators have suggested that encouragement from social networks to use family planning may increase the likelihood of subsequent contraceptive use by stimulating spousal communication (Kincaid 2000; Avogo and Agadjanian 2008). Future research should attempt to document the full range of communication effects on fertility-limitation behavior, and identify the independent effects of network communication and spousal communication.

Investigation of the impact of marital dynamics on other aspects of fertility behavior would be a fruitful avenue for future research. For example, changes in marital relationships may affect ideal family size, time until first birth, and completed fertility. Future research on spousal communication regarding family planning should move beyond its frequency and toward a greater understanding of its content depth. This could include elements of the communication such as who started the conversation; the communication's intentions, content, and quality; duration of the conversation; and whether it resulted in agreement or disagreement.

Understanding factors that reduce fertility in poor countries has been a priority for decades, although questions about the factors that speed transitions to lower fertility remain unresolved. Further understanding of the inner workings of marital-relationship dynamics and the mechanisms producing their effects on fertility behavior is called for. Only the link between one marital dynamic (spousal communication) and one aspect of fertility behavior (contraceptive use) has been investigated directly in this study. The observed positive impact of spousal communication concerning family planning on subsequent contraceptive use suggests, however, that policies promoting greater integration of men into family planning programs, and encouraging spousal discussion of ideal family size and contraceptive methods and practices, have promise for assisting couples in limiting their fertility.

Acknowledgments

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Table 1

Means and standard deviations of variables used in the analyses, Chitwan Valley, Nepal, 1996

Variable	Mean	Standard deviation
Family planning discussion		
Wife's report	1.68	0.52
Husband's report	1.87	0.56
Childbearing experiences and preferences		
Number of children ever born by 1996	2.44	1.34
Number of children ever died by 1996	0.22	0.53
Both spouses prefer no more children	0.53	0.50
Couple's background information		
Participation in spouse selection	2.05	1.66
Wife's education	0.60	0.49
Husband's education	0.86	0.34
Household owns house plot	0.83	0.38
Age		
Wife aged 15–24 in 1996	0.46	0.50
Wife aged 25–34 in 1996	0.54	0.50
Husband aged 15–24 in 1996	0.16	0.37
Husband aged 25–56 in 1996	0.84	0.37
Ethnic group		
Upper Caste Hindu	0.41	0.49
Lower Caste Hindu	0.11	0.32
Newar	0.07	0.25
Hill Tibeto-Burmese	0.16	0.37
Terai Tibeto-Burmese	0.24	0.43
Access to contraceptives (minutes walk to nearest health post; median = 15)	20.44	17.59

Table 2

Logistic regression estimates of the effects of spousal communication on the odds of using one of four contraceptive methods, Chitwan Valley, Nepal, 1996–2006

Independent variable	Male sterilization		Female sterilization		Depo-Provera		Condoms	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Family planning discussion								
Wife's report	1.79 ***		1.60 *		1.49 **		1.45 *	
Husband's report		1.30 *		1.25		1.11		2.06 ***
Childbearing experiences and preferences								
Number of children ever born by 1996	1.11	1.19 *	1.08	1.19	1.08	1.10	1.81 ***	1.80 ***
Number of children ever died by 1996	0.69 *	0.69 *	1.12	1.05	1.24	1.28	0.35 ***	0.36 ***
Both spouses prefer no more children	0.93	0.96	0.84	0.76	1.02	1.06	0.68	0.64 *
Couple's background information								
Participation in spouse selection	1.06	1.05	1.14 *	1.11	0.95	0.93	1.01	0.98
Wife's education	0.87	0.92	0.70	0.62 *	0.90	0.87	2.59 ***	2.91 ***
Husband's education	1.04	0.81	0.73	0.58 *	1.16	1.00	1.01	0.70
Household owns house plot	0.99	1.01	1.05	1.13	0.91	0.88	0.74	0.81
Age								
Wife aged 15–24 in 1996	1.81 **	1.81 **	1.72 *	2.14 **	1.23	1.23	1.59 *	1.37
Wife aged 25–34 in 1996 (r)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Husband aged 15–24 in 1996	0.89	1.01	1.11	1.37	1.28	1.48 *	1.72 *	1.95 *
Husband aged 25–56 in 1996 (r)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ethnic group								
Upper Caste Hindu (r)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lower Caste Hindu	0.35 ***	0.29 ***	0.88	0.66	2.07 **	2.00 **	0.26 **	0.31 *
Newar	1.00	0.98	3.28 *	4.38 *	1.69	1.91 *	0.65	0.70
Hill Tibeto-Burmese	0.34 ***	0.32 ***	0.71	0.71	1.90 **	1.74 *	0.59	0.56
Terai Tibeto-Burmese	0.55 *	0.51 *	1.87	1.71	0.72	0.70	0.51	0.48 *
Access to contraceptives (minutes walk to nearest health post)	0.99	0.99	0.99	0.99	0.99	0.99 *	0.99	0.99

Independent variable	Male sterilization		Female sterilization		Depo-Provera		Condoms	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Duration[a]	1.19^{*}	1.25^{*}	2.21^{***}	2.63^{***}	0.75^{**}	0.76^{**}	0.37^{***}	0.37^{***}
Duration squared	0.97^{**}	0.96^{**}	0.92^{***}	0.91^{***}	1.01	1.00	1.08^{***}	1.08^{***}
Person-months	39,975	35,954	39,975	35,954	28,362	25,295	35,356	31,442
−2 Log likelihood	337,180	300,127	385,479	347,141	225,988	202,008	351,270	310,570

*
One-tailed test significant at p < 0.05;

**
p < 0.01;

***
p < 0.001.

[a]Duration measured in years since baseline interview, precise to the month.