All in the Family: Explaining the Persistence of Female Genital Cutting in the Gambia*

Marc F. Bellemare† Tara L. Steinmetz‡

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Abstract

Why does female genital cutting (FGC) persist in certain places while has declined elsewhere? Using survey data from the Gambia, we study an important aspect of the persistence of FGC, namely the relationship between (i) whether a woman has undergone FGC and (ii) her support for the practice. Our data exhibit sufficient intrahousehold variation in both FGC status and in support for the practice to allow controlling for unobserved heterogeneity between households. First, our results suggest that a woman who has undergone FGC 40 percentage points more likely to be in favor of the practice, from a baseline likelihood of 40%. Second, our findings indicate that 85% of the relationship between whether a woman has undergone FGC and her support for the practice can be attributed to individual- or household-level factors, but that only 15% of that relationship can be explained by factors at the village level or beyond. This suggests that village-wide pledges against FGC, though they have worked well in neighboring Senegal, are unlikely to be effective in the Gambia. Rather, policies aimed at eliminating FGC in this context should instead target individuals and households if they are to be effective.

Keywords: Female Genital Cutting, Female Genital Mutilation, Sexual and Reproductive Health, Africa, Gambia

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† Corresponding Author, Sanford School of Public Policy, Duke University Box 90312, Durham, NC, 27708-0312 (until July 2013) and Department of Applied Economics, University of Minnesota, 1994 Buford Avenue, St. Paul, MN, 55108 (starting August 2013), marc.bellemare@gmail.com.

‡ Department of Agricultural and Resource Economics, University of California, Davis, One Shields Avenue, Davis, CA, 95616, tlsteinmetz@ucdavis.edu.

1. Introduction

Why does the practice of female genital cutting (FGC), in which a woman's genitalia is partially or totally removed for nonmedical reasons, persist in certain places even though it has been declining elsewhere? Although more than 100 million women have undergone FGC and at least three million girls are thought to experience the procedure every year worldwide (World Health Organization, 2012),[1] social scientists only have a limited understanding of the reasons why FGC persists (Hayford, 2005).

The practice of FGC is widespread throughout Africa, Asia, and the Middle East,[2] but it is also a public health concern in the United States, the United Kingdom, and other developed countries (Black and Debelle, 1995; Jones et al., 1997; National Public Radio, 2004), where immigrants often continue illegally practicing FGC on girls born to their communities (Black and Debelle, 1995; US Department of Health and Human Services, 2009).[3] In its typology of FGC, the World Health Organization distinguishes between four types of FGC. In the first type (clitoridectomy), the clitoris is partially or totally removed. In the second type (excision), both the clitoris and the labia are partially or totally removed. In the third type (infibulation), the vaginal opening is narrowed by sewing or stitching the labia together. The fourth type of FGC covers the procedures that do not fit in any of the first three categories, which usually involve "pricking, piercing, incising, scraping and cauterizing the genital area" (World Health

[1] Many terms are used to describe the procedure examined in this study, including "female genital cutting," "female genital mutilation," and "female circumcision." "Female genital mutilation" is largely used by opponents of the practice, and carries with it an underlying negative judgment of the tradition, a moral conclusion outside the scope of our empirical investigation. "Female circumcision" tends to imply a tradition similar to the more familiar male circumcision, a comparison that is, depending on the type of cutting referred to, potentially misleading. Therefore, except when directly citing other sources, we favor the term "female genital cutting" throughout this study.

[2] Cases of FGC have been reported in Benin, Burkina Faso, Côte d'Ivoire, the Central African Republic, Egypt, Eritrea, Ethiopia, the Gambia, Ghana, Guinea, India, Indonesia, Kenya, Liberia, Malaysia, Mali, Mauritania, Niger, Nigeria, Oman, Senegal, Somalia, South Sudan, Sudan, Tanzania, the United Arab Emirates, and Yemen (Black and Debelle, 1995; Dorkenoo, 1999; Hayford, 2005; Hernlund and Shell-Duncan, 2007; Jackson et al., 2003; Mackie, 1996; Shell-Duncan and Hernlund, 2006).

[3] Historically, FGC has been practiced in the US as early as the 1860s. James (1998:1037) notes how "[i]mmediately following the Civil War … [b]ecause women's 'mental disorders' were equated with their sexual organs, one 'cure' adopted in the late 1860s was clitoridectomy."

Organization, 2012). The procedure can take place at any time between birth and the age of 15 (World Health Organization, 2012), with the bulk of FGCs occurring between the ages of four and eight (Jones et al., 1999).

The potential health impacts of FGC are widely documented. According to Skaine (2005), FGC can

> "cause severe scarring that causes an obstruction during delivery. If infection is present at the time of the procedure in [clitoridectomy] and [excision], possible vulval adhesions can form that narrow or obstruct the vaginal opening and make labor long. The herbal pessaries used in [other types of FGC] and the use of rock salt after early pregnancies to reduce the vagina may result in severe scarring and stenosis."

Studies in Mali and Burkina Faso also document the negative health impacts correlated with undergoing FGC, and women who have undergone more severe forms of FGC experience increased probability of reproductive health complications. Indeed, compared to the five percent of uncut women who experience birthing complications, 18% of women who have undergone clitoridectomy experience similar complications, a figure that climbs to 30% for women who have been excised and for women who have been infibulated (Jones, et al. 1999).[4]

While there are no systematic studies looking at the psychological impacts of FGC, some surmise that the practice also has psychological costs (Jones, et al. 1999; Shell-Duncan and Hernlund, 2006), such as decreased trust in caregivers and the relationship problems that arise from painful intercourse due to infibulation. Others speculate that the psychological damage inflicted by FGC is deeply embedded in the consciousness of those who have undergone the practice and that "[i]n the longer term, women may suffer anxiety, depression, chronic irritability, frigidity, and marital conflicts" (Dorkenoo, 1999). Finally, others assert that, regardless of health or psychological damage, FGC is a violation of human rights

[4] In contrast, Wagner (2013) does not find a decrease in the fertility of women who have undergone FGC in her sample of women across 13 African countries.

(Moore et al., 1997), and that "[s]uppression and control over women's sexuality are demeaning to women and deny an aspect of their humanity" (Skaine, 2005).

Given the posited health consequences – both physical and mental – of FGC, it is worth asking why the practice persists in certain places but has been declining elsewhere. We provide a partial answer to that question by using household survey data from the Gambia and by studying one aspect of the persistence of FGC, namely the association between (i) having undergone FGC and (ii) being in support of the practice. More specifically, in order to study the persistence of FGC, we first look at the relationship between whether a respondent has undergone FGC and whether she would like her daughter to undergo FGC. We then look at the relationship between whether a respondent has undergone FGC and whether she would like the practice to continue for Gambian society at large; looking at these two different but related outcomes provides a check on the robustness of our results.

