Measuring attitudes regarding female genital mutilation through a list experiment

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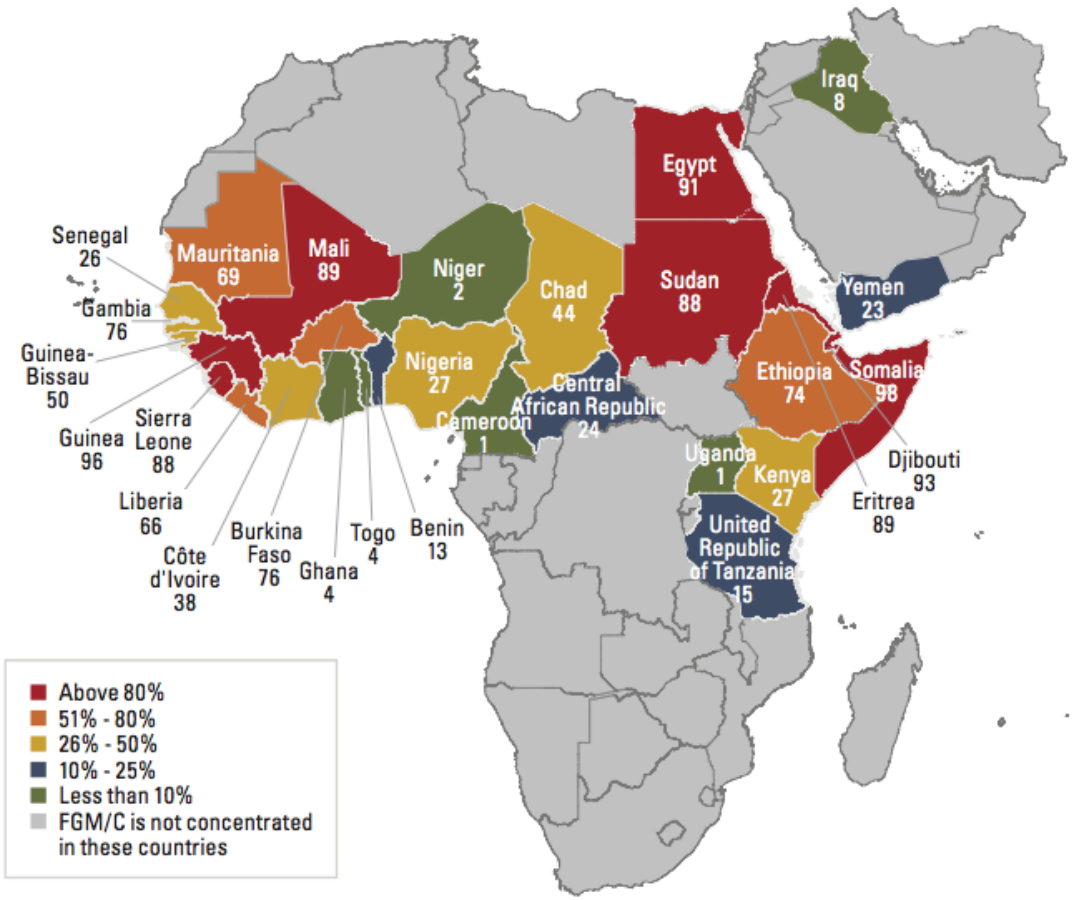
RES Womens Committee 2015 Mentoring Meetings

FGM

- Female genital mutilation (FGM or female circumcision) includes all procedures that alter or cause injure to the female genital organs. They are mainly carried out on young girls, between infancy and age 15.
- FGM can lead to reproductive health complications among which: obstructed menstruation, difficulty in conceiving, and neonatal death.
- FGM is recognized as an extreme form of discrimination and violence against women.
- Worldwide about 140 million girls and women are living with the consequences of FGM.
- The WHO estimates that in Africa more than 3 million girls are at risk for FGM annually.

FGM in Africa

Figure 1: Percentage of girls and women aged 15 to 49 years who have undergone FGM, by country.



Source: DHS, MICS and SHHS, 1997-2012. Map developed by UNICEF, 2013.

What's behind FGM?

