

Pre-analysis Plan for Harming to Signal (2 July 2018)

1 Interventions and Experiments

1.1 Signaling Intervention

During household listings we implement a signaling intervention in survey villages.

1.1.1 Hypotheses

With this intervention we test the following main hypotheses:

- Does introducing a new signaling language, i.e. a less harmful signaling opportunity, decrease support for other, more harmful signals?
- Can an additional social signal overwrite the signaling effect of engagement in harmful traditional practices?
- Do chiefs enforce harmful social norms as a signaling mechanism because they exercise control over it?
- Are there trade-offs between authority and the erosion of established social norms

1.1.2 Experimental Design

Testing these four main hypothesis leads to the following experimental design where we introduce a new pro-social signaling opportunity at the village level. The signaling opportunity consists of colorful rubber bracelets that can be obtained in return for being pro-social. 4 treatment conditions with/without rubber bracelets and with/without food donations are necessary to clearly isolate the proposed mechanism. More details on the analyses follows in Section 3.1.

- A. Under the *donation boxes/bracelet treatment* bracelets are distributed to the 10 most pro-social households in the village (according to the village chiefs prior assessment). The rest of the village can acquire the bracelets against food donations. Village chief advertises the scheme. Food donations will be - and are announced to be – collected and distributed to the most needy in the village by the manager.
- B. Under the *no donation boxes/bracelet treatment* bracelets are distributed to 10 random households as gifts and bracelets can be bought for the same price as a food donation is valued. Village chief advertises the scheme. Money will be and is announced to be kept by the manager of the scheme.
- C. Under the *donation boxes/no bracelet treatment*, no bracelets are available in return for food donations, but food donations equally advertised and managed by chief as in A.
- D. The no donation boxes/no bracelet condition is a pure control.

In order to analyze the extent to which chiefs enforce harmful social norms as a signaling mechanism because they exercise control over it, and to investigate potential trade-offs between authority and


the erosion of established social norms we cross-randomize whether the village chief or a person on the list of pro-social households manages the scheme - on top of conditions A-D

- E. Under the *managed by village chief condition* the village chief is responsible for managing the bracelets and the food donations and for the distribution in the end ($C_c = 1$).
- F. Under the *managed by pro-social person condition* number 10 on the list of pro-social people is responsible for managing the bracelets and the food donations and for the redistribution in the end. The chief is informed about that choice and the reason for that choice ($C_c = 0$).

2x2 Design with cross-randomized variation in manager of the intervention:

	Bracelets ($B_v = 1$)	No Bracelets ($B_v = 0$)
Donation boxes ($D_v = 1$)	A: $\frac{4}{14}N$ (118 villages)	B: $\frac{4}{14}N$ (117 villages)
No Donation boxes ($D_v = 0$)	C: $\frac{3}{14}N$ (89 villages)	D: $\frac{3}{14}N$ (89 villages)

Managed by village chief ($C_c = 1$)	Managed by most pro-social person ($C_c = 0$).
E: $\frac{1}{2}N$ (207 villages)	F: $\frac{1}{2}N$ (206 villages)



Assignment to treatment and control group is done at the village level. Imperfect compliance is taken as intention-to-treat because those are the effects to be expected from any actual program (which depends on villages' compliance). Thus, villages where chiefs do not allow for the chosen treatment are still included in the survey – if permission is given.

1.2 Self-esteem Intervention (E_h)

We manipulate self-esteem in the short-term with a self affirmation task.

1.2.1 Hypotheses

With this intervention we test the following main hypotheses:

- Does higher self-esteem decrease reputational concerns and thereby reduce the willingness to contribute to goods with status signaling component, like local traditions?

- Does self-esteem affect social desirability bias?

1.2.2 Experimental Design

We use a self-affirmation task (Steele 1988, Cohen et al. 2009, Hall et al. 2013, Bursztyn et al. 2017), where we ask treated individuals to reflect on a recent experience or achievement that made them feel proud. Control individuals are asked to talk about their favorite dish. We use the 10-question Rosenberg self-esteem scale as manipulation check of the self-esteem priming.

Treatment ($E_h = 1$)	Control ($E_h = 0$)
$1/2N$ (4130 households)	$1/2N$ (4130 households)

Assignment to treatment and control group is done at the household level. Half the households within each village are randomly assigned to the treatment condition while the other half is assigned to the control condition.

1.3 Experiment on Perceived Public Image (J_h^1, J_h^2)

We test how perceived pro-sociality depends on the engagement in harmful traditional practices.