Our contribution is thus threefold. First, we estimate the impact of having undergone FGC on support for the practice, whether that support is defined as being in favor of FGC for one's own daughter or for society. Second, we quantify the contribution each level of variation (i.e., individual, household, village, district, and region) has on the persistence of FGC as we define it here. Third, this one of the first studies of FGC in economics. In a recent working paper, Wagner (2013) also looks at the persistence of FGC but her approach, which is complementary to ours, looks at cross-country evidence.

The Gambian context is well suited to the study of the persistence of FGC. Indeed, although FGC has been declining since 2000 in neighboring Senegal (Hernlund and Shell-Duncan, 2007), which encloses almost all of the Gambia (see Figure 1), the practice shows little sign of decline in the Gambia. Additionally, Gambian president Yahya Jammeh is on record as saying that his country "will not follow Senegal's lead in banning female genital mutilation," and that FGC is "part of [Gambian] culture and we should not allow anyone to dictate to us how we should conduct ourselves" (cad, 1999). The Gambia is

thus an ideal setting to study FGC, i.e., a country where there is enough variation across regions, districts, villages, and households in the prevalence of FGC, and where the practice not only remains widespread – our data indicate that four in five of women aged 15 to 49 have undergone FGC in The Gambia[5] – but also enjoys official support.

The strength of our approach lies in our research design. Indeed, although our data covers a cross-section of households, 50% of those households have more than one respondent, and there is intrahousehold variation in both whether respondents have undergone FGC and in support for the practice. This allows incorporating district, village, and household fixed effects, and we therefore innovate by exploiting the intrahousehold variation in both FGC status and in beliefs about whether the practice should continue.[6] This also allows quantifying the contribution of each level of variation (i.e., individual, household, village, and district) to the persistence of FGC as we define it in this paper. Our work thus builds on the work of Hayford (2005), who used multi-level models to control for the heterogeneity between communities, by bringing improved empirical identification to the study of FGC.

Our results indicate that 85% of the relationship between a woman's own FGC status and her support for the practice can be attributed to individual- and household-level factors, but that only 15% of that relationship can be explained by factors at the village level or beyond. This suggests that community-level pledges against FGC, though they have been effective in reducing the extent of FGC in Senegal (and in reducing the extent of foot binding in China in the first half of the 20th century, cf. Mackie, 1996), are unlikely to be effective in this context. Rather, policies aimed at eliminating FGC in the Gambia should target individuals and households if they are to be effective.

[5] See section 2 for a discussion of this and other descriptive statistics.

[6] We discuss the amount of within-household variation in the variable of interest, in both dependent variables, as well as in each variable of interest—dependent variable pair at the end of this section.

2. Data and Descriptive Statistics

We use the 2005 round of the Gambian Multiple Indicator Cluster Survey (MICS). The MICS data were collected by the Gambian Bureau of Statistics (Gambian Bureau of Statistics) and UNICEF in 2005-2006. Selection within clusters (i.e., villages) was random, with few refusals to participate in the survey: of the 6,175 households selected for the survey, 6,171 were occupied, and 6,071 were successfully interviewed. In the interviewed households, 10,252 women aged 15 to 49 were identified, and 9,982 were successfully interviewed for a 97.4% response rate. Sampling weights are provided with the MICS to make the sample nationally representative, and we use those weights throughout this paper.

Table 1 presents descriptive statistics for the dependent variables (i.e., dummies for whether the respondent believes the practice of FGC should continue and for whether she would like her daughter to undergo FGC), the variable of interest (i.e., a dummy for whether the respondent has undergone FGC), and the control variables. The estimation samples varied between dependent variable: the determinants of whether the respondent believes the practice of FGC should continue is estimated over 9,016 observations versus 9,533 for whether the respondent would like her daughter to undergo FGC. For that reason, Table 1 presents descriptive statistics for both estimation samples.

Because 12% of observations are missing from the former sample and 7% of observations are missing from the latter sample, we explored whether there were systematic differences between the observations in each sample and the observations that are missing. For each estimation sample, controlling for district-household-village fixed effects and interviewer fixed effects (because our most complete specification below controls for those levels of heterogeneity), we fail to reject the null hypothesis that the mean of our dependent variable and of our variable of interest (i.e., whether a woman has undergone FGC) is the same in the estimation sample and among the missing variables at any of the conventional levels of significance. In other words, for the estimation sample used for whether FGC should continue, neither the percentage of respondents who believe the practice should

continue nor the percentage of respondents who have undergone FGC systematically differ between the observations included in the estimation sample and the observations excluded from it because of missing data. Likewise, for the estimation sample used for whether a respondent would like her daughter to undergo FGC, neither the percentage of respondents who believe the practice should continue nor the percentage of respondents who have undergone FGC systematically differ between the observations included in the estimation sample and the observations excluded from it because of missing data.

Turning to descriptive statistics, there appears to be widespread support for FGC in the Gambia: 76% of the women in our data believe that the practice of FGC should continue in the Gambia, 73% would like their daughters to undergo FGC. Moreover, about 80% of our respondents have undergone FGC.

At about 28 years of age, the average respondent is middle-aged given that life expectancy was 54.1 years in the Gambia in 2005 (United Nations Development Program, 2005). Fewer than 12% of respondents have attended primary school, and about 27% of respondents have attended secondary school, with about 60% of respondents who did not attend school at all. The overwhelming majority of households in the data are headed by a Muslim.

In order to gauge whether respondents had some knowledge of public health, they were asked a simple question about whether one can get HIV/AIDS through supernatural means. We thus use this variable as a proxy for an individual's knowledge of public health in the empirical work below. Three quarters of respondents know that it is not possible to contract HIV/AIDS through supernatural means, but about 13% of respondents report not knowing whether one can get HIV/AIDS through supernatural means.

A wealth score was computed for each household on the basis of its ownership of specific assets. According to the MICS report:

> Principal components analysis was performed by using information on the ownership of household goods and amenities (assets) to assign weights to each household asset, and obtain wealth scores for each household in the sample. The assets used in these calculations were as follows: persons per sleeping room; type of roof, floor and wall of house; type of cooking fuel; ownership of cars, mobiles, refrigerators, TVs and other means of transportation; and type of toilet facilities. Each household was then weighted by the number of household members, and the household population was divided into five groups of equal size, from the poorest quintile to the richest quintile, based on the wealth scores of households they were living in (Gambian Bureau of Statistics, 2007:17.)

