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Making marriages last

Trust is good, but credible information is better

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Abstract: In high HIV-prevalence contexts, marriage can lead to significant risks through spousal behaviours. Yet, individuals cannot rely on their spouse to reveal their HIV status. Couples' HIV testing and counselling can provide spouses with credible information about each other's HIV status. Using random variation in participation in couples' testing, this study documents that uncertainty about spouses' HIV status contributes to marital dissolutions. Innovations, such as HIV couples' testing and counselling—and, in the future, possibly rapid self-testing—that reduce this uncertainty can thus have profound impacts on marital behaviours and stability.

Keywords: HIV prevention, field experiment, subjective beliefs, uncertainty
JEL classification: C93, I12, I30

Figure and tables: at end of the paper

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1 Introduction

Since the seminal article by Lucas and Prescott (1971), economists have examined investments under uncertainty in a variety of contexts. Becker et al. (1977) applied the idea to marriage and divorce, suggesting that an increased likelihood of separation or divorce reduces the incentive for spouses to invest in marriage-specific assets. This theory has since been tested empirically by measuring changes in investments in marriage-specific capital, such as a spouse's education, children, household specialization, and home ownership, after the adoption of unilateral divorce laws (Stevenson 2007). Uncertainty about the quality or integrity of the marriage can also affect investments in the relationship. For example, with greater uncertainty about paternity, men are less willing to invest in their (alleged) offspring and more likely to divorce (Alexander 1974; Anderson and Greene 2005).

Perhaps nowhere more than in sub-Saharan Africa do individuals face such high levels of risk and uncertainty within marriage. In particular, with high rates of HIV and evidence of frequent concurrent partnerships, marriage, and other long-term relationships do not necessarily provide protection against HIV infection. For example, the Demographic and Health Survey (DHS) across Africa found that at least 25 per cent of married men and 11 per cent of married women reported having sex with a non-spousal, non-cohabiting partner in the previous 12 months (Curtis and Sutherland 2004). Evidence suggests that sexual relationships in Africa often include long-term concurrent sexual partnerships involving high rates of coital risk exposures among secondary partners (Harrison and O'Sullivan 2010; Morris et al. 2010). Indeed, research has found that a woman's risk of infection is greatest when married (Bongaarts 2007; Clark et al. 2009; Glynn et al. 2003). Because of these patterns, some advocates speak publicly about the potential dangers of marriage. Stephen Lewis, UN Special Envoy for HIV/AIDS, remarked, 'One of the most dangerous environments for a woman in Africa is to be married' (Lewis 2005).

Marriage may also make it more difficult to use condoms or abstain from having sex, even when individuals believe that condoms can protect against HIV infection. It has been shown that it may be more difficult to adopt or suggest preventative behaviours with a spouse or primary partner (Chimbiri 2007).

In addition to the increased HIV risk associated with marriage, there is also a great deal of uncertainty related to this type of risk. Individuals lack perfect information about their spouse's HIV status and the risk they face from their spouse (e.g. current and future fidelity), and there is evidence of widespread mistrust of partners. In a survey of men in committed partnerships in urban Malawi, men were asked about their level of trust in their partner; a full 70 per cent suspected their partner of having another partner.[1] Another survey in Malawi, conducted in rural villages, found that 22 per cent of women reported knowing their spouse had another partner and another 34 per cent reported they suspected or did not know.[2] In high HIV-prevalence areas, most people

[1] Authors' own calculations using data collected among 1,448 uncircumcised men in Lilongwe in 2009. See Chikhumba et al. (2014).

[2] Authors' own calculations using 2004 Malawi Longitudinal Study of Families and Health (MLSFH) data from 1,530 adult women in rural Malawi (Kohler et al. 2015).

know others who are currently infected or have died of HIV, and many worry or believe there is a chance of future HIV infection.

Despite the challenges of adopting preventative behaviours within marriage, there is evidence that individuals within committed relationships do have some strategies that can help to reduce their risk. For example, individuals may increase communication within their marriage or partnership (Zulu and Chepngeno 2003), engage with others in the community to acquire information about or monitor fidelity (Hirsch et al. 2007), or end the relationship (Reniers 2008). In this paper we focus on one of these strategies: dissolution of a marriage in response to resolving one component of the uncertainty within marriage—a spouse's HIV status.

