

THE INFLUENCE OF MEN'S SOCIAL NETWORKS AND SOCIAL  
NORMS ON FAMILY PLANNING IN BENIN

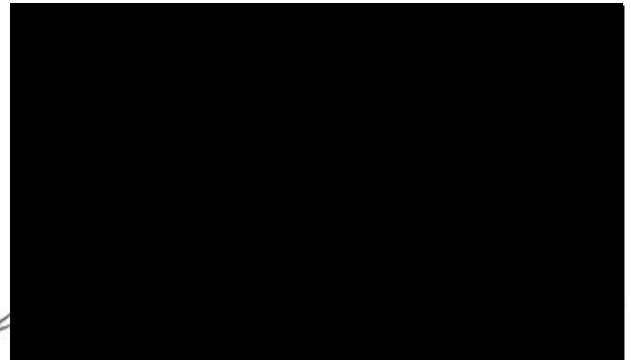
By

Katherine LeMasters

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**Abstract:**

**Objectives:** This analysis aims to assess men's social networks and norms surrounding family planning (FP) and the relation of these factors to couple's FP intentions.

**Methods:** We examined pre- and post-intervention surveys completed by men in the Tékponon Jikuagou intervention, which worked to engage women and men in FP discussions by catalyzing diffusion of new ideas through women's and men's networks.

**Results:** Most men had few network members, talked with few members about FP, and did not discuss FP with their partner(s), yet most believed it was acceptable to discuss FP. Among social factors, FP communication with network contacts had the most significant relationship with FP intentions.

**Discussion/Conclusion:** These findings indicate both a need and opportunity for increased FP related dialogue in these communities.

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## I. Introduction

### *Background*

Global progress has been made on supply-side barriers to family planning (FP) use and on knowledge of FP methods since the 1994 Cairo Declaration on Population and Development (1,2). However, in many developing countries, unmet need for FP remains high. A woman is classified as having an unmet need for FP if she wants to avoid childbearing, is sexually active, and is not using an effective contraception method (3). Low FP use and high unmet need have multiple consequences for women's health including unsafe abortion and unsafe birth spacing (4,5). Beyond physical health, FP use impacts women's empowerment, child welfare, social and economic development, and environmental sustainability (6,7).

Benin, the country of focus for this study, has a high unmet need for contraception, low modern contraception (MC) use, and poor maternal and child health. MC methods used in Benin include condoms, implants, injectables, intrauterine devices, oral contraceptives, the standard days method, and sterilization (8). The government of Benin has committed to a 20% contraceptive prevalence rate by 2018, and MC use among women in Benin increased from 3% to 15% between 1996-2017 (8,9). Yet, unmet need increased from 28% to 36% in the same time period (8). High fertility and desired family size contribute to continued low MC use, and in 2015 women had 4.9 children on average (10). Benin also continues to have a high maternal mortality ratio and infant mortality rate for Sub-Saharan Africa at 405 maternal deaths per 100,000 live births and 63 infant deaths per 1,000 live births (11,12).

To address low MC use, high unmet need, and their resulting health outcomes, attention has been paid to identifying and addressing demand-side barriers to MC use such as self-efficacy to use FP (2,13). To date, initiatives have focused on women and have largely neglected men's role in the FP process, yet couple communication about FP has arisen as a critical component in FP (13–15). In Benin, one of the most commonly cited reasons for women not using FP is opposition from a male partner, yet less than 4% of women had discussed FP with their partner in 2015 (10). The lack of discussion around FP and the need for men's approval indicates that new approaches are needed to engage Beninese men in FP discussions and decision-making (10).

The lack of discussion around FP and the need for men's approval indicates that FP discussion may not be socially acceptable (10). Social acceptability has two aspects: social networks and social norms. This lack of social acceptability may reflect that men's social networks do not value FP and that men's community's social norms do not support FP.

Literature on the connection between social networks, FP use, and fertility behavior has grown in recent years (16–19). It is important to consider both the structure (i.e., network size) and content (i.e., network approval of FP) of peoples' networks related to FP. Prior work with women has found that having networks outside of one's village may lead to a higher acceptance of FP, that having a woman's husband in her network is influential for the number of children the couple has, and that a higher percentage of a woman's network that is conjugal kin is associated with less FP use and more traditional norms (17). Work with women has also found that having other FP users

in one's network is associated with higher FP use as women find out about others' FP use through direct communication (20,21).

Social norms are the unspoken rules that govern behavior and include social pressures, sanctions, and approval from community and family members (22). Specifically, subjective norms are the expectations of influential others and injunctive norms involve the perceived sanctions that would result from diverging from the norm (22). Such norms have long been recognized as playing a role in shaping fertility preferences, with sanctions being a particularly salient mechanism to enforce norms related to fertility (17,23–27). Less work has evidenced social norms' specific relationship to FP discussion and use, but a recent review found that all studies measuring social norms and FP use had significant relationships between at least one FP norm and a related FP behavior (28). Prior work has also found significant associations between condom use and subjective norms (29–31).

More recently, work has focused on understanding and addressing social networks and norms related to FP in order to understand and address community level influences on FP. Yet, despite the recognized importance of men in FP decision-making, most work has focused on women (10,32,33). More specifically, most research that addresses peoples' social environment for FP focuses on women (17,23–27). This includes research focused on understanding social network influences on FP use (17,20,27,34). An exception to this was a qualitative study in rural Malawi, which found that both women's and men's social networks influence their FP use, but that these networks impact their FP behaviors differently (21). This work also found that gender shapes the way individuals speak about and then perceive FP (21). For example, men's

perception of their network contacts that used FP is based on assumptions rather than direct communication (21). Additionally, prior work has found that men's social networks may be more influential in their FP use than women's and that men are more likely than women to have known their network contacts for a long period of time (20). Thus, we cannot transfer findings about women's networks and norms to men. A greater understanding of men's social networks and social norms surrounding FP is needed.

#### *The Tékponon Jikuagou (TJ) intervention*

The Institute of Reproductive Health at Georgetown University, CARE International, and Plan International, designed, piloted, refined and scaled-up TJ (35). TJ was implemented in the Ouémé Department of Benin from late 2012 through early 2017 and is funded by the United States Agency for International Development (35). The TJ intervention was implemented as a response to the need to increase the social acceptability of FP discussion and use.

Formative work in Benin has found that both social networks and social norms influence fertility decisions (36). Specifically, previous work has shown that fertility decisions are typically made within the context of a large sphere of relationships (i.e., the husband and wife dyad, friendship and family networks) and are under the influence of community norms (36). To encourage discussion about FP between partners, there is therefore a need to reduce social and cultural barriers by engaging the larger community and soliciting their support for FP (10). In the last decade, multiple studies have shown that sparking community dialogue about FP creates a more supportive FP environment by providing opportunities for social support and dialogue, which leads to accelerated diffusion of FP use (15,35,37).