Given this description, it is evidently not possible to interpret the mean of the wealth score in either of our estimation samples, but almost half of all households own a television, over 90% of them own a radio, and about one third of all households have access to electricity, i.e., they are connected to the power grid.[7]

The Gambian MICS also included five questions about domestic violence. Each question asked the respondent whether she thought domestic violence against a woman was justified under a different scenario. Because those five questions tend to capture an attitude toward domestic violence in general, we do not include them separately, since doing so would lead to estimated coefficients that would not be very meaningful on their own. Rather, we split the five questions into two broad categories of domestic violence, i.e., domestic violence related to a woman's behavior (DV behavior), and domestic violence related to whether a woman should be treated as her husband's property (DV property).

Specifically, our DV behavior score includes questions about whether domestic violence is justified if a woman neglects her children, argues with her husband, or if she burns the food, and our DV property

[7] The reader may wonder what use a household that does not have electricity may have for a television or a radio. Those households who do are not connected to the power grid often use batteries or generators.

score includes the questions about whether domestic violence is justified if a woman goes out without telling her husband or refuses to have sex with him. Each score is equal to one if the respondent agrees with at least one of the statements included in coming up with that score and equal to zero otherwise. For example, if a respondent agrees that a man is justified in beating his wife if she neglects her children, but not if she argues with him or burns the food, that respondent is assigned a DV behavior score of one. Conversely, if a respondent disagrees that a man is justified in beating his wife if she goes out without telling him or refuses to have sex with him, that respondent is assigned a DV property score of zero. About one in seven woman in the data believes domestic violence is justified if a woman goes out without telling her husband or refuses to have sex with him. Similarly, about one in seven woman in the data believes domestic violence is justified if a woman argues with her husband, neglects her kids, or burns the food.

Lastly, Table 1 presents the ethnic breakdown of the respondents in the data. The most common ethnic group is Mandinka, with 35% of respondents reporting that they belong to that group, followed closely by Pulaar (better known outside the Gambia as Fulani) with 20%. The Wolof and Jola ethnic groups each account for 11% of respondents, with 4% of respondents reporting that they are Serere. Because there are many more ethnic groups than these five ethnic groups in the Gambia, 18% of respondents are classified as belonging to other ethnic groups.

Turning to the intrahousehold variation in FGC status and in support for the practice, which we exploit in order to study the persistence of FGC in this context, the data include 152 households for which there is intrahousehold variation in whether respondents underwent FGC, 286 households for which there is intrahousehold variation in whether respondents would like their daughters to undergo FGC, and 272 households for which there is intrahousehold variation in whether respondents would like the practice to continue in Gambian society at large. More importantly, the data include 362 households

for which there is intrahousehold variation either in whether respondents underwent FGC or in whether respondents would like their daughters to undergo FGC. Likewise, the data set contains 357 households for which there is intrahousehold variation either in whether respondents underwent FGC or whether respondents would like the practice to continue in Gambian society at large. Given these numbers, there is enough variation – both between and within households – to estimate the relationship between a woman's own FGC status and her beliefs about whether the practice should continue.

3. Empirical Framework

As we noted in the introduction, we do two things with our data. First, we estimate the impact that a woman having undergone FGC has on her support for the practice, and second, we quantify the contribution each level of variation (i.e., individual, household, village, district, and region) has on the persistence of FGC as we define it here. For ease of exposition, we start by explaining how we go about the latter contribution.

We begin by estimating two correlation coefficients: one between whether a woman has undergone FGC and whether she would like her daughter to undergo FGC as well, and the other between whether a woman has undergone FGC and whether she would like the practice to continue. Those correlation coefficients will serve as benchmarks against which to compare our estimates of the persistence of FGC.

The first equation we estimate is such that

$$y_{ihvd} = \alpha_1 + \gamma_1 D_{ihvd} + \beta_1 x_{ihvd} + \delta_{1u} u_{hvd} + \delta_{1e} d_e + \epsilon_{1ihvd}, \quad (1)$$

where the subscripts denote individual i in household h in village v in district d, y denotes one of our outcomes of interest (i.e., whether a woman would like her daughter to undergo FGC, or whether a woman would like the practice of FGC to continue), D_{ihvd} is our variable of interest (i.e., whether a respondent has undergone FGC), x_{ihvd} is a vector of control variables, u_{hvd} is a dummy variable for

whether the household is located in an urban area, d_e is a vector of interviewer (or enumerator, hence the subscript e) fixed effects, and ϵ_{ihvd} is an error term with mean zero.

We estimate equation (1) by ordinary least squares (OLS), weighting each observation with the associated probability weight provided in the data and clustering the standard errors at the village level. Given the binary nature of both dependent variables, our use of OLS means that every equation estimated in this paper is a linear probability model (LPM). In estimating LPMs, we follow the recommendations of Angrist and Pischke (2008) for microeconomic applications. There are three clear advantages to estimating LPMs instead of popular alternatives like probit and logit. First and foremost, a linear procedure like the LPM is well-suited to handle fixed effects, given the incidental parameters problem associated with the probit (Heckman, 1981). Second, the LPM prevents identification via the specific functional form assumed in a probit or logit. Finally, LPM coefficients are directly interpretable as marginal effects, i.e., as percentage changes in the probability that $\Pr(y_{ihvd} = 1)$, whereas probit and logit coefficients have to be transformed before they can be interpreted as such.

Although there are some disadvantages to estimating LPMs, we argue that those disadvantages are not relevant in this context. The first disadvantage is that the variance of a binary variable like y_{ihvd} has a Bernoulli structure – i.e., $Var(y_{ihvd}) = p_{ihvd}(1 - p_{ihvd})$, where $p_{ihvd} = \Pr(y_{ihvd} = 1)$ – so the LPM is inherently heteroskedasticity. But because we use probability weights throughout, our standard errors are robust to heteroskedasticity. Second, many researchers avoid the LPM because it can lead to predicted values of the dependent variable that lie outside of $[0,1]$ interval. But our goal in this paper is not to predict the probability that a respondent will be in favor of FGC for her own daughter or of the practice of FGC continuing. Rather, it is to estimate coefficient estimates as precisely as possible, so this particular critique of the LPM is not relevant here.

That said, equation (1) does a poor job of controlling for the unobserved heterogeneity between respondents. Indeed, many of the characteristics of our respondents are unobserved, which means that those characteristics are captured by the error term ϵ. But if those unobserved characteristics are correlated with whether a respondent has undergone FGC, our estimate $\hat{\gamma}_1$ of the impact of a woman having undergone FGC on whether she wants the practice to continue and on whether she would like her daughter to undergo FGC will be biased.

In order to obtain a measure of the impact of a woman's own FGC status on our outcome variables that is as accurate as possible, we incorporate increasingly refined levels of fixed effects – district, village, and household – in order to filter out unobserved heterogeneity at the same levels. Thus, the second equation we estimate controls for the heterogeneity between districts and is such that

$$y_{ihvd} = \alpha_2 + \gamma_2 D_{ihvd} + \beta_2 x_{ihvd} + \delta_{2d} d_d + \delta_{2e} d_e + \epsilon_{2ihvd}, \quad (2)$$

where d_d is a vector of district fixed effects to control for the factors that are common to all the respondents in a given district.