Previous research on divorce as a coping strategy has shown an association between the dissolution of marriage with increased suspicion about a partner's fidelity or when a partner has been found to be HIV positive (Grinstead et al. 2001; Porter et al. 2004). Reniers (2008), using panel data in rural Malawi, found that being worried about HIV and suspicion of a spouse's infidelity were significantly associated with an increase in the likelihood of divorcing in subsequent survey waves. Smith and Watkins (2005) also found in rural Malawi that marriage was significantly associated with worry about HIV risk; moreover, women who suspected their husbands of infidelity were more than twice as likely to become more worried over time, and becoming more suspicious increased the likelihood of becoming more worried by approximately 70 per cent.

While the association between HIV risk and divorce is suggestive of a behavioural response to risk and uncertainty, a causal interpretation may be biased by unobserved characteristics of individuals or the relationship that are omitted from the analysis. This paper, on the other hand, examines the causal impact of learning a spouse's HIV status. To do so, we compare marital outcomes of HIV-negative couples, some of whom were randomly assigned to be counselled and tested, and to learn their HIV results together (rather than individually). Couples who tested together learned their spouse's HIV (negative) results along with their own, perfectly informing them of the current risk of infection they faced in the marriage.

Our results suggest large effects of couples' HIV testing on marriage. Two years after the HIV testing, we find a 3.8 to 4.8 percentage point reduction (from a base of 7.7 per cent among couples offered individual testing) in the likelihood of divorce or separation among couples who learned their HIV-negative results together.

In contrast to counselling alone, there are several mechanisms through which couples' counselling could impact marital outcomes. First, because each member of the couple learns the other's HIV test results, this provides credible evidence of a spouse's HIV status. This information could provide some information regarding a spouse's faithfulness or infidelity, either confirming or rejecting prior beliefs, which in turn could reduce worry or anxiety about future HIV risk. This may directly improve the marriage or could reduce the need to dissolve the marriage to protect oneself from HIV. A second feature of couples' counselling is that it could provide a forum for increased communication between spouses about sex or HIV. The importance of spousal communication is often emphasized in family planning programmes, and there have been numerous cross-sectional randomized studies that show positive correlations between spousal communication and contraceptive use. Increased spousal communication may also be effective in providing information useful for evaluating one's own risk of infection (Gregson et al. 1998; Schatz 2005; Zulu and Chepngeno 2003). While our data is somewhat limited to fully identify the exact mechanisms, we show that those who participated in couples' counselling were significantly less likely to be worried about getting HIV and less worried about their last HIV test.

While this study is the first, to our knowledge, to examine the causal effect of couples' HIV testing on divorce, there have been several similar randomized and non-randomized studies. Angelucci and Bennet (2017) use panel data of adolescent girls to study the impact of repeat HIV testing and find that increased testing increases the likelihood of marriage over almost three years. Another study in the United States examines the impact of couple-based risk reduction interventions that were randomly allocated among 535 African American HIV serodiscordant couples. One year later, condom use was significantly higher and the number of unprotected sexual acts was significantly lower among those who were randomized into the couples' intervention, but there was no impact on concurrency or sexually transmitted diseases (El-Bassel et al. 2010). Lastly, a study in Tanzania randomized women attending antenatal clinics into receiving either individual or couples' HIV counselling and testing. In this study, however, the participation rates of women receiving the couples' counselling was significantly lower than the individual treatment because the couples required that the women return for a subsequent visit; this differential compliance complicates statistical inference (Becker et al. 2010).