TJ takes a social network diffusion theory approach. Social network diffusion refers to the movement of ideas through social channels (35). People are strongly influenced by the thoughts, attitudes, and judgments of their influential community leaders and social networks (35,38). Thus, TJ draws on peoples' social networks to spread and diffuse information in favor of FP use (35). Specifically, the intervention aims to catalyze diffusion of new ideas through men's and women's networks using community members identified as influential actors (35). The intervention first engaged communities in social network mapping to identify influential social groups and individuals (35). The TJ intervention then involved training these influential groups and opinion leaders (i.e., religious leaders, village savings and loan groups) to encourage reflection and community dialogue about fertility desires and contraception among all community members (35). The influential actors subsequently held group meetings in their communities, using story cards and infographics to stimulate critical discussion around reproductive decisions. The intervention also involved broadcasting FP related conversations on radio shows and linking FP providers with influential groups (35).

### *Study Objectives*

Given the need to understand men's social networks and norms specifically, we focused this analysis on analyzing data from the surveys completed by men in the TJ intervention communities. Our goal was to understand the content and structure of men's social networks and social norms surrounding FP and the relation of these factors to couple's intended FP use. This analysis created indicators for and explored men's social networks and norms related to FP, and subsequently assessed the relationship between men's social networks, social norms, and intention to use FP between baseline and



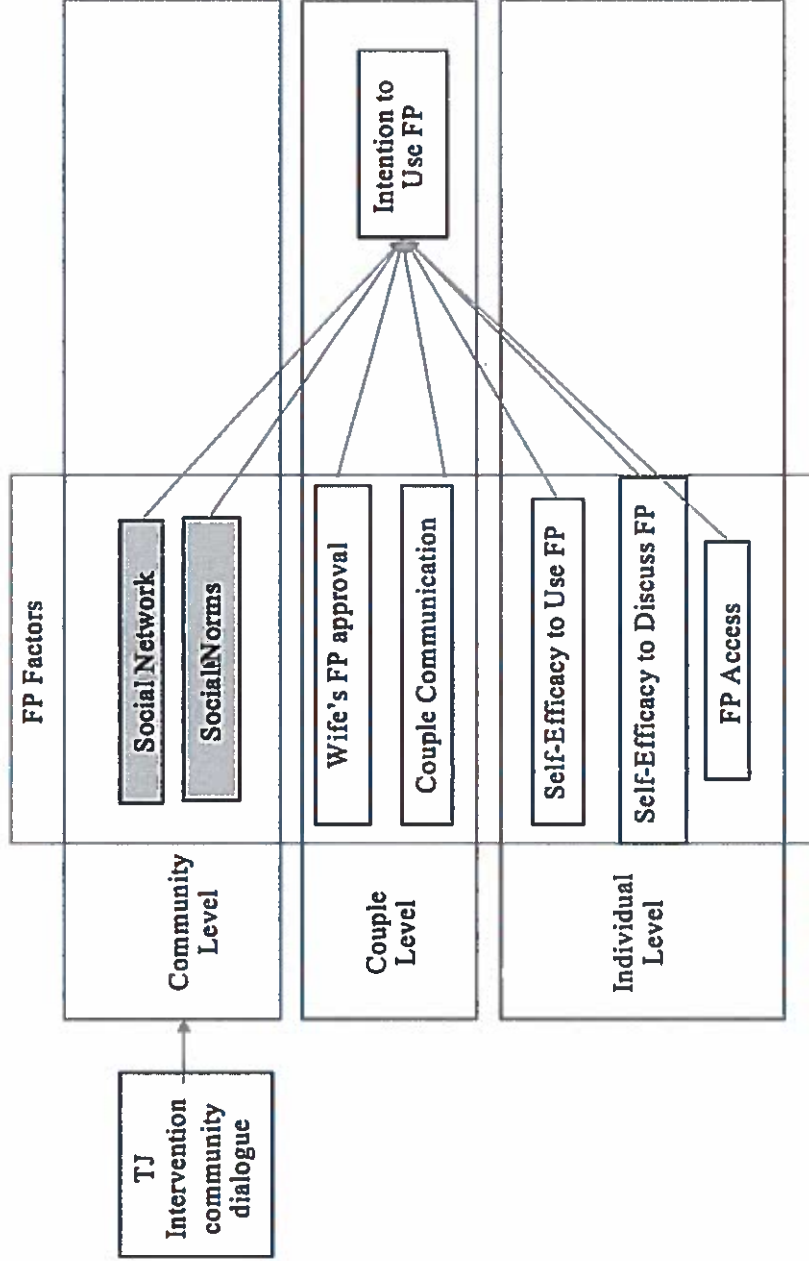
endline. Through unpacking men's social networks and norms and their relationship to FP intentions, this analysis will enable researchers and development organizations to strategize how to better engage Beninese men in FP.

### *Conceptual Model and Hypotheses*

The conceptual model supporting social network diffusion theory centers on the mechanisms underlying the association between community dialogue about FP, FP networks and norms, and FP intention. The items we focus on in this analysis are at the community level and are highlighted in yellow in **Figure 1: Conceptual Model for Couples' Intention to Use FP**. Building on TJ's social network diffusion approach, we hypothesize that men with networks that are more supportive of FP and men who believe that social norms around FP are more supportive of FP use would report greater intention to use FP.

We operationalized supportive social networks and social norms in multiple ways. For example, we consider the size of men's networks and how much of their network is outside of their village, as we expect that both factors may spark more FP communication as well as serve as a bridge to new, outside ideas (17). We also hypothesize that the higher the percentage of men's networks that are their male relatives, the more likely men are to adhere to traditional FP norms that are not supportive of FP (17). Related to social norms, we hypothesize that if FP use is normative and expected by the community and that if the perceived sanctions that would arise from using FP are weak, couples' intention to use FP will increase.

Figure 1 : Conceptual Model for Couple's Intention to Use FP, Community Level Factors Highlighted



We also suspect that certain demographic characteristics may affect the relationship between social factors and FP intentions. Younger age groups may be more supportive of FP, as prior work has found age-specific effects on FP use (17). Those with more living children may be more supportive of FP, but only if they want to space or limit childbearing (39). Those with more education are also more likely to be supportive of FP, but the association between education and FP may be less strong for men than for women (40). Prior work has found that among women, having a co-wife may lead to less FP use, but it is unclear how having multiple wives affects men's FP decisions (17,39).