Equation (3) controls for the heterogeneity between villages (and, by construction, between districts) and is such that

$$y_{ihvd} = \alpha_3 + \gamma_3 D_{ihvd} + \beta_3 x_{ihvd} + \delta_{3vd} d_{vd} + \delta_{3e} d_e + \epsilon_{3ihvd}, \quad (3)$$

where d_{vd} is a vector of village-district fixed effects to control for the factors that are common to all the respondents in a given village.

Lastly, equation (4) controls for the heterogeneity between households (and, by construction, between villages and districts) and is such that

$$y_{ihvd} = \alpha_4 + \gamma_4 D_{ihvd} + \beta_4 x_{ihvd} + \delta_{4hvd} d_{4hvd} + \delta_{4e} d_e + \epsilon_{4ihvd}, \quad (4)$$

where d_{hvd} is a vector of household-village-district fixed effects to control for the factors that are common to all the respondents in a given household.

Equations (1) to (4) allow us to progressively chip away at the correlation between a woman's FGC status and our two measures of her support for the practice, which in turn allows us to quantify the contribution of each level of variation to the whole of FGC persistence as it is defined here. Indeed, what is left of ρ (i.e., the initial correlation between having undergone FGC and support for the practice) after estimating equation (4) is the amount of variation in FGC persistence that is due purely to individual level factors. The other equations allow recovering the amount of variation in FGC persistence that is due to household-, village-, and district-level factors.

In other words, once we have obtained an estimate of γ_2, we can compare that estimate to our estimate of γ_1 so as to determine what percentage of the variation in FGC persistence of FGC is explained by the variables on the RHS of equation (2), i.e., by district-level factors. We can do this two more times, comparing our estimates of γ_3 and γ_2 (to determine how much variation in FGC persistence is due to village-level factors), and then comparing our estimates of γ_4 and γ_3 (to determine how much variation in FGC persistence is due to household-level factors). Ultimately, our estimate of γ_4 should tell us how much variation in FGC persistence is due to individual-level factors. To summarize:

1. The coefficient of correlation $\hat{\rho}$ between having undergone FGC and support for the practice represents the total level of variation in persistence.
2. The variation in FGC persistence that is explained by the variables on the RHS of equation 1 is given by $\frac{\hat{\rho}-\hat{\gamma}_1}{\hat{\rho}}$.
3. The variation in FGC persistence that is explained by the variables on the RHS of equation 2 (i.e., by district-level variation) is given by $\frac{\hat{\gamma}_1-\hat{\gamma}_2}{\hat{\rho}}$.

4. The variation in FGC persistence that is explained by the variables on the RHS of equation 3 (i.e., by village-level variation) is given by $\frac{\hat{\gamma}_2 - \hat{\gamma}_3}{\hat{\rho}}$.
5. The variation in FGC persistence that is explained by the variables on the RHS of equation 4 (i.e., by household-level variation) is given by $\frac{\hat{\gamma}_3 - \hat{\gamma}_4}{\hat{\rho}}$.
6. The variation in FGC persistence that is explained by individual-level variation is given by $\frac{\hat{\gamma}_4}{\hat{\rho}}$.

For example, suppose there is a correlation of 0.90 between a woman's FGC status and whether she would like the practice to continue, and estimation of equation (1) yields an estimate $\hat{\gamma}_1$ = 0.75. We would then say that the variables on the RHS of equation (1) explain (0.90 – 0.75)/0.90 = 0.167, or 16.67% of the variation in the persistence of FGC.

We noted earlier that another contribution of ours is to estimate the impact that a woman having undergone FGC has on her support for the practice. While this is true, our estimate of that impact is not as cleanly identified as one would like, which means that we cannot claim that the estimated relationships between a respondent's FGC status and our variables of interest are causal. We argue, however, that our estimates get as close as possible given the available data and methods.

Indeed, there are three potential sources of statistical endogeneity to any empirical application, which are all sources of bias: (i) reverse causality, (ii) unobserved heterogeneity, and (iii) measurement error. In this context, reverse causality is unlikely to be an issue, first because most women have little to no say in whether they undergo FGC or not given that the bulk of FGCs occur between the ages of four and eight, and second because even if a woman is given a choice in the matter, it is unlikely that her future support for the practice affects that early choice.

As is often the case in applied microeconomics, unobserved heterogeneity is perhaps the most important source of statistical endogeneity in this context, and thus the most important source of bias.

That is, even though our use of district-village-household fixed effects allows purging the error term of a great deal of its correlation with the variables on the RHS of equation (4), it is not possible to control for the unobserved heterogeneity between individuals in this context. Indeed, there are many individual-level characteristics that are difficult to measure and which our data do not include, such as a respondent's bargaining power within her household, her degree of risk aversion, her level of trust, and so on. Furthermore, it is likely that at least some of those unobservable characteristics, which are in the error term in equation (4), are correlated with some of the variables on the right-hand side of the same equation.

As regards measurement error, even though a few studies question the reliability of self-reported data on FGC (Jackson et al., 2003; Elmusharaf et al., 2006), our use of interviewer fixed effects should lessen the importance of the measurement error problem stemming from respondents lying about whether they have undergone FGC. It is important to note, however, that interviewer fixed effects only eliminate the measurement error problem that stems from respondents misreporting the dependent variables or the variable of interest *because of interviewer-specific characteristics*, and there may still be some systematic misreporting that is idiosyncratic, i.e., respondent-specific. Additionally, there may also be non-systematic measurement error, such as misclassification due to an interviewer recording the wrong answer.

Another thing that threatens the identification of γ in this context is a violation of the stable unit treatment value assumption (SUTVA, cf. Morgan and Winship, 2007), according to which whether one unit is treated or not should have no impact on another unit's outcome. In our application, the SUTVA entails that whether a woman has undergone FGC or not has no impact on whether another woman is in support of the practice, i.e., there are no "spillovers." But this is highly unlikely to hold in this context, as one can think of situations where a woman who regrets having undergone FGC has discussed it with the

other women in her household and changed their support for the practice. Indeed, even with household fixed effects, which control for all the factors common to women in the same household, one cannot rule out that one respondent's experience (or lack thereof) of FGC has no impact on another woman's support for the practice.

How could one obtain a causal or cleanly identified estimate of γ, then? In order to answer that question, it helps to imagine what the ideal data set would look like. Ideally, one would want to randomly assign respondents to the treatment (i.e., having undergone FGC) and control groups (i.e., not having undergone FGC). But such a randomized design – even one with an encouragement design in which women would receive some sort of randomly assigned incentive to undergo FGC or not – would raise serious ethical questions given the likely physiological and psychological impacts of undergoing FGC.