2 Research design

2.1 Data and experiment

To study the impact of couples' HIV testing, we use data from the Malawi Longitudinal Study of Families and Health (MLSFH) (Kohler et al 2015) and the Malawi Incentive Project (Kohler and Thornton 2012). The MLSFH is a longitudinal study of men and women in three districts of rural Malawi. The original respondents included ever-married women and their husbands who were randomly selected from around 125 villages in 1998 and re-interviewed in 2001. In 2004, an additional sample of randomly selected adolescents/young men and women (aged 14–24) from the same villages was added to the original sample. Each respondent and respondent's spouse were eligible to be (re)interviewed in 2006, 2008, and 2010. Survey attrition has been documented in the MLSFH cohort profile, and while attrition has been selective, as is expected in contexts where migration and mortality are key factors resulting in attrition, there is no evidence that selective attrition biases the estimates of key relationships related to marriage or HIV-related behaviours (Kohler et al. 2015). During the surveys in 2004, 2006, 2008, and 2010, respondents were offered free home-based HIV testing (Kohler et al. 2015).

In 2006, a sub-sample of couples and individuals were randomly selected, based in part on their HIV and marital status in 2004, to be a part of the Malawi Incentives Project (Kohler and Thornton 2012). The study included both unmarried individuals and married couples, as well as HIV-positive and HIV-negative respondents, who had previously been recruited for the MLSFH. The aim of this project was to investigate whether financial incentives for remaining HIV negative would affect individuals' HIV risk-taking behaviour and HIV incidence. Our earlier analyses found no evidence supporting this hypothesis (Kohler and Thornton 2012).

In this paper, we utilize a different design aspect of the Malawi Incentives Project study for investigating the role of how credible information about the spouse can affect marriage outcomes and behaviours within marriage. Specifically, in response to stipulation during the human subject research approval process, the design of the Malawi Incentives Project study adopted couples' testing and counselling for obtaining and communicating HIV test results to married participants. As a result, couples who were selected in 2006 for the Malawi Incentive Project were offered 'couples' counselling' in which they would test and learn HIV results together, rather than being

offered an individual, private, HIV test.[3] Only a random sub-set of MLSFH respondents were selected for the Malawi Incentive Project, and only married couples who were selected for this project were offered couples' counselling. Married couples not selected for the Malawi Incentive Project were offered individual HIV testing and counselling, in the same fashion as was offered to unmarried MLSFH respondents.

Our analyses exploit the fact that, in essence, the design of the 2006 MLSFH study for the Malawi Incentive Project created a random assignment to couples' counselling. Couples' HIV testing involved spouses receiving counselling together and learning both spouses' HIV results together. Only individuals who were married and whose spouses were available were given the chance to have couples' counselling. Both spouses were required to individually agree to the couples' counselling and testing. If one member of the couple did not agree to couples' counselling, then both members of the couple would test for HIV as an individual.

Surveys and HIV testing were again conducted in 2008 as part of the MLSFH. We have several sets of outcome variables measured in 2008. First, we examine the effect of couples' counselling on divorce or separation approximately two years after the 2006 HIV testing. A detailed retrospective marital history suveyed in 2008 allows us to measure marital dissolution. We also use questions asked in 2008 about how worried individuals were about getting HIV, getting HIV from their spouse, and about having their most recent HIV test. Respondents were asked: 'How worried are you that you might catch HIV/AIDS?'; 'Women can become infected with HIV/AIDS in a number of ways. Out of the following list, which one are you most worried about for yourself?'; and 'How worried were you about your last HIV test result?'. For all respondents, the last HIV test refers to the one conducted in early 2008 as part of the Malawi Incentives Project.

2.2 Sample

Figure 1 presents information on the sample and randomization. The sample includes women who were married and were interviewed in both 2004 and 2006. In addition, we restrict the sample to couples who were HIV negative in both 2004 and 2006. Individual women (who were married) are our unit of analysis. In total, 326 women were assigned to couples' counselling (treatment) and 283 were assigned to individual counselling (control).

To be counselled as a couple, both spouses had to have been available to meet with the survey team and were required to individually agree to couples' counselling. Approximately 33.4 per cent of those offered couples' counselling actually counselled with their spouse. The reasons why the remaining individuals did not take part in couples' counselling were that they were not found/interviewed, refused to take part, their spouse was not found, or they were tested as an individual.[4]

[3] Respondents in the Malawi Incentives Project were surveyed and tested four times over the next 12–15 months. At the end of the third visit, respondents were offered another HIV test either as a couple—if initially assigned to a couples' test—or as an individual. Those who were offered couples' counselling were also part of the Malawi Incentives Project that offered monetary incentives to remain HIV negative for one year. Our analysis evaluates the impact of both couples' counselling and being part of the incentives study. Kohler and Thornton (2012) find no impact of being offered incentives on sexual behaviour or HIV status.