## II. Methods

### *Data and Sample*

Data for this analysis come from baseline (n=505) and endline (n=522) men's surveys from intervention communities conducted during TJ's scale-up phase. TJ conducted its baseline survey prior to the intervention and then conducted endline surveys 18 months later (three months after the intervention ended) with different participants, resulting in repeated cross-sectional data. The intervention took place in 16 villages in the Ouémé Department. Sampling was stratified by region and village size and was based on the 2012 Beninese Demographic and Health Survey (8). Sampling was conducted with a probability proportional to the adult population (15-59 years) according to the 2015 Benin census (35).

Both surveys included a social network mapping census in which participants were asked to separately give the first name of people that they relied on for material (i.e., money, food), practical (i.e., childcare, chores), and/or emotional (i.e., advice and guidance) support. Because participants could name the same person in multiple

networks, duplicates were removed – defined as having the same relation to the participant and the same first name. Both surveys also asked questions related to FP social norms, self-efficacy for FP use and discussion, couple communication, and FP current and intended use. We use couples’ intention to use FP as our outcome for the following reasons: men alone may not know or accurately report the couple’s actual FP use, there is a strong correspondence between intention to use FP in the future and subsequent FP use, and changing community level factors for FP may be more likely to alter peoples’ future FP use rather than current use (3,41).

One man and one woman per household were interviewed. While they are most likely spouses, these data are not matched. Participating men were over the age of 18 years and in union with a woman ages 18-44 years. Response rates for men were 97% at baseline and 95% at endline. The Institutional Review Board of Georgetown University and le Comité d’Ethique de la Recherche, Institut des Science Biomédicales Appliquées en Santé in Benin approved the study protocol in 2012. This secondary data analysis was deemed exempt by the Institutional Review Board at the University of North Carolina at Chapel Hill.

### *Key Indicators (Appendix A)*

#### *Community Level Factors for FP*

For men’s social networks, we created indicators for both structure (i.e., their network size) and content (i.e., if their network supports FP use) (37). We calculated the size of each man’s network, his relation to those in his network, and where these contacts resided. First, we report the average size of men’s networks (**Network Size**). For residence, we created a variable for the percent of their network that lives outside of their

village as opposed to in their household or village (**Network Outside of Village**). For men's relationship to those in their network, we created a dichotomous variable for whether or not a man's wife was in his network (**Network Wife**). We also created a variable for the percent of men's networks that are comprised of people other than a male relative (i.e., father, brother, or other male relative) (**Network Non-Relative**). We constructed the content of men's interactions within their network, which includes their perception of network members' approval of FP and their communication about FP. We created an indicator for the percent of members they believe approves of FP (**Network FP Approval**) and an indicator for the percentage of their network that they have communicated about FP with (**Network FP Communication**).

To examine the influence of social norms on men's intention to use FP, we assess subjective and injunctive norm indicators. Men were asked their level of agreement with the following subjective norm: *'In this village, it is acceptable to discuss FP'* (**FP Acceptability**). Men were asked their level of agreement with the following injunctive norms: *'Do you think you'd be criticized by community if used MC; Do you think you'd be excluded from social gatherings if used MC?'; 'If a man finds out his wife is using FP, would he yell or beat her?'* (**FP Sanctions**). Social norms questions were asked on a scale of 1-3 (i.e., agree, somewhat agree, disagree; agree, disagree, sometimes) or 1-4 (i.e., strongly agree, agree, disagree, strongly disagree). Due to the different scales, we collapsed all items into dichotomous variables for agree or disagree.

#### *Couple and Individual Level Factors for FP*

We also included variables at the couple and individual level known to be related to FP intentions in our multivariate model. At the couple level, this includes men's

perception of their wives' FP approval and couple communication to discuss FP and childbearing. At the individual level, this includes men's self-efficacy to use FP, men's self-efficacy to discuss FP, and men's FP access. Men's self-efficacy to use FP was measured by the man's confidence in using MC at all times. Men's self-efficacy to discuss FP was comprised of items asking about men's comfort discussing FP with different people in a six-item index. Men's FP access was assessed in a four-item index. We also captured demographic variables known to be influential in individual's FP decisions: age, education, number of wives, number of living children, religion, and ethnicity. Age, education, and number of living children were made into categorical indicators. Number of wives was dichotomized as 'one' or 'more than one,' religion was dichotomized as 'Christian' or 'non-Christian,' and ethnicity was dichotomized as 'Fon' or 'other.'

All items were coded so that 'one' is indicative of an environment more supportive of FP and 'zero' is indicative of an environment less supportive of FP. Indices were created for injunctive norms, couple communication, self-efficacy to discuss FP, and FP access. Indices have different numbers of items, so we created averages rather than summative measures to make the scales comparable in the multivariate model.

#### *FP Intended and Current Use*

We included whether or not men think that they themselves or at least one of their wives will use FP in the future to delay or limit pregnancy as our outcome of interest (i.e., couple's FP intentions). We also report whether or not any of the men believe their wives are currently using FP. Within FP, we include whether or not they believe any wife is

currently using MC or traditional methods. Within MC, we include whether the wife is using a long-acting or short-acting method.

### *Statistical Analyses*

Our first aim with these analyses was to describe men's egocentric social networks and social norms related to discussion and approval of FP use at baseline and endline. Second, we assessed the pairwise correlations between community, couple, and individual level factors related to FP to couples' intention to use FP. Third, we created logistic regression models to examine bivariate associations between men's community, couple, and individual level FP indicators and related covariates and intended FP use. Last, we created a multivariate logistic regression model to relate men's FP community, couple, and individual level factors and covariates that were significant in the bivariate analyses to intention to use FP. We created interactions between these significant variables and an indicator for the baseline or endline survey.

We first created descriptive statistics with numbers and percentages for all categorical variables at baseline and endline. For continuous variables, scales, and indices, we present means and standard deviations. We then tested for significant changes between baseline and endline for the intervention group. For categorical variables, we used Pearson's chi-squared test, which tests for statistically significant differences in values of the categorical variables between baseline and endline. For continuous variables, we use t-tests, which test for statistically significant mean differences between baseline and endline.

Second, we created bivariate correlations between key indicators separately at baseline and endline. While we expect for items to be correlated, correlations that are

statistically significant and larger than 0.80 are problematic as high multicollinearity makes it difficult to separate out predictor variables' unique effects. If two items were significantly correlated above 0.80, one of the two highly correlated variables was dropped.