The next-best alternative might be a difference-in-difference design that would survey respondents before and after they undergo FGC and look at whether their views on the practice change as a result of undergoing FGC. But given that the bulk of FGCs occur before the age of 15 (World Health Organization, 2012), the immaturity of respondents would make it difficult to get fully thought-out answers. Similar issues would arise with longitudinal data, which would follow respondents over several years and exploit the variation in respondents' own-FGC status and in their views on the practice of FGC, with the additional problem that one might not observe enough variation in the dependent variables and in the outcome of interest.

Another alternative would be to use a quasi experimental research design that would rely on an instrumental variable, i.e., a variable that is correlated with whether a woman has undergone FGC, but which only affects her support for the practice through her own FGC status. Such a variable, however, might be extremely difficult if not impossible to come by. This is especially so because the best

instrumental variables typically rely on some kind of randomization scheme controlled by the researcher, and in this context, randomization would again raise serious ethical questions, for the reasons described above.

In short, the estimation of a causal relationship between a woman's own FGC status and her views on whether the practice should continue and on whether she would want her own daughter to undergo FGC might prove to impossible to attain. As a result, the estimation strategy adopted in this paper might be as close as social scientists get to identifying such a relationship.

4. Results

4.1. Cross Tabulations

Table 2 present cross tabulations for the variable of interest and the dependent variables. The top panel of Table 2 presents a cross-tabulation of whether a respondent has undergone FGC and of whether she would like her daughter to undergo FGC, and the bottom panel of Table 2 presents a cross-tabulation of whether a respondent has undergone FGC and of whether she thinks the practice should continue. Both cross-tabulations indicate a high degree of correlation between having undergone FGC and support for the practice. Specifically, the correlation coefficient between whether a respondent has undergone FGC and whether she would like her own daughter to undergo FGC is 0.83, and the correlation coefficient between whether a respondent has undergone FGC and whether she would like the practice to continue is 0.80, with both coefficients significant at the 1% level.

4.2. Linear Probability Models

Table 3 presents the determinants of whether respondents would like their daughters to undergo FGC. The most striking result relates to the relationship between a respondent's FGC status and whether she would like her daughter to undergo FGC. The inclusion of individual- and household-level controls in column 1 weakens the correlation between the two variables from a pairwise correlation of 0.83 to 0.75,

indicating that those control variables have little explanatory power. Likewise, the inclusion of district and village fixed effects weakens the correlation from 0.75 to 0.73, and from 0.73 to 0.70, indicating that district and village-level heterogeneity also have very little explanatory power. The inclusion of household fixed effects, however, reduces the estimated coefficient for a woman's own FGC status by almost 45%, from 0.70 to 0.40. Put another way, 37% – i.e., (0.703 - 0.397)/0.83 – of the correlation between a respondent's own FGC status and whether she would like her daughter to undergo FGC can be attributed to heterogeneity between households rather than to heterogeneity at the village or district levels. Similarly, in Table 4, 41% – i.e., (0.687 – 0.360)/0.80 – of the correlation between a respondent's own FGC status and whether she would like the practice to continue can be attributed to heterogeneity between households rather than to heterogeneity at the village or district levels.

Figure 2 summarizes the contribution of each level of variation to the persistence of FGC in Tables 3 and 4. To determine the contribution of individual-level factors in the first column of Figure 2, the amount of variation in the relationship between a respondent's own FGC status and whether that respondent is in favor of FGC for her daughter that is due to individual-level factors (0.397, or the estimated coefficient for whether a respondent has undergone FGC in Column 4 of Table 3) is divided by the correlation between a respondent's own FGC status and whether that respondent is in favor of FGC for her daughter (0.83), for a total of 48%. Then, to determine the contribution of household-level factors in the first column of Figure 2, the amount of variation in the relationship between a respondent's own FGC status and whether that respondent is in favor of FGC for her daughter that is due to household-level factors (0.703 – 0.397, or the difference in estimated coefficient for whether a respondent has undergone FGC between Columns 3 and 4 of Table 3) is divided by the correlation between a respondent's own FGC status and whether that respondent is in favor of FGC for her daughter (0.83), for a total of 37%. The remainder of Figure 2 is obtained by similar calculations.

What is the association between having undergone FGC and support for the practice? To answer this question, we look at the results in column 4 of table 3 and column 4 of table 4, which present the results of our most complete specification. In both cases, the intercept can be interpreted as the baseline probability that a respondent will support FGC, i.e., the likelihood that a respondent will be in favor of FGC holding the variables on the RHS of equation 4 constant. Thus, the baseline probability that a woman will be in favor of FGC for her daughter is 40%, and the baseline probability that a woman will be in favor of FGC for society is 35%. Having undergone FGC, however, increases the former probability by 39.7 percentage points and the latter probability by 36 percentage points. In both cases, this represents an increase of about 100%.

To assess the robustness of our findings, appendix tables A1 and A2 look at two different definitions of support for FGC. Table A1 looks at whether a respondent is in support of FGC *both* for her daughter *and* for society.[8] Table A2 looks at whether a respondent is in support of FGC *either* for her daughter *or* for society. Tables A1 and A2 thus respectively look at general and partial support for the practice of FGC. In both cases, the findings are almost exactly similar to those in tables 3 and 4.

4.3. Limitations

We have discussed the weaknesses of our identification strategy in section 2. In addition to those limitations, we also cannot distinguish between the various types of FGC the women in our sample have undergone or between the types of FGC they are in support of. Moreover, the data we use only sampled only women, and women between the ages of 15 and 49 only. The former matters because one can be in support of one type of FGC without necessarily being in support of another type. The latter matters because elderly women are often the ones performing FGC (Morrone et al., 2002), and so they may have

[8] This is similar in spirit to Poirier's (1980) bivariate probit with partial observability, in which one only observes the product of two binary variables.

an interest in seeing the practice persist, though our findings seem to indicate either that age has no impact on support for FGC or that support for FGC is decreasing in the age of respondents, and because sampling men as well as women would allow studying intrahousehold decision processes regarding FGC (Alderman et al., 1995; Doss, 1995) as well the marriage market value of FGC (Wagner, 2013). Moreover, though respondents were asked whether they would like their daughter to undergo FGC, not every respondent in the data had a daughter, and studies of the reliability of self-reported data on FGC indicate that self-reporting tends to underestimate the extent of FGC (Jackson et al., 2003; Elmusharaf et al., 2006).