[4] Five respondents had no information on how they tested in 2006. These were dropped from the analysis.

We use the variables collected in the survey conducted in 2006, before the HIV testing, as baseline data. Table 1 presents some of the baseline summary statistics and tests for balance across a number of characteristics as well as for differential attrition with respect to these baseline variables.

The average age in the control group was just over 40 years with an average of approximately 4.3 years of education. Because the survey was conducted in three different regions, the sample was ethnically and religiously diverse with 18.7 per cent being Yao, 30.1 per cent Chewa, and 39.9 per cent Tumbuka. The majority, 64.9 per cent, were Christian. An additional 16 per cent of the respondents were Muslim. Respondents had been married for an average of 17 years, with 95 per cent of spouses living in the same village. Around 23 per cent of the individuals reported that their spouses had another partner when they met—further corroboration of the high levels of uncertainty related to a spouse's fidelity. The vast majority (9 out of 10), however, reported discussing HIV at the beginning of their relationship. Almost 10 per cent believed that their spouse was HIV positive when they met, increasing to 46 per cent at the time of the survey. Almost 40 per cent believed that their spouse might have another sexual partner, and 44 per cent said that they worried most about getting HIV from their spouse. Approximately 86 per cent believed that they had some future likelihood of HIV infection, whereas 47 per cent believed they had the infection at the time of the interview. Many were worried about getting HIV (45.3 per cent).

Column 2 presents the difference in average characteristics between those randomly offered to test as a couple and those offered to test individually. Each number in column 2 is the coefficient of a single regression of the baseline variable on an indicator of being assigned into couples' counselling and region fixed effects. Standard errors are clustered by village. Almost all of the variables are balanced across treatment (couples) and control (individual testing).

Overall, 90 per cent of those in the sample were interviewed in 2008. There is no significant difference overall across individual vs. couples' testing (coefficient 0.017, p-value=0.533). Column 3 presents tests of differential attrition. Each row in column 3 presents estimates from separate regressions of having attrited in 2008 on the baseline variable, an indicator of being assigned to couples' testing in 2006, the interaction of couples' testing and the baseline variable, and region dummies. Robust standard errors are clustered by village. There is some differential attrition across baseline variables—in other words, those assigned to couples' testing with certain baseline characteristics are more likely to attrit. Those who were assigned to couples' testing who believed their spouse had another partner, who had ever used a condom, or who reported more sexual partners, were more likely to attrit. The analytical sample—women with complete survey data—consists of 609 married women.

3 Results

3.1 Empirical strategy

To empirically measure the impact of couples' counselling and testing on marital outcomes, we use the fact that couples' counselling was randomly offered and estimate the following intention to treat estimate (ITT):

$$Y_i = \alpha + \beta_1 Assigned\ Couple_i + X_i'\gamma + \varepsilon_i,$$

where *Assigned Couple* indicates that individual *i* was offered the opportunity to learn their HIV results as a couple rather than as an individual. In some specifications we include a vector of baseline controls that include age, age-squared, years of education, ethnicity, religion, ever having used a condom, and region fixed effects—each measured in 2006. We cluster standard errors by village and run linear ordinary least squares (OLS) regressions.

The main empirical strategy compares the marital behaviour in 2008 of couples who were offered individual HIV testing with couples who were randomly offered couples' counselling. We present results from this comparison (the intention to treat estimates) and the treatment on the treated estimates using an instrumental variables strategy:

$$Y_i = \alpha + \hat{\beta}_1 Tested\ as\ Couple_i + X_i'\gamma + \varepsilon_i$$

where *Tested as Couple* is estimated by:

$$Tested\ as\ Couple_i = \alpha + \beta_1 Assigned\ Couple_i + X_i'\gamma + \varepsilon_i.$$