Third, we used logistic regression to determine the association between men's FP-related social networks and norms and couples' intention to use FP, a dichotomous outcome. Logistic regression has commonly been used to assess the relationship between social factors and FP use (17,37). We first ran binary logistic regressions separately for baseline and endline and we report statistically significant results as odds ratios. We then ran one multivariate logistic regression with men surveyed at baseline and endline to assess how indicators' relationship to FP intentions varied over time. We first ran a fully interacted model, with every indicator interacted with the survey wave indicator. We then ran a model with statistically significant interactions, which we present here. We present our multivariate model results as predicted probabilities, which is the probability of couples intending to use FP given various characteristics on the predictor variables. To take into account TJ's sampling strategy at the village level, we cluster our results at the village level. Given that scales, indices, and some social network measures are measured from zero to one on a continuous scale, we standardized these measures for ease of interpretation.



### III. Results

#### *Descriptive Statistics*

*Men's Demographic Characteristics (Table 1)*

Table 1. Men's Demographic Characteristics							
	Baseline (n=505)		Endline (n=522)		P-Value	Total (n=1,027)	
	n	%	n	%		n	%
<b>Age Group</b>					.008		
18-24	12	2	30	6		42	4
25-24	185	37	207	40		392	38
>34	308	61	285	55		593	58
<b>Education Status</b>					.873		
None	139	28	151	29		290	28
Primary	219	43	220	42		439	43
Secondary or More	147	29	151	29		298	29
<b>Number of Wives</b>					.000		
1	308	61	393	75		701	68
More than 1	197	39	129	25		326	32
<b>Number of Living Children</b>					.000		
None	12	2	36	7		48	5
1	48	10	66	13		114	11
2	77	15	80	15		157	15
3	78	15	92	18		170	17
4	68	13	74	14		142	14
5 or more	222	44	173	33		395	38
Missing	0	0	1	0		1	0
<b>Religion</b>					.697		
Christian	439	87	458	88		897	87
Other	66	13	64	12		130	13
<b>Ethnicity</b>					.434		
Fon	491	97	506	97		997	97
Other	42	4	50	5		30	3

In this sample, the majority of men are over 34 years old (61% baseline; 55% endline), have at least a primary education (73% baseline; 71% endline), and have only one wife (61% baseline; 75% endline). Over one-third have at least five children (44% baseline; 33% endline), most are Christian (87% baseline; 88% endline), and they are

almost exclusively of Fon ethnicity (97% baseline; 97% endline). There are statistically significant differences between baseline and endline men’s samples in their average age, number of wives, and number of children. We control for these differences using multivariate models.

*Men and their Wives’ Fertility and FP Behaviors (Table 2)*

Table 2. Men and their Wives’ Fertility and FP Behaviors							
	Baseline (n=505)		Endline (n=522)		P-Value	Total (n=1,027)	
	<i>n</i>	%	<i>n</i>	%		<i>n</i>	%
<i>Future FP Use</i>							
Intended Future Use of FP	225	45	271	52	0.018	496	48
<i>Current FP Use</i>							
Current Use of Family Planning	221	44	240	46	0.727	461	63
Traditional methods	102	20	24	5	0.000	126	12
Modern contraception	117	23	216	41	0.000	333	32
Long Acting	13	3	27	5	0.031	40	4
Short Acting	109	22	190	36	0.000	299	29

Forty-five percent of men at baseline and 52% at endline reported that they or their wives intended to use FP. While men’s wives’ current use of FP did not increase in a statistically significant way (44% baseline; 46% endline), their use of MC significantly increased from 23% to 41%, and their use of traditional FP significantly decreased from 20% to 5%.

*Men’s Community Level FP Factors (Table 3)*

The social network mapping activity elicited a very small number of network contacts (mean of 2) and 14% of men listed no network contacts at all. On average, less than one-half of men’s network contacts lived outside of their village (35% baseline; 43% endline). Few of men’s networks included at least one wife (13% baseline; 23% endline) and over one-half of men’s contacts were not male relatives (56% baseline; 67% endline). On average, the percent of men’s network contacts that they believe approved of FP

remained low (25% baseline; 25% endline). Men had talked with a small percentage of network members about FP, though this did increase from 15% at baseline to 31% at endline.

While men’s perceived approval of FP by network contacts and their communication about FP was low, their FP norms were more supportive of FP. Seventy-eight percent of men believed it was acceptable to discuss MC in their community at baseline and 98% believed it was acceptable at endline. Men’s agreement with sanctions related to FP use was low (38% baseline; 30% endline), which is agreement with roughly one of the three sanction related questions.

Table 3. Men’s Community Level Factors for FP

		Baseline (n=505)		Endline (n=522)		P-Value	Total (n=1,027)	
		Mean or %	SD	Mean or %	SD		Mean or %	SD
Network Size (range)		2.05 (0-5)	0.93	2.17 (0-4)	0.79	.681	1.79 (0-5)	1.10
<i>Average proportion of:</i>								
FP Networks	Network Outside of Village	.35	.41	.43	.41	.002	0.39	0.41
	Network Wife*	14%		23%		.000	18%	
	Network Non-Relative	.56	.43	.67	.40	.000	0.62	0.42
	Network FP Approval	.26	.39	.25	.36	.612	0.25	0.37
	Network FP Communication	.15	.32	.31	.39	.000	0.23	0.36
<i>Average proportion of:</i>								
FP Social Norms	FP Acceptability*	78%		98%		.000	88%	
	FP Sanctions (3 items) <sup>+</sup>	.38	.32	.30	.19	.000	0.34	0.27

+ index of multiple items on a scale of 0-1

\* binary indicator

*Men’s Couple and Individual Level FP Factors (Table 4)*

At the couple level, the majority of men believed that at least one of their wives approved of FP (54% baseline; 68% endline). The percent of men discussing FP and childbearing with at least one wife was relatively high but varied by indicator. About one-half discussed their opinion about having children (47% baseline; 60% endline), many discussed which MC method to use with their wife (33% baseline; 48% endline),

less than one-half discussed how to obtain MC (30% baseline; 44% endline). In the index, men on average agreed with 37% of the items (about one out of three) at baseline and 51% of the items at endline (about 1.5 out of three).

At the individual level, 76% of men were confident in using MC all the time at baseline and 81% of men were confident in doing so at endline. On average, men were comfortable discussing FP with 38% of people listed (wife, father-in-law, uncle, social group, someone older than them, and a woman other than their wife) at baseline and 42% at endline, which is between two and three of the six people listed. Men agreed with, on average, 37% of the four questions (1.5 out of four) indicating FP access at baseline and 51% at endline (two out of four).