1.3.1 Hypotheses

- Do individuals use harmful traditional practices for signaling their pro-sociality?
- Can an additional social signal overwrite the signaling effect of engagement in harmful traditional practices?

1.3.2 Experimental Design

In order to learn whether people use harmful traditional practices for signaling their pro-sociality we want to find out how individuals perceive a hypothetical person who does (not) engage in harmful traditional practices. We therefore randomly assign people to one of two conditions.

In condition 1, subjects are asked to evaluate a hypothetical person who wants to marry off his 14 year old daughter and encouraged her to participate in local initiation rituals, on dimensions altruism, reciprocity, and trustworthiness ($J_h^1 = 1$).

In condition 2, subjects are asked to evaluate a hypothetical person who does not want to marry off his 14 year old daughter and did not encourage her to participate in local initiation rituals, on dimensions altruism, reciprocity, and trustworthiness ($J_h^1 = 0$).

Condition 1 ($J_h^1 = 1$)	Condition 2 ($J_h^1 = 0$)
$1/2N$ (4130 households)	$1/2N$ (4130 households)

Assignment to the two conditions is done at the household level. Half the households within each village are randomly assigned to treatment condition 1 while the other half is assigned to treatment condition 2.

Additionally, we ask each subject to evaluate the same hypothetical person after learning that this person recently obtained a rubber bracelet (J_h^2).

1.4 List Experiments

List experiments (Raghavarao and Federer, 1979) are a standard method to account for social desirability bias in survey questions. We adapted the method to work under constraints regarding illiteracy.

1.4.1 Hypotheses

- Is there social desirability bias involved in reporting of attitudes and (planned) engagement in harmful traditional practices?
- Can we measure individual-level susceptibility to social pressure in list experiments?
- Does self-esteem affect attitudes towards harmful traditional practices or exclusively reporting thereof?

1.4.2 Experimental Design

Condition 1	Condition 2
$1/2N$ (4130 households)	$1/2N$ (4130 households)

In condition 1, subjects answer 3 sub questions in List experiments 1-3 and 4 sub questions in List experiments 4-6.

In condition 2, subjects answer 4 sub questions in List experiments 1-3 and 3 sub questions in List experiments 4-6.

Assignment to treatment and control group is done at the household level. Half the households within each village are randomly assigned to treatment condition 1 while the other half is assigned to treatment condition 2.

Additionally, individuals answer 3 sub questions in List experiment 7 and 4 sub questions in List experiment 8, or vice versa, with equal proportions in both treatment conditions of the self-esteem intervention.

1.4.3 Validation Measures

One List experiment is designed in a way to show a lower bound on measured social desirability bias (Statement: “We are (now) in Malawi”. Note: adapted version (2. July 2018) after learning during field training of enumerators that many Malawians do not know the meaning of “Africa” in the previously registered validation question.). Another List experiment serves the double purpose of setting an upper bound and revealing the sensitivity to experimenter demand effects by using the method proposed by Quidt, Haushofer, Roth (2017) (Statement: “There are common cultural practices in this village that may harm children”).

1.4.4 Individual measure of susceptibility to social pressure (*Susceptibility_i*)

We can calculate an individual level measure for susceptibility to social pressure as the difference between blocks of direct and list responses for individuals who answer sensitive questions (only available for half the sample):

$$Susceptibility_i = \sum_j (List_{ij} - Direct_{ij})$$

We validate the proposed sensitivity measure with 1/3 of the population by including 13 items from the validated social desirability scale by Ballard (1992).

2 Outcomes

We consider 4 groups of outcomes: (i) attitudes towards and planned future engagement in harmful traditional, (ii) public perception of an individual who engages in harmful traditional practices, (iii) prevalence of harmful traditional practices, and (iv) village chiefs’ characteristics and self-perception. We have several outcome variables for each of the 4 groups. To account for multiple testing, multiple outcomes are grouped into sub-families and families, with inference conducted using seemingly unrelated regressions, following Kling, Liebman and Katz (“Experimental Analysis of Neighborhood Effects”, ECMA, 2007)

(i) Attitudes towards and planned future engagement in harmful traditional practices: *A*

- Direct elicitation of child marriage, initiation rituals, FGM/C
- List elicitation of child marriage, initiation rituals, FGM/C
- Krupka/Weber elicitation of child labor, child marriage, initiation rituals, FGM/C

(ii) Public perception of an individual that engages in harmful traditional practices: *P*

The following measures are adapted versions after piloting Falk et al's (2016) social preference module.