- Prerequisite for marriage (Mackie, 1996).
- Signal that a girl/woman respect the authority (Shell-Duncan et al., 2011).
- Ethnicity and religious identity, socio-cultural gains might be considered more important than health consequences (Wagner, forthcoming, JDS).
- Factors at village level only account for 15% of the relationship between whether a woman has undergone FGM and her support for the practice, while 85% is attributed to individual and household level factors (Bellemare et al., 2015).

Measuring attitudes

- What is a good way to measure attitudes about FGM?
- All the research is based on direct survey questions. Answers to direct questions about sensitive issues may be biased due to incentives to lie.
- Social desirability effects play an important role as FGM is formally prohibited but a widespread advocated custom in the local culture.
- This paper aims at identifying the true perceptions about FGM using new data collected in Ethiopia.

List experiments in the literature

This paper considers a survey technique called the list-experiment. The idea behind a list-experiment, also called item count or unmatched count technique, is that if a sensitive question is asked indirectly, the respondent may reveal a truthful response.

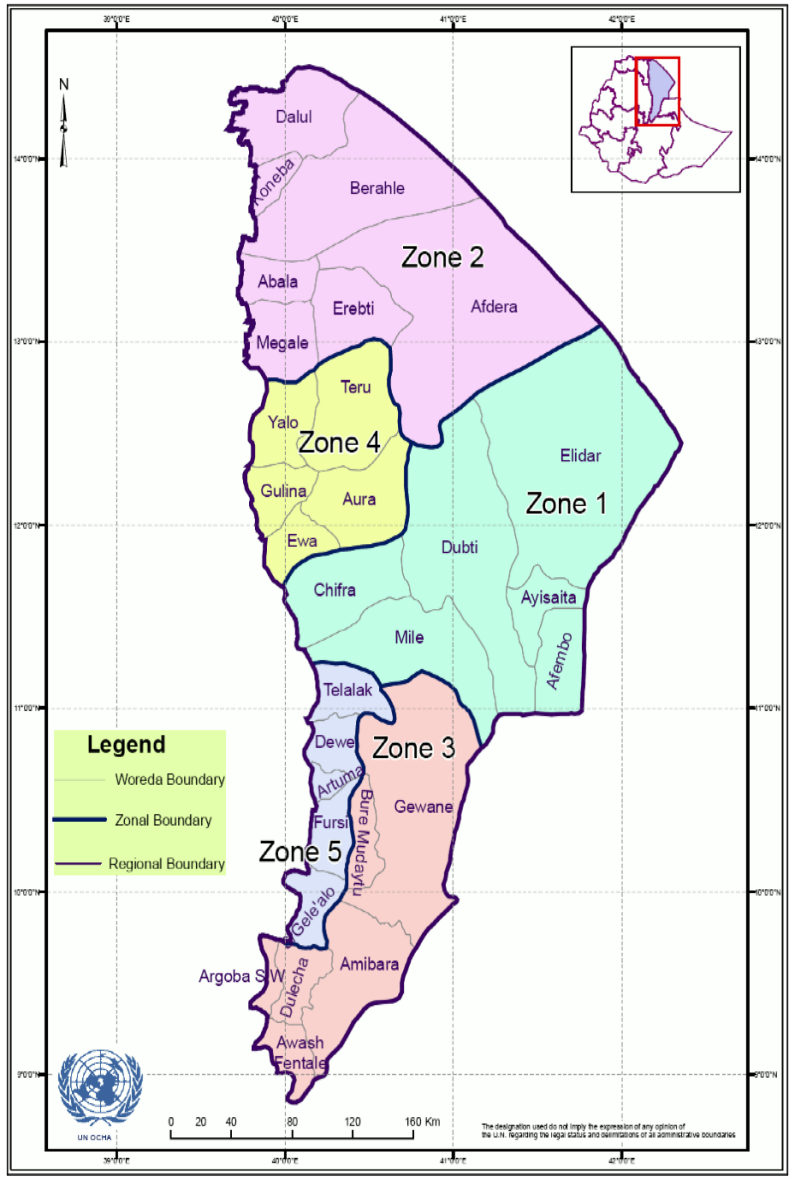
- Mainly used in political science to understand for example voters' attitudes and racial attitudes (Kuklinski et al., 1997; Redlawsk et al., 2010).
- New applications in development economics Karlan and Zinman (2012) (paper on microfinance, published in JDE) and Chong, Gonzales-Navarro, Karlan, and Valdivia (2013) and Jamison, Karlan, and Raffler (2013) (working papers on risky behaviour and reproductive health).
- New methodological research in statistics (Imai, 2011, JASA) (multivariate regression techniques to account for respondent's characteristics).