	Baseline (n=505)		Endline (n=522)		P-Value	Total (n=1,027)	
	Mean or %	SD	Mean or %	SD		Mean or %	SD
<i>Couple Level Environment for FP</i>							
At least one wife approves of FP	54%		68%		.000	65%	
Couple Communication about FP (3 items) <sup>+</sup>	.37	.42	.51	.43	.000	0.44	0.43
<i>Individual Level Environment for FP</i>							
Self-Efficacy to Use FP	76%		81%		.000	70%	
Self-Efficacy to Discuss FP (6 items) <sup>+</sup>	.38	.36	.43	.35	.010	0.41	0.35
FP Access (4 items) <sup>+</sup>	.54	.44	.79	.33	.010	0.67	0.41

<sup>+</sup> index of multiple items on a scale of 0-1

### *Correlations*

At baseline, there were no statistically significant associations stronger than 0.80, but at endline, the percentage of network contacts that men communicated about FP (**Network FP Communication**) with was correlated with the percentage of contacts that men believed approved of FP (**Network FP Approval**) at .83. This is not surprising, as both questions were only answered by men that listed social network contacts.

Additionally, when men communicate about FP, it is likely that they also believe that person approves of FP, as people learn about others' experiences with and stances on FP when they talk with them about it (37). We only include the percentage of social network contacts that men communicated with about FP in the multivariate model.

### *Logistic Regressions*

#### *Binary Logistic Regressions for Couples' Intention to use FP in the Intervention Group (Table 5)*

In our bivariate model, all social network and social norm indicators were associated with intention to use FP in at least baseline or endline except for **Network Non-Relative**. **Network Size** is positively associated with intention to use at endline (OR=1.41) but not at baseline. **Network Outside of Village**, **Network Wife**, **Network FP Approval**, and **Network FP Communication** all have positive associations with FP intention at both baseline and endline. Those who believe that FP is acceptable to discuss in the community (**FP Acceptability**) have over twice the odds of intending to use FP than those that do not at baseline (OR=2.50). However, this association is not significant at endline, likely as over 98% agree that it is acceptable to discuss FP. Those that agree, on average, that more sanctions will come from using FP (**FP Sanctions**) have a lower intention to use FP at both baseline (OR=0.66) and endline (OR=0.76).

At the couple level, having at least one wife that men believe approves of FP is associated with over 15 times the odds of intention to use FP at baseline and over 16 times the odds at endline (OR=15.72; OR=16.32). Having more couple communication is also related to higher intention to use FP at baseline and endline (OR=3.30; OR=2.80). At the individual level, having higher self-efficacy to use FP, higher self-efficacy to discuss

FP, and greater FP access are associated with a higher odds of intention to use FP at both baseline and endline.

Table 5: Binary Logistic Regressions for Couples' Intention to use FP		
	Baseline	Endline
	Odds Ratio (95% CI)	Odds Ratio (95% CI)
Time	1.34 (0.89-2.03)	
<i>Men's Community Level Factors for FP</i>		
Network Size	1.04 (0.88, 1.22)	1.41** (1.11, 1.8)
Network Outside of Village	1.23** (1.03, 1.46)	1.41*** (1.16, 1.71)
Network Wife	2.41** (1.26, 4.63)	5.02** (2.08, 12.11)
Network Non-Relative	0.92 (0.75, 1.13)	1.00 (0.72, 1.39)
Network FP Approval <sup>+</sup>	1.89*** (1.45, 2.46)	2.38*** (1.76, 0)
Network FP Communication	2.32*** (1.73, 3.12)	1.99*** (1.55, 3.22)
FP Acceptability	2.5** (1.3, 4.83)	0.35 (0.09, 2.56)
FP Sanctions	0.66*** (0.55, 0.78)	0.76* (0.6, 0.96)
<i>Men's Couple Level Factors for FP</i>		
At least one wife approves of FP	15.72*** (8.81, 28.06)	16.32*** (9.52, 27.99)
Couple Communication about FP	3.3*** (2.66, 4.1)	2.8*** (2.21, 3.54)
<i>Men's Individual Level Factors for FP</i>		
Self-Efficacy to Use FP	5.29*** (3.54, 7.9)	8.28*** (3.63, 18.9)
Self-Efficacy to Discuss FP	3.58*** (2.89, 4.44)	2.04*** (1.63, 2.56)
FP Access	3.23*** (2.67, 3.9)	3.58*** (2.29, 5.58)
<i>Covariates</i>		
Age		
19-24 (ref)	1.00	1.00
25-34	1.33 (0.54, 3.24)	1.64 (0.97, 2.76)
>34	1.02 (0.39, 2.67)	1.03 (0.63, 1.67)
Education		
None (ref)	1.00	1.00
Primary	1.36 (0.86, 2.13)	1.79** (1.17, 2.75)
Secondary or more	2.38* (1.18, 4.81)	3.53*** (2.19, 5.71)
Multiple Wives	1.19 (0.96, 1.49)	0.64** (0.46, 0.88)
Number of Children	0.93 (0.84, 1.03)	0.93 (0.86, 1)
Christian	3.12** (1.54, 6.32)	1.81** (1.17, 2.79)
Fon Ethnicity	1.07 (0.46, 2.5)	2.44* (1.02, 5.86)
*p<.05. **<.01. ***p<.001.		
<sup>+</sup> item removed in multivariate models due to multicollinearity		

Among covariates, age and number of children were not significantly associated with FP intention. Those with primary education had a 79% higher odds of intention to use than those with no education at endline (OR=1.79) and those with secondary education or more had over twice the odds of intention to use compared to those with no education at baseline (OR=2.38) and over three times the odds of intention to use compared to those with no education at endline (OR=3.53). Those with multiple wives had a lower odds of intention to use at endline (OR=0.64) but not at baseline. Those that are Christian had a higher odds of intention to use at baseline and endline than those of other religions (OR=3.12; OR=1.81) and those of Fon ethnicity had a higher odds of intention to use at endline but not at baseline compared to those of other ethnicities (OR=2.44). Time was not statistically significantly associated with intention to use FP. Given either a lack of a significant association with intention to use or multicollinearity, age, children, **Network Non-Relative**, and **Network FP approval** were taken out of the multivariate model.