3.2 Results

Table 2 presents the main results of the impact of couples' counselling on marital dissolution. First, the average rate of separation among those in the control group was 7.7 per cent. Couples' counselling reduced the likelihood of divorce and is statistically significant in all specifications (with and without controls, OLS, and instrumental variables (IV)). The OLS estimates range from reducing the likelihood of divorce from 3.8 to 4.8 percentage points, while the IV estimates suggest a reduction of 11.3 to 13.7 percentage points. The IV estimates rescale the OLS estimates by the percentage in the treatment group who actually received couples' counselling (33 per cent). Because the IV estimate is considerably larger than the average rate of divorce in the control group, our preferred specification is the treatment effect on the treated (TOT) (i.e. OLS).

How did couples' counselling reduce divorce? One possible mechanism is the reduction in uncertainty about the risk of infection within the marriage. We present results consistent with this, finding that couples' counselling significantly reduced reported worry about present and future risk of infection (Table 3). Respondents who tested as a couple were less worried about getting HIV (by 8.2 to 5.6 percentage points with the OLS estimates and 24.3 to 15.7 percentage points with the IV estimates) and less worried about their last HIV test (by 4.7 to 4.1 percentage points and 14.1 to 11.5 percentage points with the OLS and IV, respectively). There is no significant effect of believing that the main cause of worry over HIV infection is due to infection from a spouse.

4 Conclusion

Throughout the world, marriage is one of the most significant events in a person's life, forming legal, economic, and social ties between spouses and their extended families. While the benefits of marriage include specialization, the provision of insurance, risk sharing, and economies of scale, marriage can also be associated with risk and uncertainty. In high HIV-prevalent areas, interactions between husbands and wives are among the most important behaviours affecting HIV risks, long-term survival, and family well-being. Yet, contrary to common perception, marriage does not

necessarily protect against infection. Infidelity and distrust are widespread, and protecting oneself may be even more difficult within a committed relationship.

In Malawi, where marriage is nearly universal, divorce is common, remarriage is frequent, and individuals are well aware of the connections between marriage and HIV risk (Anglewicz and Reniers 2014; Reniers 2008). The MLSFH analyses have shown that marriage is perceived as a risk for HIV infection, especially for women, and suspicion that one's spouse was unfaithful is correlated with a spouse's HIV status (Anglewicz and Kohler 2009; Smith and Watkins 2005). In this setting, most women overestimate the probability that their spouse is infected and the likelihood that he has another partner. Without credible evidence of the true risk faced in marriage, this distrust may result in the dissolution of perfectly safe and healthy relationships.

Individual-based HIV testing is informative for one's own current HIV status, and can motivate preventative behaviour. For example, HIV-positive individuals who learned their status in 2004 are more likely to purchase condoms in the short run (Thornton 2008). They also reported having fewer partners in 2006 and having used condoms more often during 2004–06 than those who did not learn their status (Fedor et al. 2015).[5] Yet individual counselling and testing is unable to provide credible information about a spouse's HIV status.

In our context, HIV is transmitted primarily through sexual intercourse, where a partner's HIV status is difficult to verify. And, to learn about a spouse's status—and thus one's own future risk of infection—men and women cannot rely on their spouse to truthfully disclose their HIV results. Qualitative evidence suggests potential dishonesty between spouses when disclosing HIV results. Gipson et al. (2010) heard from one woman in a focus group about what she would do if she were found to be HIV positive during individual testing: 'There would be lies. We won't tell each other the truth. After testing, I would tell my husband that I'm negative even if it's not true. I would smile when he is around and cry when he is absent. I wouldn't like to disappoint him'.

In couples' counselling on the other hand, each member of the couple learns the other's HIV test results, providing credible evidence of a spouse's HIV status. Still, no prior study, to our knowledge, has addressed the inherent information asymmetry in HIV testing and counselling.

Our findings support other research that Malawians are not passive with respect to the risks they face, or believe they face, including through their spouses (Kohler et al. 2015). Importantly, credible information about their spouses' HIV status, rather than beliefs alone, would enable women to more optimally respond to risks, which might imply investing more in current marriages—rather than pursuing marital dissolution—if beliefs about HIV risks through the spouse are biased upward.