Data

Since 2011 an NGO programme is working in Afar (Ethiopia) to provide comprehensive sexuality education programs and health services. The main targets are young people and women of reproductive age.

In October 2012, we collected data on some beneficiaries (zones 3 and 5), and some non-beneficiaries (zone 1):

Our survey consists of women/mothers aged between 15 and 49 (n=631) and unmarried girls (n=217) aged between 15 and 24.The working sample contains in total 848 respondents.



Descriptive statistics

Variable	N	Mean	Std. Dev.
Age	845	28.226	9.512
Religion (1=Christian; 0=Muslim)	839	0.049	
Ethnic group (proportions)			
Afar	848	0.78	
Other ethnic minorities	848	0.22	
Areas in Afar (proportions)			
Zone 1	848	0.33	
Zone 3	848	0.34	
Zone 5	848	0.33	
Health education/training (1=yes; 0=no)	835	0.243	
Health providers available (0-4)	848	2.514	1.003
Health services accessible (0-5)	848	2.637	2.041
Having children (1=yes; 0=no)	846	0.722	
Ever being married (1=yes; 0=no)	843	0.770	
Educated† (1=yes; 0=no)	844	0.213	
Sex and HIV knowledge (0-6)	847	4.046	1.279
NGO program target (1=yes; 0=no)	848	0.667	

† includes people that have at least completed elementary school.

List experiment (Miller, 1984)

- Consider a survey sample composed by N respondents randomly divided in two groups: treatment and control.
  $\rightarrow$ $T_i = 1$ respondent i belongs to the treatment group ($T_i = 0$, control).
- Control group respondents receive a list of J non-sensitive, yes/no items.
- Treatment group respondents receive the same list of non-sensitive items plus a sensitive, yes/no item ($J + 1$ in total), where $j = J + 1$ is the sensitive one.
- The sensitive item measures the sensitive topic.
- The respondents have to tell the interviewer how many of the listed items they agree on, but not which items. $Y_i = Y_i(T_i)$: observed response.
- Assumptions: randomisation of the treatment, no design effects, no liar.

Assumptions

Assumption 1: Randomisation of the treatment

Responses are jointly independent of the treatment variable.

Assumption 2: No design effects

The addition of the sensitive item does not change the sum of affirmative answers to the control items.

Assumption 3: No liar

The respondents give truthful answers for the sensitive item.

Difference-in-means estimator

If these assumptions hold, the unbiased estimate of the population proportion of those that agree on the sensitive item can be computed as:

$$\hat{\tau} = \frac{1}{N_1} \sum_{i=1}^{N} T_i Y_i - \frac{1}{N_0} \sum_{i=1}^{N} (1 - T_i) Y_i,$$

- $N_1 = \sum_{i=1}^{N} T_i$ size of the treatment group,
- $N_0 = N - N_1$ size of the control group.

$\rightarrow$ the difference-in-means estimator is commonly used in the list experiment literature (see for example, Karlan and Zinman, 2012), it does not allow to estimate the relationship between preferences over the sensitive item and the respondent's characteristics (Corstange, 2009; Imai, 2011; Blair and Imai, 2012).

Multivariate regression estimator (Imai, 2011, JASA)

A special case of one of the estimators developed by Imai (2011) is:

$$Y_i = X_i^T \gamma + T_i X_i^T \delta + \epsilon_i, \tag{1}$$

- a linear regression with interaction terms, where
- X_i is a vector of observed covariates for respondent i
- $E(\epsilon_i | X_i, T_i) = 0$,
- (γ, δ) vector of unknown parameters,
- heteroskedasticity-consistent standard errors are computed to account for the difference in the variance of error term between the treatment and control groups.