*Multivariate Logistic Regression for Couples' Intention to use FP (Table 6)*

In the multivariate model with interactions, time itself was not significantly associated with intention to use FP. The predicted probability of intention to use FP at baseline was 55% and the predicted probability at endline is 47% although this difference is not statistically significant. While the average person's predicted probability of intention to use FP decreased, overall intention to use FP increased from baseline to endline as did use of MC. Men's **Network Size** and listing at least one wife in their network (**Network Wife**) were not associated with intention to use FP at baseline but were significantly associated with intention to use FP at endline. Specifically, at endline,

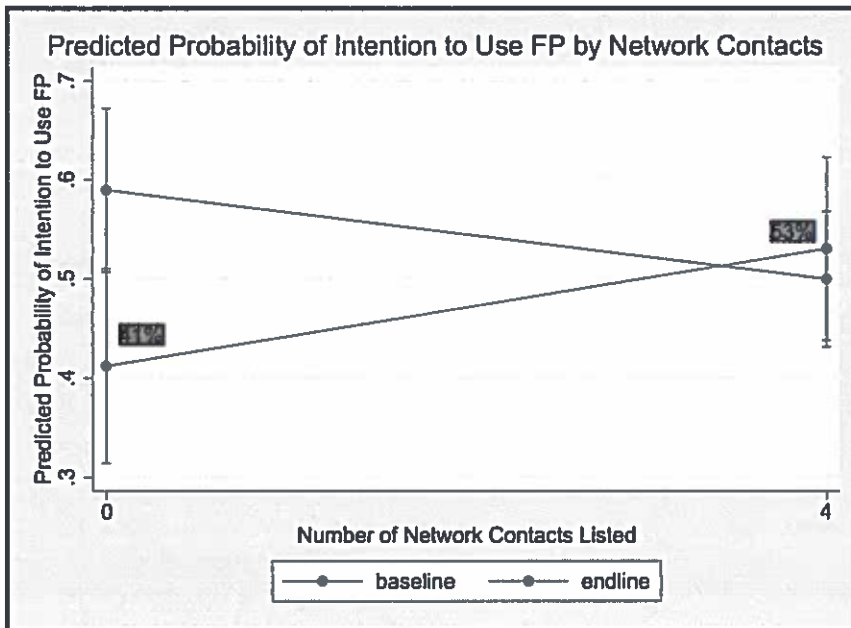
men that listed zero network contacts had a 41% predicted probability of FP intention and those that listed four network contacts had a 53% predicted probability (*Figure 2*). At baseline, men listing at least one wife in their network had a lower predicted probability of FP intentions than those listing no wife. At baseline, those listing at least one wife had a 49% predicted probability of intention to use whereas those not listing a wife in their network had a 56% predicted probability of intention to use (*Figure 3*). At endline, those listing a wife in their network had a 58% predicted probability of use and those not listing a wife in their network had a 44% predicted probability (*Figure 3*). Among the social network variables, the only one significantly related to FP intentions in the same way over time was the percent that men communicate with about FP (**Network FP Communication**) (OR=2.68). Men had a 47% predicted probability of intending to use FP if they talk with 0% of their network contacts and a 60% predicted probability of intending to use FP if they talk with 100% of their network contacts about FP (*Figure 4*).

Among the social norms variables, men's perceived acceptability of FP discussion in the community was not associated with FP intentions at baseline but was significantly associated with intentions at endline. At baseline, men had a 47% predicted probability of intending to use FP if they believe that it is not acceptable to discuss FP in their community (*Figure 5*). At endline, men that did not believe it was acceptable to discuss FP had a 67% predicted probability of intention to use FP. Men's perceptions that people would incur sanctions in their community if they used FP (**FP Sanctions**) was associated with intention to use FP at baseline and at endline.



Table 6: Multivariate Logistic Regression for Couples' Intention to use FP in the Intervention Group	
	(n=976)
	Pseudo R <sup>2</sup> =.4144
	Odds Ratio (95% CI)
Time	0.28 (0.01, 5.53)
<i>Men's Community Level Factors for FP</i>	
Network Size	0.84 (0.65, 1.08)
Time*Network Size	1.52* (1.01, 2.28)
Network Outside of Village	0.91 (0.50, 1.66)
Network Wife	0.56 (0.23, 1.37)
Time*Network Wife	5.65* (1.62, 19.67)
Network FP Communication	2.68* (1.46, 4.93)
FP Acceptability	2.01 (0.93, 4.34)
Time*FP Acceptability	0.06* (0.00, 0.94)
FP Sanctions	0.68*** (0.56, 0.83)
Time*FP Sanctions	1.63** (1.13, 2.34)
<i>Men's Couple Level Factors for FP</i>	
At least one wife approves of FP	5.88*** (3.90, 8.86)
Couple Communication about FP	1.99*** (1.71, 2.32)
<i>Men's Individual Level Factors for FP</i>	
Self-Efficacy to Use FP	0.50* (0.25, 0.97)
Time*Self-Efficacy to Use FP	4.75*** (2.37, 9.54)
Self-Efficacy to Discuss FP	1.42*** (1.18, 1.72)
FP Access	1.82** (1.22, 2.71)
<i>Covariates</i>	
Education	
None (ref)	
Primary	0.88 (0.61, 1.26)
Secondary or more	1.63** (1.17, 2.25)
Multiple Wives	1.34 (0.97, 1.85)
Time*Multiple Wives	0.33*** (0.19, 0.56)
Christian	2.55 (0.99, 6.58)
Time*Christian	0.24** (0.08, 0.69)
Fon Ethnicity	0.33 (0.09, 1.19)
Time*Fon Ethnicity	11.73* (1.44, 95.67)
Intercept	0.40 (0.07, 2.42)
*p<.05. **<.01. ***p<.001.	

**Figure 2: Predicated Probability of Intention to Use FP by Network Contacts**



**Figure 3: Predicated Probability of Intention to Use FP by Network Wife**

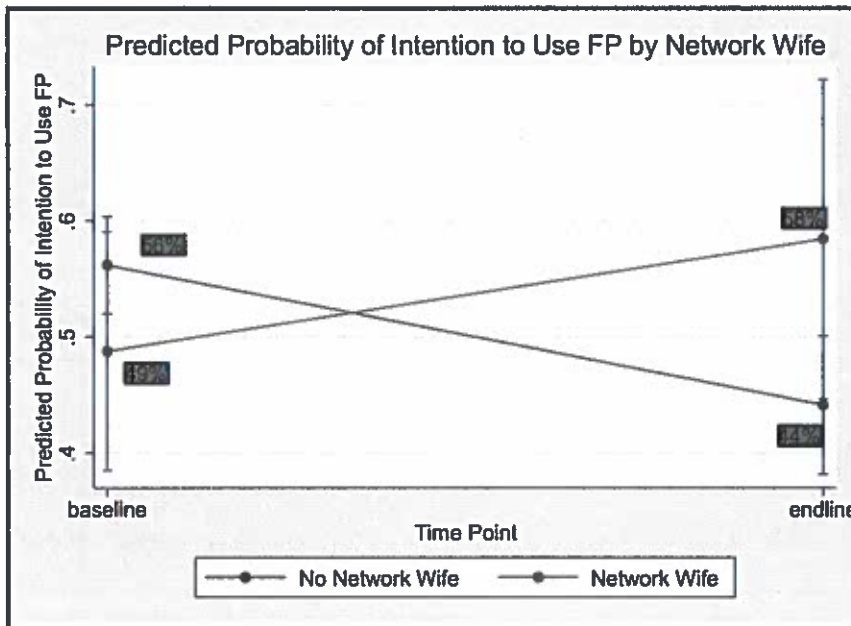


Figure 4: Predicated Probability of Intention to Use FP by Network FP Communication