Relative to other studies, one weakness of our study is that we must remain agnostic about the three theories that have been developed to account for the persistence of FGC (Steinmetz, 2012). The first of those theories states that FGC persists as a social norm (Mackie, 1996; Shell-Duncan and Hernlund, 2006; Hayford, 2005; Easton et al., 2003; Lightfoot-Klein, 1989). The second theory posits that as women's rights expand, support for FGC should decrease (Easton et al., 2003; El-Dawla, 1999; Finke, 2006; Yount, 2002). The third theory states that as a society modernizes, support for FGC should wane (Easton et al., 2003; Williams and Sobiesczyk, 1997). Finally, as regards external validity, though our sample allows drawing inference about the persistence of FGC among all Gambian women aged 15 to 49, it is unclear whether our results apply to other contexts, or even to Gambian woman younger than 15 and older than 49

5. Summary and Conclusions

In this study, we have investigated why the practice of female genital cutting, which has been declining in some countries, persists in others. Specifically, using household survey data from the Gambia, where FGC shows no sign of going away, we have studied the relationship between a woman's own FGC status – whether she has undergone FGC – and her support for the practice, which adopt as our definition of

FGC persistence. This definition of persistence is relevant to the research question we pose because in neighboring Senegal, policies aimed at reducing the extent of FGC by conducting village-wide pledges to eliminate the practice have worked well, but such pledges have not worked in the Gambia. In line with this stylized fact, we find that much of the relationship between a woman's own FGC status and her support for the practice can be attributed to individual- and household-level factors, which likely explains why village-level campaigns to phase out the practice of FGC, have not worked in the Gambia. Moreover, we find that having undergone FGC increases the likelihood that a woman will be in favor of the practice by about 100%, or by about 40 percentage points from a baseline likelihood of 40% for a total of about 80%.

The main strength of this study lies in our research design, which allows exploiting the within-household variation in respondents' own FGC status and in their support for the practice, and which allows determining how much each type of factor contributes to the persistence of FGC. Another strength of this study is that the data allow incorporating interviewer fixed effects. Additionally, our findings are nationally representative of Gambian women aged 15 to 49.

Our findings go against the conventional wisdom surrounding policies aimed at ending FGC in West Africa, which often involve community-wide pledges to abandon the practice (Mackie, 1996; Wakabi, 2007). By showing that 85% of the relationship between a respondent's FGC status and her support for the practice is due to individual- and household-level factors in the Gambia (and conversely, by showing that only 15% of that variation is due to factors at the village level and beyond), our findings suggest that policies aimed at eliminating the practice of FGC should target individuals and households rather than communities.

That said, the Gambia is only one of several countries where the practice of FGC remains widespread, which points to the need for studies such as this one in those other countries. In addition,

to better understand the mechanisms through which FGC persists, there is a need for systematic investigations of the causal pathways behind FGC persistence. In that spirit, recent work by Wagner (2013) looks at the persistence of FGC across 13 African countries and finds that women who have undergone FGC are 40% more likely to get married.

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Figure 1: Map of the Gambia. (Source: Wikimedia Commons.)

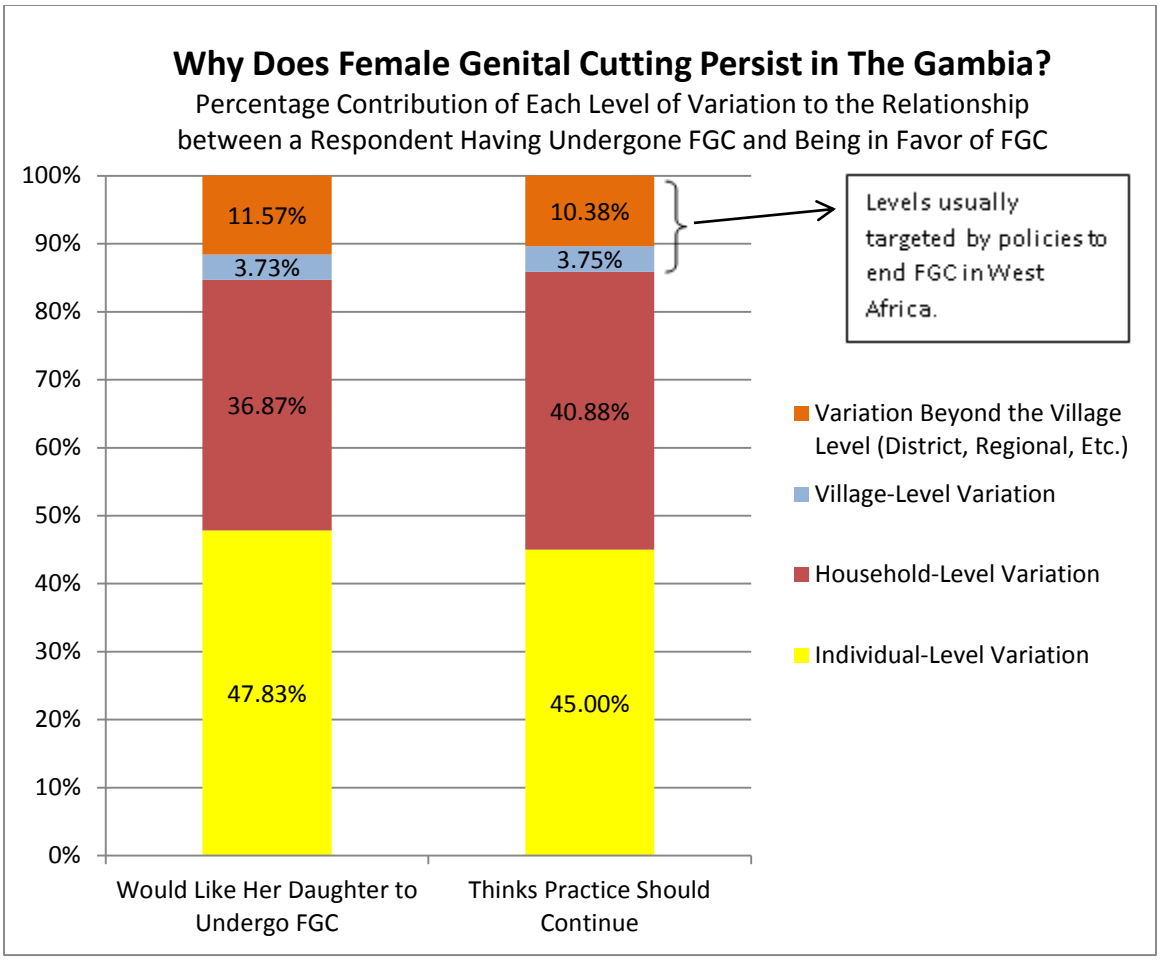

Figure 2. Percentage Contributions of Each Type of Factor to the Persistence of FGC in the Gambia. (Source: Authors' Own Calculations.)