Our list experiment

The control group was presented with the following question:

I want you to give me a secretive answer for the following statements. I will give you 3(4) stones and you have to hold them in your right hand. Keep your hands (both) on your back side. If you agree on the statement I will soon be reading to you, you transfer one stone to your left hand behind you (I will not see it, you shouldnt also tell me), but if you dont agree, do not transfer any stone. At the end, I would like to know the total number of statements you agreed on. Now, I read the statements:

1. HIV can be transmitted through witchcraft or other supernatural means
2. It is acceptable to use contraceptives to avoid pregnancy
3. In a marriage both partners should decide on how many children they should have

The treatment group was presented with the same question with an extra sensitive item:

4. A girl should be circumcised

Figure 2: Results of the list experiment.

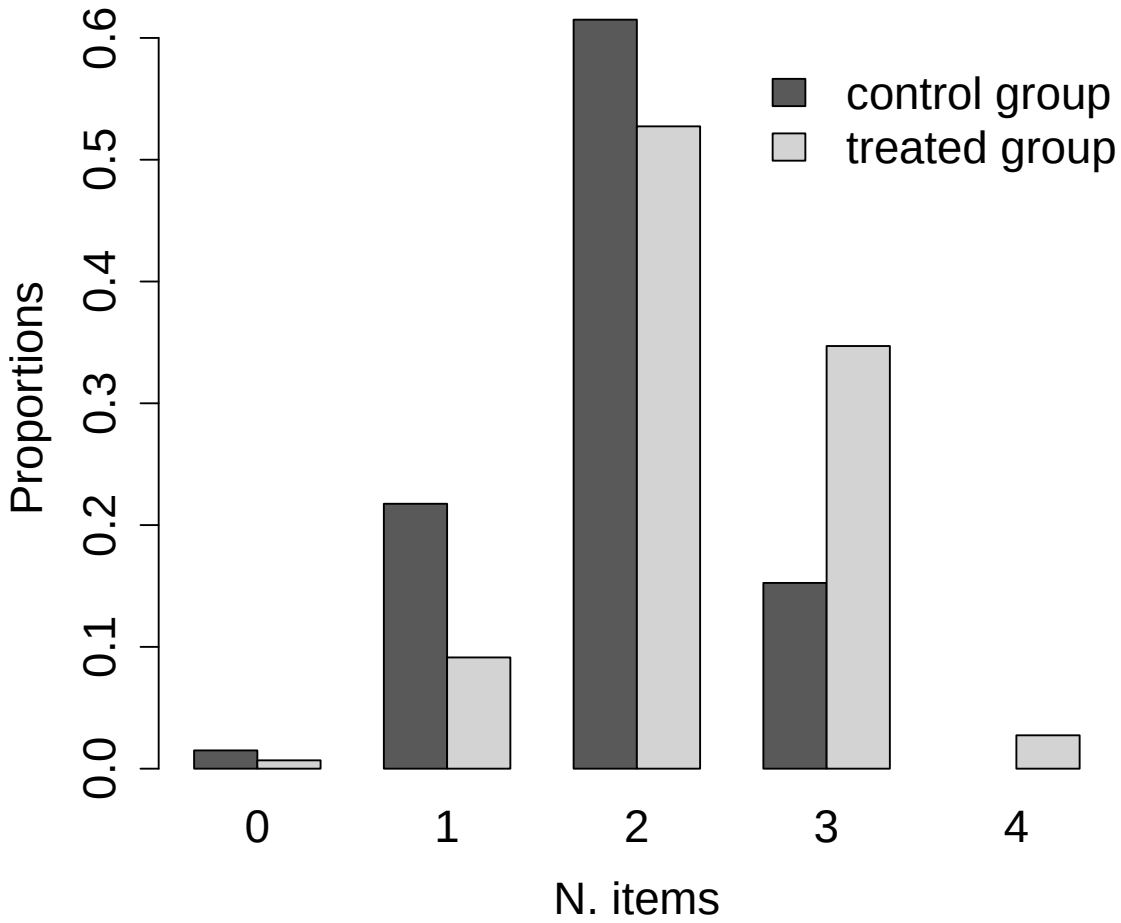


Table 1: List experiment difference-in-means result.