While our findings underscore the role of credible information for decision-making within marriage, it is unclear if specific interventions can affect spousal interactions and the stability of marriages. The key finding of our analyses is that when couples are counselled and test for HIV together, two years later they are significantly more likely to still be married and are significantly less likely to be worried about HIV infection. Couples' counselling may have directly improved

[5] Learning the HIV status in 2004 did not seem to affect the chances of divorce for either HIV-negative or HIV-positive MLSFH respondents after 2004; it did, however, reduce the number of sexual partners among HIV-positive respondents, reduce fertility, and increase condom use with spouses for both HIV-negative and HIV-positive respondents.

the marriage or could have increased spousal communication. Learning of a spouse's HIV (negative) status may have provided some information about a spouse's faithfulness, or may have served as a signalling device. For example, spouses who refused couples' counselling when offered may have signalled an unwillingness to communicate their status to their partner and a belief that the likelihood of HIV infection was high (and conversely for those who accepted the couples' counselling). Thus, some information may have been revealed even before learning a spouse's HIV status.

The expansion of self-testing is starting to change this lack of access to credible information about partners' HIV status, but these innovations in testing are only now beginning to roll out and were not available during our study period. Hence, in making decisions about partner selection, condom use, marriage, and divorce, individuals are generally uncertain about the HIV status of their partners/spouses, and, mostly, individuals have limited options for obtaining credible information about their partners' HIV status.

Couples' testing and counselling is one primary approach to address this issue, providing couples with credible and verifiable information about each other's HIV status. Our study is the first to document the causal effect of HIV couples' counselling on marital stability and perceptions affecting marital behaviour. The key finding of our analyses is that uncertainty about a spouse's HIV status, often coupled with an overestimation of the probability of the spouse being HIV positive, seems to be an important driver of marital dissolution in contexts such as Malawi. Moreover, our analyses suggest that interventions such as HIV couples' testing and counselling—and in the future possibly rapid self-testing—that reduce this uncertainty and provide spouses with access to credible information about each other's HIV status, can have profound impacts on marital behaviours and marital stability.

More generally, our analyses suggest that uncertainty about partner characteristics and partner quality can be an important consideration for how couples behave within marriage and the extent to which they seek marital dissolution to avoid adverse marital outcomes. HIV is a prime example as HIV status is a key partner characteristic affecting health and long-term well-being, and marital solution is one of the primary mechanisms for reducing the risks of HIV infection through a partner that is HIV positive. Yet, in the absence of credible information about a partner's HIV status, perceptions about that status can be misleading, resulting in possible inefficiently high levels of divorce and marital dissolution. Our analyses suggest that giving access to credible information about partner characteristics, in our case through couple-based HIV testing and counselling, can be an important avenue for increasing the stability of marriages and, because of the negative consequences of divorce on child outcomes (Chae 2016), also for increasing child human capital.