Table 1. Descriptive Statistics

	(1)	(2)
Respondent Believes FGC Should Continue for Society (Dummy)	0.755	-
	(0.015)	
Respondent Would Like Her Daughter to Undergo FGC (Dummy)	-	0.731
		(0.016)
Respondent Has Undergone FGC (Dummy)	0.814	0.791
	(0.013)	(0.015)
Respondent Age (Years)	27.533	27.545
	(0.100)	(0.098)
Respondent Has Some Primary Education (Dummy)	0.119	0.119
	(0.004)	(0.004)
Respondent Has Some Secondary Education (Dummy)	0.275	0.270
	(0.012)	(0.012)
Household Head is Muslim (Dummy)	0.963	0.963
	(0.004)	(0.004)
HIV/AIDS through Supernatural Means? Yes (Dummy)	0.115	0.116
	(0.005)	(0.005)
HIV/AIDS through Supernatural Means? No (Dummy)	0.752	0.745
	(0.010)	(0.010)
HIV/AIDS through Supernatural Means? Does Not Know (Dummy)	0.132	0.138
	(0.008)	(0.008)
Wealth (Score)	0.028	0.019
	(0.045)	(0.046)
Household Owns a Television (Dummy)	0.459	0.454
	(0.015)	(0.016)
Household Owns a Radio (Dummy)	0.910	0.910
	(0.005)	(0.005)
Household Has Access to Electricity (Dummy)	0.284	0.285
	(0.019)	(0.019)
Domestic Violence: Woman as Property (Score)	0.711	0.709
	(0.013)	(0.013)
Domestic Violence: Woman's Behavior (Score)	0.614	0.611
	(0.012)	(0.012)
Mandinka (Dummy)	0.366	0.353
	(0.018)	(0.018)
Wolof (Dummy)	0.109	0.126
	(0.011)	(0.013)
Jola (Dummy)	0.112	0.109
	(0.010)	(0.010)
Pulaar (Dummy)	0.198	0.198
	(0.014)	(0.014)
Serere (Dummy)	0.038	0.038
	(0.004)	(0.004)
Other Ethnicity (Dummy)	0.176	0.174
	(0.019)	(0.019)

Observations	9,016	9,533

Robust standard errors in parentheses

Table 2. Cross Tabulations of the Dependent Variables with the Variable of Interest

	Respondent Would Like Her Daughter to Undergo FGC		
Respondent Underwent FGC	**No**	**Yes**	**Total**
No	1912	44	1956
Yes	590	6987	7577
Total	2502	7031	9533

	Respondent Would Like the Practice of FGC to Continue		
Respondent Underwent FGC	**No**	**Yes**	**Total**
No	1582	57	1639
Yes	570	6807	7377
Total	2152	6864	9016

Table 3. Linear Probability Model Estimation Results for Whether Respondents Wants Their Daughters to Undergo FGC

Variable	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Would Like Her Daughter to Undergo FGC; = 0 Otherwise.				
Underwent FGC	0.747***	0.734***	0.703***	0.397***
	(0.018)	(0.018)	(0.019)	(0.058)
Age	-0.001***	-0.001***	-0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.019**	-0.019**	-0.018**	-0.007
	(0.010)	(0.009)	(0.009)	(0.014)
Secondary Education	-0.065***	-0.065***	-0.064***	-0.041***
	(0.009)	(0.009)	(0.009)	(0.016)
Household Head Muslim	0.113***	0.110***	0.109***	
	(0.022)	(0.023)	(0.025)	
HIV and Supernatural Means? No	-0.016**	-0.017**	-0.021***	-0.026*
	(0.007)	(0.007)	(0.007)	(0.015)
HIV and Supernatural Means? Don't Know	0.007	0.004	0.007	0.010
	(0.009)	(0.009)	(0.009)	(0.019)
Wealth Score	-0.013*	-0.018***	-0.011	
	(0.007)	(0.007)	(0.008)	
Television	0.001	0.002	-0.002	
	(0.007)	(0.007)	(0.008)	
Radio	-0.002	0.000	-0.006	
	(0.008)	(0.008)	(0.009)	
Electricity	-0.004	-0.000	-0.005	
	(0.011)	(0.011)	(0.012)	
Domestic Violence: Property	0.054***	0.054***	0.052***	0.048**
	(0.009)	(0.009)	(0.009)	(0.019)
Domestic Violence: Behavior	0.006	0.003	0.005	0.016
	(0.007)	(0.007)	(0.007)	(0.013)
Wolof	-0.155***	-0.141***	-0.136***	
	(0.017)	(0.017)	(0.017)	
Jola	-0.028**	-0.028**	-0.015	

	(0.012)	(0.012)	(0.015)	
Pulaar	-0.033***	-0.034***	-0.017	
	(0.009)	(0.009)	(0.011)	
Serere	-0.125***	-0.123***	-0.118***	
	(0.023)	(0.023)	(0.023)	
Other Ethnic Group	-0.028**	-0.034***	-0.039**	
	(0.012)	(0.013)	(0.016)	
Urban Household	-0.021**			
	(0.009)			
Constant	-0.120***	-0.136***	-0.129***	0.400***
	(0.043)	(0.038)	(0.043)	(0.098)
Observations	9,533	9,533	9,533	9,533
R-squared	0.720	0.725	0.744	0.903
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
District Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors clustered at the village level in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Linear Probability Model Estimation Results for Whether Respondents Think the Practice of FGC Should Continue

Variable	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue; = 0 Otherwise.				
Underwent FGC	0.723***	0.717***	0.687***	0.360***
	(0.020)	(0.020)	(0.021)	(0.064)
Age	-0.001***	-0.001**	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.026**	-0.025**	-0.026***	-0.020
	(0.010)	(0.010)	(0.010)	(0.016)
Secondary Education	-0.067***	-0.066***	-0.067***	-0.041**
	(0.009)	(0.009)	(0.010)	(0.017)
Household Head Muslim	0.125***	0.121***	0.128***	
	(0.025)	(0.026)	(0.027)	
HIV and Supernatural Means? No	-0.015*	-0.017**	-0.018**	-0.020
	(0.008)	(0.008)	(0.008)	(0.018)
HIV and Supernatural Means? Don't Know	0.004	0.000	0.002	-0.004
	(0.011)	(0.011)	(0.011)	(0.023)
Wealth Score	-0.014*	-0.017**	-0.010	
	(0.007)	(0.007)	(0.008)	
Television	0.004	0.005	0.002	
	(0.007)	(0.007)	(0.008)	
Radio	-0.004	-0.002	-0.006	
	(0.009)	(0.009)	(0.010)	
Electricity	-0.012	-0.011	-0.022*	
	(0.012)	(0.011)	(0.012)	
Domestic Violence: Property	0.060***	0.059***	0.057***	0.053***
	(0.010)	(0.010)	(0.010)	(0.020)
Domestic Violence: Behavior	0.002	-0.001	0.001	0.009
	(0.007)	(0.007)	(0.007)	(0.014)
Wolof	-0.145***	-0.131***	-0.126***	
	(0.019)	(0.019)	(0.019)	
Jola	-0.024**	-0.023*	-0.010	