	Control group	**Treatmen group**	**Diff-in-means estimate**
Mean	1.905	2.297	0.392***
S.E.	0.032	0.033	0.047
N	400	438	

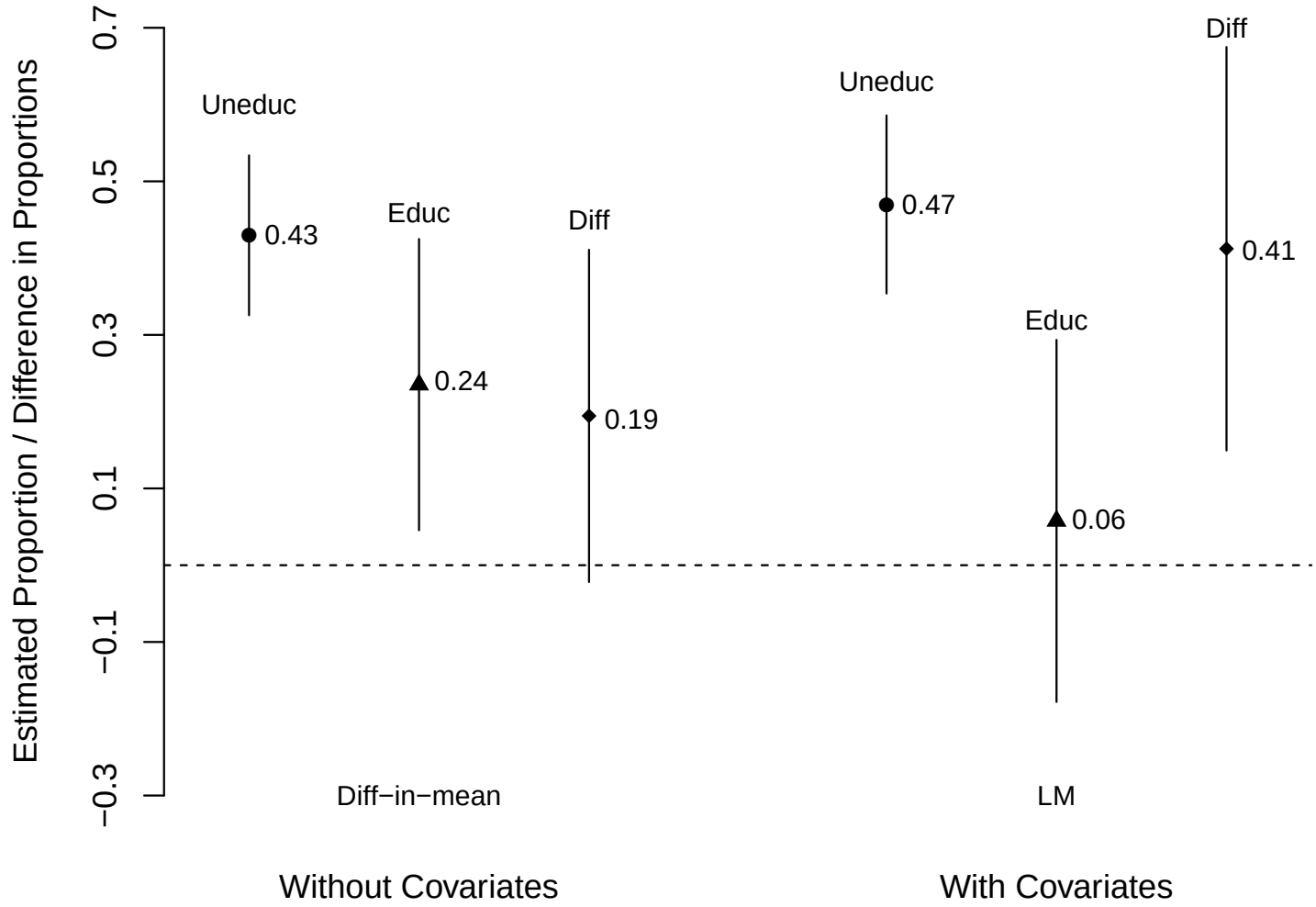
Note. The sensitive item is "a girl should be circumcised".
Signif. codes: (*) if p $<$ .05, (**) if p $<$ .01, (***) if p $<$ .001.