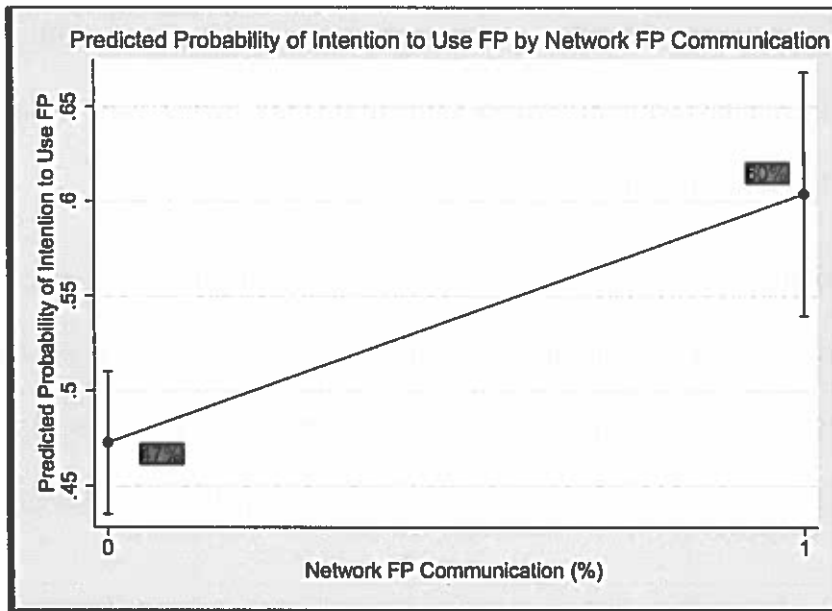
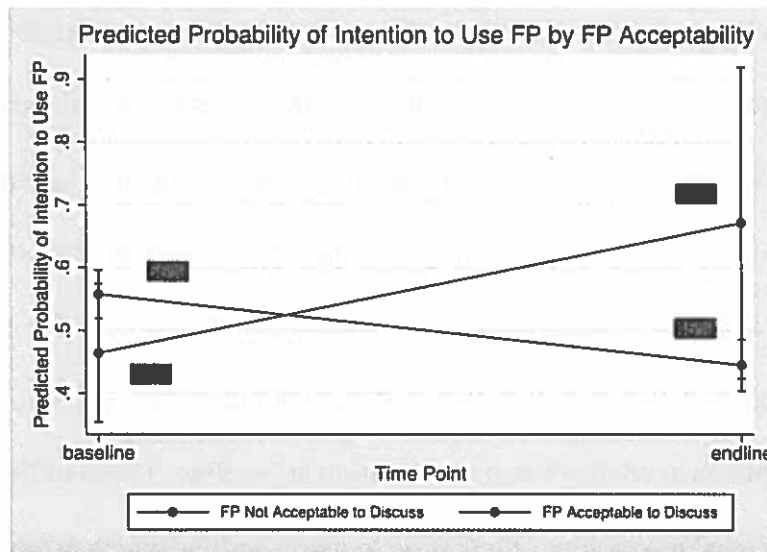


Figure 5: Predicated Probability of Intention to Use FP by FP Acceptability



At the couple level, having at least one wife that approves of FP (OR=5.88) and communicating about FP with a wife (OR=1.99) were positively associated with intention to use FP and these associations do not vary over time. If men believed that their wife did not approve of FP, they had a 31% predicted probability if intending to use FP. If men believed that their wife did approve of FP, they had a 59% predicted

probability of intending to use FP. If men did not talk with their wives about FP method, FP access, or their ideal number of children, they had a 48% predicted probability of intention to use. If men talked with their wives about these three things, they had a 58% predicted probability of intention to use FP.

At the individual level, self-efficacy to use FP was significantly associated with intention to use FP at baseline and endline. Self-efficacy to discuss FP was positively associated with intention to use and did not vary over time (OR=1.42). FP access was also positively associated with FP intentions and this relationship did not vary over time (OR=1.82).

Among covariates, those with a secondary education had a 63% higher odds of intending to use FP than those with no education (OR=1.63). Men having multiple wives was negatively associated with FP intentions at endline but there was no association at baseline. Men had a 57% predicted probability of intending to use if they had multiple wives at baseline, but they had only a 40% predicted probability of intending to use if they had multiple wives at endline. Being Christian was significantly associated with intention to use at endline but not at baseline. Being of Fon ethnicity had a positive association with FP intentions at endline but no association at baseline. Those of Fon ethnicity had a 47% predicted probability of intention to use at endline whereas those that are not of Fon ethnicity had a 31% predicted probability of intention to use.

Our model with interactions has a pseudo  $R^2$  of .4144, indicating that while our model explains a substantial portion of the variation in intention to use FP, other factors beyond the social and couple level are important as well.

#### IV. Discussion

This is the first in-depth study to assess the social networks and social norms related to FP use among men in Benin. It is also the first in Benin and one of the first in Sub-Saharan Africa to explore associations between men's social networks and social norms related to FP and intended FP use. It provides insights into the composition of men's networks and how men's social networks and norms may be related to FP behavior given the prior focus on women's networks. Our work has five main findings related to factors affecting men's FP use: men's networks are small, men's small networks are important for FP intentions, couple level factors may dominate FP intentions for men, more men believe that discussing and using FP is acceptable in their communities than have actually spoken about FP, and other factors beyond the social and couple level are substantially affecting couple's FP intentions.

First, we find that men have small networks and that about 14% of men listed zero network contacts. This contrasts with literature on women's networks, which finds that women have, on average, between four and 18 network members and speak with a high proportion of network members about FP (17,20,27). That said, our second main finding is that men's small networks are important for FP intentions. Most social network indicators were strongly correlated with intention to use FP in bivariate models. This may be because men are likely to have known their networks since childhood whereas women are more likely to have altered networks after marriage (20). Among the community level factors we assessed, **Network FP Communication** had the most significant and consistent relationship with FP intentions in our multivariate models. **Network FP Communication** dominates social network mechanisms in prior work as well (20). Given

that men did not communicate with the majority of their network contacts about FP, this indicates that men discussing FP with even one contact may be important to FP decision-making. We also found that other social network and norm indicators (i.e., **Network Size**, **Network Wife**, and **FP Acceptability**) were significantly related to intention to use FP at endline but not at baseline.