- Altruism (scale 0-10): *"How willing is John to help other people without expecting anything in return? Helping could for example be lending a tool or giving some money to other households that need it desperately"*
- Reciprocity (scale 0-10): *"When someone treats John unfairly, for instance when a person steals and eats some of John's food, how willing is John to punish this person, for example by blaming him in public?"* and *"When someone does John a favor, for instance when a person helps John to fix his roof, how willing is John to return the favor in the future, for example by also helping this other person to fix something?"*
- Trust/Trustworthiness (scale 0-10): *"John is reliable, honest, and truthful"*

Here, we are interested on the joint measure of pro-sociality, containing altruism, reciprocity and trustworthiness.

(iii) Prevalence of harmful traditional practices: Y

- Direct elicitation of child marriage, initiation rituals, FGM/C, and child labor
- List elicitation of child labor

(iv) Village chiefs' characteristics and self-perception: K , Susceptibility

3 Analysis Plan

3.1 Harming to Signal

3.1.1 Do pro-social individuals follow (Y_i)/support (A_i) harmful traditional practices more often?

$$Y_i = \beta_0 + \beta_1 \text{Prosociality}_i + e_i$$

$$A_i = \beta_0 + \beta_1 \text{Prosociality}_i + e_i$$

We are interested on the joint measure of pro-sociality, containing altruism, reciprocity, and trust from the Falk et al. (2016) social preference module.

Further, it may be informative to consider the interaction with prevalent local social norms. Effects may depend on prevalence of harmful practices in village (Harmful_Norm_v).

$$Y_{iv} = \beta_0 + \beta_1 \text{Prosociality}_i + \beta_2 \text{Harmful_Norm}_v + \beta_3 \text{Prosociality}_i \text{Harmful_Norm}_v + e_{iv}$$

$$A_{iv} = \beta_0 + \beta_1 \text{Prosociality}_i + \beta_2 \text{Harmful_Norm}_v + \beta_3 \text{Prosociality}_i \text{Harmful_Norm}_v + e_{iv}$$

3.1.2 Are individuals with increased self-esteem (E_h)/reduced reputational concerns more likely to oppose social norms related to harmful traditional practices?

Distinguishing between effects on attitudes A_{ih} and effects on reporting (social desirability bias) requires running the following regressions:

$$(i) A_{ih} = \beta_0 + \beta_1 E_h + e_{ih}$$

$$(ii) A_{ih} = \beta_0 + \beta_1 \text{Susceptibility}_i + e_{ih}$$

(iii) IV:

$$1. \text{ Stage: } \text{Susceptibility}_{ih} = \alpha_0 + \alpha_1 E_h + v_{ih}$$

$$2. \text{ Stage: } A_{ih} = \beta_0 + \beta_1 \text{Susceptibility}_{ih} + e_{ih}$$

Validity Check Reporting: As opposed to attitudes and planned future engagement, prevalence of harmful traditional practices cannot plausibly be affected by the interventions, as the time between intervention and measurement is too short in our setting (no behavior change during the experiment). Thus, we can use prevalence measures Y_{ih} to check for differences in reporting about the participation in harmful traditional practices as a consequence of the interventions.

3.1.3 How is the public image of a person affected if this person engages in harmful traditional practices?

$$P_{ih} = \beta_0 + \beta_1 J_h^1 + e_{ih}$$

It may be informative to consider the interaction with prevalent local social norms. Effects may differ between villages that engage in child marriage and initiation rituals and villages that do not. I.e. if the village supports the practices that John engages in ($Identical_Norm_v$).

$$P_{ihv} = \beta_0 + \beta_1 J_h^1 + \beta_2 Identical_Norm_v + \beta_3 J_h^1 Identical_Norm_v + e_{ihv}$$

3.1.4 Can an additional social signal overwrite the signaling effect of engagement in harmful traditional practices

$$P_{ihv} = \alpha_0 + \alpha_1 J_h^2 + \alpha_2 D_v + \alpha_3 B_v + \alpha_4 D_v B_v + e_{ihv}$$

$$P_{ihv} = \beta_0 + \beta_1 J_h^2 + \beta_2 D_v + \beta_3 B_v + \beta_4 D_v B_v + \beta_5 J_h^2 D_v + \beta_6 J_h^2 B_v + \beta_7 J_h^2 D_v B_v + e_{ihv}$$

As the bracelets (B) only have a signaling meaning in the treatment with bracelets and donation boxes (D) at the same time we expect $\beta_4 \neq 0$ and $\beta_7 \neq 0$. I.e. in villages where bracelets have a pro-social meaning, John should be perceived as being more pro-social if he obtained a bracelet.