Table 2: Results of the linear regression model for the list experiment (Imai, 2011).

Variables	**Est**	**SE**
Sensitive item		
T	0.813***	0.209
Age×T	-0.007	0.007
Ever married×T	-0.179	0.167
Educated×T	-0.412**	0.147
Other ethnic minorities×T	0.009	0.119
NGO program target×T	-0.022	0.100
Control items		
Intercept	1.721***	0.141
Age	-0.000	0.005
Ever married	0.097	0.117
Educated	0.138	0.097
Other ethnic minorities	0.152*	0.076
NGO program target	0.084	0.068

T corresponds to the treatment status dummy (1 treated; 0 control). The sensitive item estimated parameters correspond to δ in equation 1. The control item estimated parameters correspond to γ in equation 1. Robust S.E. Signif. codes: (†) if p $<$ .1, (*) if p $<$ .05, (**) if p $<$ .01, (***) if p $<$ .001.

Figure 3: Estimated proportion of women who are in favour of FGM based on different estimation models.



Social desirability bias

Table 3: Results of the linear probability model applied to responses to the direct question.

	"A girl should be circumcised"
Variables	
Age	0.004†
	(0.002)
Ever married	0.060
	(0.051)
Educated	-0.074†
	(0.044)
Other ethnic minorities	-0.123**
	(0.036)
NGO program target	-0.115**
	(0.034)
Intercept	0.251***
	(0.064)
Observations	836

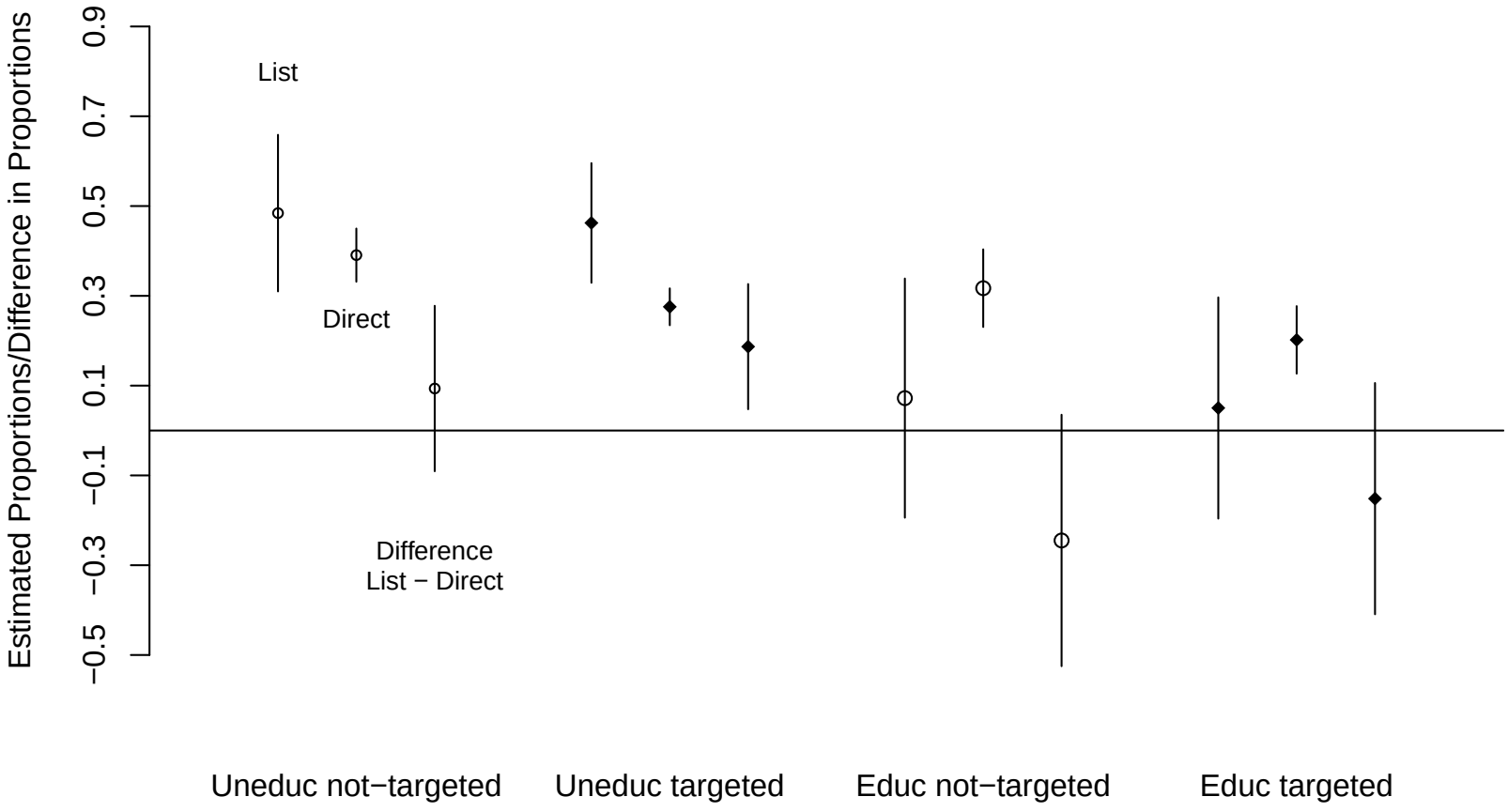
The dependent variable is a dummy variable whether or not a girl should be circumcised. Standard errors are in parentheses. Signif. codes: (†) if p $<$ .1, (*) if p $<$ .05, (**) if p $<$ .01, (***) if p $<$ .001.