	(0.011)	(0.012)	(0.014)	
Pulaar	-0.031***	-0.034***	-0.016	
	(0.009)	(0.010)	(0.011)	
Serere	-0.121***	-0.119***	-0.115***	
	(0.022)	(0.022)	(0.022)	
Other Ethnic Group	-0.026**	-0.030**	-0.030*	
	(0.012)	(0.013)	(0.017)	
Urban Household	-0.015			
	(0.010)			
Constant	-0.113**	-0.094**	-0.068	0.346***
	(0.046)	(0.044)	(0.045)	(0.122)
Observations	9,016	9,016	9,016	9,016
R-squared	0.690	0.695	0.718	0.905
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
District Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors clustered at the village level in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix

Table A1. Linear Probability Model Estimation Results for Whether Respondents Strongly Support FGC

Variable	(1)	(2)	(3)	(4)
	Dependent Variable: = 1 if Respondent Thinks FGC Should Continue AND if Respondent Would Like Her Daughter to Undergo FGC; = 0 Otherwise			
Underwent FGC	0.735***	0.723***	0.690***	0.360***
	(0.019)	(0.019)	(0.020)	(0.041)
Age	-0.001***	-0.001***	-0.001***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.026***	-0.025**	-0.025***	-0.013
	(0.010)	(0.010)	(0.009)	(0.010)
Secondary Education	-0.070***	-0.070***	-0.070***	-0.046***
	(0.009)	(0.009)	(0.009)	(0.012)
Household Head Muslim	0.121***	0.116***	0.118***	
	(0.022)	(0.022)	(0.024)	
HIV and Supernatural Means? No	-0.012	-0.013*	-0.016**	-0.022**
	(0.008)	(0.008)	(0.007)	(0.011)
HIV and Supernatural Means? Don't Know	0.008	0.004	0.006	-0.001
	(0.010)	(0.010)	(0.010)	(0.014)
Wealth Score	-0.010	-0.015**	-0.008	
	(0.007)	(0.007)	(0.008)	
Television	-0.000	0.000	-0.004	
	(0.008)	(0.008)	(0.008)	
Radio	-0.009	-0.007	-0.011	
	(0.009)	(0.009)	(0.010)	
Electricity	-0.013	-0.010	-0.017	
	(0.012)	(0.012)	(0.012)	
Domestic Violence: Property	0.059***	0.059***	0.057***	0.054***
	(0.010)	(0.010)	(0.010)	(0.014)
Domestic Violence: Behavior	0.002	-0.002	0.000	0.006

	(0.007)	(0.007)	(0.007)	(0.009)
Wolof	-0.167***	-0.151***	-0.147***	
	(0.017)	(0.017)	(0.017)	
Jola	-0.038***	-0.036***	-0.025	
	(0.013)	(0.013)	(0.016)	
Pulaar	-0.041***	-0.042***	-0.025**	
	(0.010)	(0.010)	(0.011)	
Serere	-0.136***	-0.135***	-0.133***	
	(0.022)	(0.022)	(0.022)	
Other Ethnic Group	-0.024*	-0.031**	-0.032*	
	(0.012)	(0.013)	(0.017)	
Urban Household	-0.029***			
	(0.010)			
Constant	-0.138***	-0.146***	-0.129***	0.400***
	(0.045)	(0.039)	(0.045)	(0.068)
Observations	9,357	9,357	9,357	9,357
R-squared	0.714	0.720	0.740	0.916
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
District Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors clustered at the village level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2. Linear Probability Model Estimation Results for Whether Respondents Support FGC at All

Variable	(1)	(2)	(3)	(4)
Dependent Variable: = 1 if Respondent Thinks FGC Should Continue OR if Respondent Would Like Her Daughter to Undergo FGC; = 0 Otherwise				
Underwent FGC	0.733***	0.727***	0.698***	0.400***
	(0.019)	(0.019)	(0.020)	(0.042)
Age	-0.001***	-0.001***	-0.001***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Education	-0.019**	-0.019**	-0.019**	-0.013
	(0.010)	(0.009)	(0.009)	(0.010)
Secondary Education	-0.062***	-0.061***	-0.061***	-0.035***
	(0.009)	(0.009)	(0.009)	(0.011)
Household Head Muslim	0.116***	0.114***	0.117***	
	(0.025)	(0.026)	(0.027)	
HIV and Supernatural Means? No	-0.019**	-0.022***	-0.023***	-0.026**
	(0.008)	(0.007)	(0.007)	(0.011)
HIV and Supernatural Means? Don't Know	0.004	0.000	0.004	0.005
	(0.009)	(0.009)	(0.009)	(0.014)
Wealth Score	-0.016**	-0.021***	-0.014*	
	(0.007)	(0.007)	(0.008)	
Television	0.005	0.006	0.004	
	(0.007)	(0.007)	(0.008)	
Radio	0.004	0.006	-0.000	
	(0.008)	(0.009)	(0.009)	
Electricity	-0.002	-0.001	-0.010	
	(0.011)	(0.011)	(0.012)	
Domestic Violence: Property	0.054***	0.055***	0.053***	0.048***
	(0.009)	(0.009)	(0.009)	(0.013)
Domestic Violence: Behavior	0.006	0.005	0.007	0.017*
	(0.007)	(0.007)	(0.007)	(0.009)
Wolof	-0.132***	-0.119***	-0.113***	

	(0.019)	(0.018)	(0.019)	
Jola	-0.015	-0.015	-0.001	
	(0.010)	(0.011)	(0.014)	
Pulaar	-0.024***	-0.026***	-0.008	
	(0.009)	(0.009)	(0.010)	
Serere	-0.109***	-0.107***	-0.100***	
	(0.023)	(0.023)	(0.024)	
Other Ethnic Group	-0.030**	-0.034**	-0.037**	
	(0.012)	(0.013)	(0.016)	
Urban Household	-0.007			
	(0.009)			
Constant	-0.094**	-0.084*	-0.064	0.345***
	(0.043)	(0.047)	(0.042)	(0.080)
Observations	9,192	9,192	9,192	9,192
R-squared	0.699	0.703	0.723	0.905
Interviewer Fixed Effects	Yes	Yes	Yes	Yes
District Fixed Effects	No	Yes	Yes	Yes
Village Fixed Effects	No	No	Yes	Yes
Household Fixed Effects	No	No	No	Yes

Robust standard errors clustered at the village level in parentheses

*** p<0.01, ** p<0.05, * p<0.1