Our third main finding is that while FP communication in men's networks is important, we find that couple level factors have the strongest relationship to FP intentions. Both men's communication with their wives about FP and their perception of their wives' approval for FP are significantly related to the couple's FP intentions at baseline and endline. This corroborates decades of work stating that the husband-wife dyad must be involved in FP decisions (14,15,42,43). Most work with women finds that the couple-level is important, namely that a partner's approval is influential in women's FP decision (27,44). Again, one of the most cited reasons for women not using FP in Benin is that women believed their partner did not approve of FP (10). Yet, women did not speak with their partners about FP (10). We find this connection to be salient after controlling for social and individual characteristics, as a spouse's approval and couple communication remain associated with FP intentions.

Importantly, although couple communication about FP and perceived wife's approval of FP are influential, few men listed their wife in their network, some have not communicated with their wives about FP, and about one-third do not believe their spouse approves of FP. As FP decisions largely happen at the dyadic level, it is critical that spouses be in men's material, emotional, and/or practical support networks. Our findings at the couple level have two caveats. First, more men said that they communicated with

their wife about FP than listed their wife in their network, indicating that there may be an issue related to men understanding the questions in the social network mapping census. Additionally, a prior study in Kenya found that most men had a social network and talked with much of their network about FP, further indicating that there may be an issue with the social network mapping census's data collection (20). Second, men were asked about their own or their wives' intention to use FP in the future rather than their own intention alone. This specific question may then be more influenced by interactions within the husband-wife dyad than men's intentions for themselves, which may be more influenced by community level factors.

Our fourth finding is that more men believe that FP discussion is acceptable in their community than believe that their network members or spouse approve of FP use. At the community level, over three-quarters of men believe it is acceptable to discuss FP in their community at baseline, about one-half believe their wife approves of FP, and men believe that only one-quarter of their networks approve of FP. Additionally, more men believe that others approve of FP use than they had actually communicated about FP with at the community and the couple level. **Network FP Approval** at baseline (26%) was higher than **Network FP Communication** (15%). Prior work finds that men make assumptions about their network members' FP use, reporting their network members' approval of FP based on their friends' child spacing or family size (21). In contrast, women tend to talk with their network about FP directly and then decipher their networks' approval of FP (21,27). At the couple level, more men also believe that their wives approve of FP (52%) than have discussed childbearing (47%), FP method choice (34%), or obtaining FP with their wives (30%). More than three-quarters of the men believed that it was acceptable to

discuss FP in their communities and most believed that others approved of FP use, yet few communicated about FP and men's opposition to FP continues to serve as a key barrier to FP use in Benin. These findings indicate both a need and opportunity for increased FP related dialogue in these communities.

Lastly, our multivariate model indicates that while social networks and social norms influence men's FP intentions, other factors are at play as well. Our included variables of interest and related covariates are known to influence FP use, but factors beyond the social and couple level may be affecting couple's FP intentions. One possible explanation is that while intention to use is closely tied to subsequent FP use, it is not clear whether factors contributing to current and future FP use are the same (3). Another possibility is that FP factors and their relationship to FP intentions may vary by parity or other demographic factors (44). The relationship between these factors and FP intentions may vary over time as well, as Benin's MC prevalence rate increases (27).

### *Limitations*

Repeated cross-sectional rather than longitudinal data collection prohibited us from assessing the impact of TJ's intervention on FP intentions. Additionally, in the repeated cross-section there is not balance between the baseline and endline clusters among demographic variables that we would have expected to stay the same (i.e., FP access). We also are unable to match men and women's data from households to confirm if men's perceptions of their wives' beliefs or behaviors are true (i.e., if their wife does intend to use FP in the future). Thus, we are unable to confirm that our measures of FP intention and use are accurate. Network data is also difficult to collect. There was high missingness in the networks, which may indicate that men had few social network



contacts but could also indicate that men did not understand the questions in the social network mapping census. This high missingness had implications for our multivariate model, as incomplete data was dropped from further analysis. Lastly, community level normative change takes time and the 18 months in between surveys was arguably not long enough to see significant changes among social networks and social norms related to FP.

## V. Conclusions

TJ aptly targeted increasing the dialogue around FP with communities in Benin given men's high social acceptability for FP discussion but little communication around FP. Additionally, men have few social networks contacts and even fewer contacts that discuss or approve of FP use. Yet, men communicating about FP with their network contacts and with their wives remains significantly related to FP intentions. These findings emphasize the need to increase FP related dialogue among all community members in Benin.

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<b>Appendix A: Items in Model</b>	
Variable Descriptions	Index or Scale
<b>Outcome</b>	
Intention for Future Use by any wife	
<b>Covariates</b>	
Age	
Education	
Number of wives/co-wives	
Number of living children	
Religion	
Ethnicity	
<b>Men's FP Environment: Individual and Couple Level</b>	
Any wife approves of using FP	
12 months, Discussed opinion about having children with wife/husband	Couple communication
12 months, Discussed with wife/husband which MC you would like to use	Couple communication
12 months, Discussed with wife/husband how to obtain MC	Couple communication
MC is Available in Community	FP access
Has Transportation to MC	FP access
Has Financial Means to Purchase MC	FP access
Has enough information to decide on MC	FP access
Confident in using MC all the time	
Feel comfortable talking with wife about FP	Self-Efficacy to Discuss FP
Comfort with discussing MC with father/mother-in-law	Self-Efficacy to Discuss FP
Comfort with discussing MC with uncle/aunt	Self-Efficacy to Discuss FP
Comfort with discussing MC with social group	Self-Efficacy to Discuss FP
Comfort with discussing MC with someone older than you	Self-Efficacy to Discuss FP
Comfort with discussing MC with woman/man other than wife/husband	Self-Efficacy to Discuss FP
<b>Men's FP Environment: Social Level</b>	
In this village, it is acceptable to discuss FP	Subjective Norm
Do you think you'd be criticized by community if used MC?	Injunctive Norm
Do you think you'd be excluded from social gatherings if used MC?	Injunctive Norm
If a man finds out his wife is using FP, would he yell or beat her?	Injunctive Norm
Number of network contacts	Network
Wife is in any network	Network
% of Network that is Male Relative	Network
% of Network living in their household or village	Network
% of Network they believe approves of FP	Network
% of Network they communicate about FP with	Network