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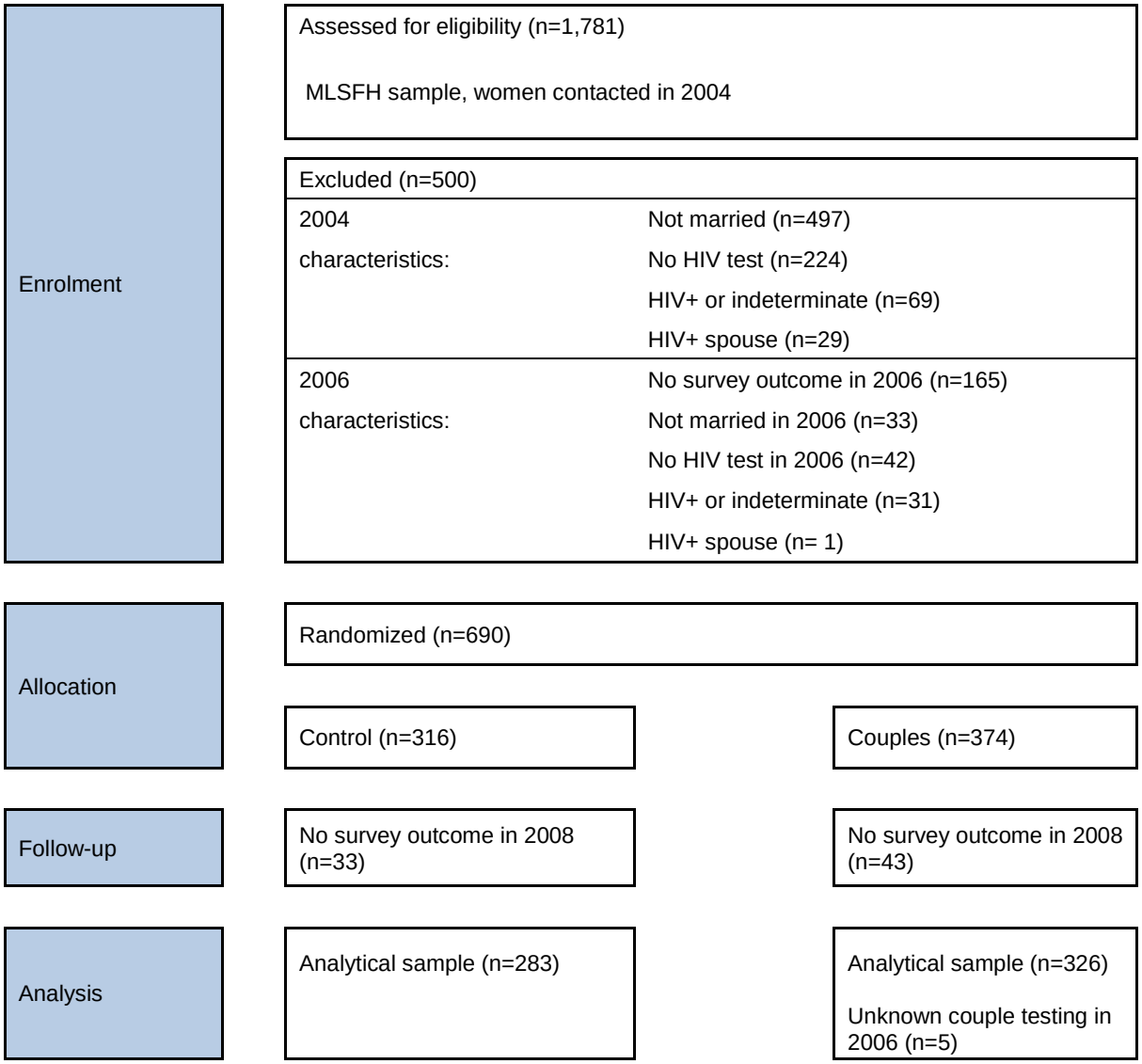
Figure and tables

Figure 1: Sample (CONSORT flow diagram)



Source: Authors' calculations.

Table 1: Baseline summary statistics

	Control mean		Testing randomization		Testing attrition	
	Mean	SD	Coefficient on treatment	SE	Coefficient on 'Treatment * Variable'	SE
	(1)		(2)		(3)	
Demographics:						
Age	40.756	(11.172)	-0.038	(0.753)	0.000	(0.002)
Years of schooling	4.268	(3.368)	-11.020	(66.530)	0.003	(0.007)
Yao	0.187	(0.390)	0.035	(0.188)	-0.057	(0.067)
Chewa	0.301	(0.459)	0.003	(0.019)	0.041	(0.056)
Tumbuka	0.399	(0.490)	-0.034	(0.020)	0.048	(0.056)
Other tribe	0.114	(0.318)	0.0335**	(0.016)	-0.072	(0.069)
Christian	0.649	(0.478)	-0.003	(0.025)	-0.012	(0.043)
Muslim	0.158	(0.366)	-0.043	(0.033)	-0.061	(0.059)
Marriage-related:						
Years of marriage	17.073	(10.036)	-0.716	(0.784)	0.001	(0.002)
Spouse had partner when met	0.234	(0.424)	-0.014	(0.033)	0.057	(0.067)
Talked about HIV when met	0.900	(0.300)	-0.022	(0.034)	-0.029	(0.068)
Likelihood of spouse HIV when met	0.097	(0.390)	0.007	(0.030)	-0.088	(0.067)
Likelihood of spouse HIV now	0.456	(0.792)	-0.072	(0.064)	0.032	(0.035)
Spouse has another partner now	0.389	(0.488)	-0.004	(0.039)	0.0958**	(0.044)
Biggest worry for contracting HIV is spouse	0.438	(0.497)	0.018	(0.038)	0.047	(0.054)
Spouse stays in the same village	0.952	(0.213)	0.006	(0.014)	0.152	(0.108)
HIV/sexual behaviour-related:						
Number of sexual partners (12 months)	1.412	(1.366)	0.130	(0.177)	0.0267***	(0.010)
Likelihood of HIV infection now	0.470	(0.783)	-0.013	(0.064)	0.038	(0.036)
Likelihood of HIV infection future	0.859	(0.941)	0.020	(0.074)	0.006	(0.028)
Worried about catching HIV	0.453	(0.499)	-0.011	(0.040)	-0.041	(0.050)
Ever used a condom	0.206	(0.405)	0.039	(0.030)	0.126*	(0.071)
	N=316					