We gain statistical power by looking at the change of P within subject by subtracting reported P_{ihv} under treatment J_h^1 .

It may again be informative to consider the interaction with prevalent local social norms (analogous to above)

3.1.5 Can support for harmful traditional practices be substituted by a pro-social signaling opportunity?

- Does facilitating pro-social signaling affect support for harmful traditional practices?

$$A_{iv} = \beta_0 + \beta_1 D_v + e_{iv}$$

- Does increasing the public visibility of pro-social signaling affect the support for harmful traditional practices?

$$A_{iv} = \beta_0 + \beta_1 B_v + e_{iv} \mid D_v = 1$$

Check if effect of bracelets per se, even in absence of signaling value

$$A_{iv} = \beta_0 + \beta_1 B_v + e_{iv} \mid D_v = 0$$

Control for effect of bracelets in absence of signaling value, if necessary:

$$A_{iv} = \beta_0 + \beta_1 D_v + \beta_2 B_v + \beta_3 D_v B_v + e_{iv}$$

- Does increasing the public visibility amplify the effect of facilitating pro-social signaling?

$$A_{iv} = \beta_0 + \beta_1 D_v + \beta_2 B_v + \beta_3 D_v B_v + e_{iv}$$

We will come back one year after the baseline data collection and look at actual change in behavior.

The pre-analysis plan will be updated accordingly at this position at a later stage.

3.2 Authority vs Norms

For these analyses only villages in treatments A,B, and C should be considered, as the full control condition D is identical if $C_c=1$ and if $C_c=0$.

3.2.1 Are there trade-offs between authority and the erosion of established social norms?

I.e. are chiefs more supportive of harmful traditional practices if they are taken away the power to manage a new signal? (Di Casola, Freddi, and Sichlimiris 2017)

We regress attitudes towards harmful traditional practices of the chiefs, A_c , on treatment C_c

$$A_c = \beta_0 + \beta_1 C_c + e_c .$$

3.2.2 Do village chiefs judge other villagers differently in terms of pro-sociality if the competences to create a public signal are taken away from them?

I.e. do the chiefs base their judgement of pro-sociality P_{ci} about other villagers i more on villager i 's involvement in harmful traditional practices H_i if chief get the authority to manage the new pro-social signal taken away from him/her?

$$P_{ci} = \beta_0 + \beta_1 C_c + \beta_2 H_i + \beta_3 C_c H_i + e_{ci} .$$

3.2.3 Perceived powers

Do village chiefs claim to have more competences/powers (K_c : Allocating resources, collecting money, form marriages, mediate/conflict resolution, influence local traditions, wiggle room for government decisions) if they lose power to manage the signal?

$$K_c = \beta_0 + \beta_1 C_c + e_c .$$

3.2.4 Reputational concerns by the chiefs

Are reputational concerns of village chiefs ($Susceptibility_c$) increased if they lose power to manage the signal?

$$Susceptibility_c = \beta_0 + \beta_1 C_c + e_c .$$

3.3 Effects of liquidity constraints and marriageability concerns

3.3.1 Effect of liquidity constraints on harmful traditional practices

We analyze the effect of liquidity constraints on harmful traditional practices by regressions on exogenous weather variations, i.e. rainfall shocks (R_{rt} : Continuous deviations from historical averages or dummies for extreme floods & droughts (10th / 90th percentile of historical monthly data)) that cause random income shocks through floods and droughts.

$$Y_{rt} = \beta_0 + \beta_1 R_{rt} + e_{rt}$$

Rainfall data is generally not available at the village level. By including village-level questions about recent floods (F_{iv}) and droughts (DR_{iv}), we can improve the precision of these shocks by building a gravity-style measure.

3.3.2 Are child marriage and initiation rituals complements or substitutes?

We analyze whether child marriage (Y_{irt}) and initiation rituals (I_{it}) are complements or substitutes by instrumenting costly initiation rituals by rainfall shocks in the region ($R_{r,t=l}$) at the usual age of initiation ceremonies.

1. Stage:

$$I_{irt} = \alpha_0 + \alpha_1 R_{r,t=l} + v_{irt}$$

2. Stage:

$$Y_{irt} = \beta_0 + \beta_1 \overset{\blacktriangle}{I_{irt}} + e_{irt}$$

Effects are expected to be different between matrilineal and patrilineal societies and between matrilineal and patrilineal living arrangements. We therefore additionally consider the interaction effects between I_{irt} and binary indicators for Matrilineal and Matrilineal.