Table 4: Estimated proportion of women answering the sensitive item in the affirmative way by socio-demographic characteristics, and differences between direct and indirect questioning.

	Direct question		List experiment		Differences	
	Est	SE	Est	SE	Est	SE
No covariates	0.300	0.016	0.392	0.047	0.092†	0.049
Covariates	0.298	0.015	0.384	0.047	0.086†	0.049
Uneducated	0.313	0.019	0.470	0.059	0.156**	0.062
Educated	0.240	0.037	0.057	0.120	-0.182	0.126
Never married	0.251	0.042	0.522	0.142	0.271†	0.148
Ever married	0.312	0.020	0.343	0.057	0.031	0.061
Ethnic group Afar	0.325	0.018	0.382	0.053	0.057	0.056
Other ethnic minorities	0.202	0.031	0.391	0.106	0.189†	0.110
NGO not-targeted	0.375	0.028	0.398	0.081	0.023	0.086
NGO targeted	0.260	0.018	0.376	0.058	0.116†	0.061

Note. The sensitive item corresponds to "a girl should be circumcised". Predictions are based on the linear probability model for the direct question, and on the linear probability model for the indirect question. The results are averaged over the sample distribution of covariates. Signif. codes: (†) if $p < .1$, (*) if $p < .05$, (**) if $p < .01$, (***) if $p < .001$.

Figure 4: Estimated proportion of women answering the sensitive item in the affirmative way by education and NGO targeting status, and their differences between direct and indirect questioning.



Conclusions

- Ethiopia is one of the countries with the highest FGM prevalence, shedding light on the real attitudes and beliefs about FGM is relevant to understand how to intervene and who to target the most.
- Women's education is the most critical variable in explaining differences in the consent towards FGM. Educated women are less in favour of FGM.
- The positive effect of the NGO programme on reducing the support for FGM seems to disappear when the sensitive information is asked indirectly. The NGO interventions might increase the social pressure on FGM and result in a stronger incentive to reveal a biased answer.
- The social desirability bias is the greatest among non-educated women that are targets of the NGO intervention. Being targets makes them less willing to share publicly the real attitudes concerning FGM support. This is an interesting result for studies that try to measure impact of policy interventions.

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THANKS!