Note: The total sample includes 690 women. Column 1 presents the average and standard deviation of each variable among those who tested as an individual in 2006 (N=316). Each row in column 2 presents estimates from separate regression of the 2006 baseline variable on an indicator of being assigned to couples' testing in 2006 and region dummies. Each row in column 3 presents estimates from separate regressions of having attrited in 2008 on the baseline variable, an indicator of being assigned to couples' testing in 2006, the interaction of couples' testing and the baseline variable, and region dummies. Robust standard errors clustered by village. * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' calculations.

Table 2: Effect of couples' counselling on divorce

Dependent variable:	Dissolved Marriage in 2007 or 2008			
	OLS		IV	
	(1)	(2)	(3)	(4)
Assigned to couples' testing (ITT)	-0.0379*	-0.0482**		
	[0.0208]	[0.0231]		
Tested as couple (TOT)			-0.113*	-0.137**
			[0.0626]	[0.0651]
Additional controls?	No	Yes	No	Yes
Observations	609	609	609	609
R-squared	0.007	0.038	.	0.008
Mean of dependent variable in control	0.077			

Note: Columns 1 and 2 present the OLS estimate of having a dissolved marriage between 2006 and 2008 on an indicator of being assigned to couples' testing in 2006. Columns 3 and 4 present IV regressions where receiving couples' testing is instrumented with having been assigned to couples' testing. Controls in columns 2 and 4 include age, age-squared, years of education, ethnicity, religion, ever used a condom, and region fixed effects—each measured in 2006. Robust standard errors clustered by village. * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' calculations

Table 3: Effects of couples' counselling on HIV worries

Dependent variable:	Very worried about catching HIV				Worried most about spouse				Worried about last HIV test			
	OLS		IV		OLS		IV		OLS		IV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Assigned to couples' testing (ITT)	-0.0823**	-0.0557			0.0324	0.00729			-0.0469*	-0.0405		
	[0.0368]	[0.0378]			[0.0422]	[0.0421]			[0.0272]	[0.0288]		
Tested as couple (TOT)			-0.243**	-0.157			0.0956	0.0206			-0.141*	-0.115
			[0.112]	[0.110]			[0.125]	[0.119]			[0.0811]	[0.0805]
Additional controls?	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	586	586	586	586	585	585	585	585	558	558	558	558
R-squared	0.008	0.121	0.007	0.122	0.001	0.051	.	0.051	0.006	0.054	0.015	0.061
Mean of dep variable in control	0.319				0.338				0.129			

Notes: Columns 1, 2, 5, 6, 9, 10, 11, and 12 present the OLS estimate of the dependent variable on an indicator of being assigned to couples testing in 2006. Columns 3, 4, 7, 8, 11, and 12 are IV regressions where receiving couples' testing is instrumented with having been assigned to couples' testing. Controls include age, age-squared, years of education, ethnicity, religion, ever used a condom, and region fixed effects—each measured in 2006. Robust standard errors clustered by village. * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Authors' calculations.