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Growing up in Africa
Age and Pro-social attitudes in Primary Schoolchildren in Goma (DRC)

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Abstract

While an extensive literature based on analysis conducted in developed countries shows that primary school children develop prosocial attitudes as they grow older, with school acting as the main driver of the socialisation process, there is little evidence of what may happen in very different socio-cultural and economic context. The paper aims at testing the relation between age and prosocial attitudes and behaviours by focusing on a sample of about 400 children attending 10 primary schools located in pheripheral areas of Goma, capital city of the North Kivu province in the northeast region of Democratic Republic of Congo. The evidence of behavioural experiments shows that schoolchildren attitude to truthfully report their choices tends to decrease with age (i.e. cheating increases); we also explore the relationship between other prosocial attitudes and age, finding mixed and weak evidence.

1 Introduction

Prosocial preferences are known to play a fundamental role in the economic life (Bowles, 2004; Fehr and Schmidt, 1999) as well as in politics (Fong et al., 2006). Although widely debated (Warneken, 2013; Rajhans et al., 2016; Fehr and Fischbacher, 2003), the origins and development of prosociality and other-regarding preferences are still mostly uncertain. Previous research has shown that very young children display basic prosocial activity early in life (Warneken and Tomasello, 2006), and that they further develop other-regarding preferences and fairness concerns as they grow older. There is indeed an increasing amount of evidence supporting the claim that prosocial behaviour is developed and "learned" over time by children (Olson and Spelke, 2008; Fehr et al., 2008). This evidence suggests that prosocial attitudes naturally occurs towards kin and close relationships (Hamilton, 1964; Rheingold et al., 1976), or in response to "direct" (Trivers, 1971) or "indirect" (Nowak and Sigmund, 2005) reciprocity; while further experimental studies show that children are less prone to engage in prosocial behaviours towards unknown adults (Rheingold et al., 1976) although they are attentive to friendship relationships (Costin and Jones, 1992).

Recent experimental studies show that egalitarian preferences develop with age (Harbaugh et al., 2003) as well as parochialism (Fehr et al., 2008). In particular, Fehr et al. (2008) implement a set of binary choice dictator games, that we also replicate in our study; they show that Swiss children are more likely to report strong preference for equal distributions at older ages, by comparing cohorts of 3-4, 5-6 and 7-8 years old schoolchildren.

The above mentioned evidence essentially refers to OECD countries, where most of the research on children behaviour has been conducted. However, anthropologists have shown that while prosocial attitudes in children develop during early years of life, as people grow up, they tend to differ across countries once they are attached to social norms and beliefs (e.g. Whiting and Whiting, 1975). Therefore, it is likely that different environmental conditions exert different effects on the development of prosocial attitudes. D'Adda and Levely (2016) show for instance, on a sample of schoolchildren in Sierra Leone, that environmental quality affects the health at birth, and this mechanism affects the development of prosocial attitudes: healthier children are more likely to be more generous and prone to prosocial behaviour.

This paper explores the relation between age and prosocial behaviour within a socio-economic context which is quite different with respect to OECD countries, where most of literature has been developed. In our reference context, human insecurity, social and economic deprivation as well as lack of opportunities may potentially influence prosocial attitudes in the adult population at large, and their development in childhood. Focusing on children seems to be particularly relevant, since today children are tomorrow's citizens.

Therefore, the paper aims at testing the relation between age and prosocial attitudes and behaviours by focusing on a sample of about 400 children attending 10 primary schools located in the peri-urban area surrounding Goma, a mid-size town located in the northern region of Democratic Republic of Congo. We explore the determinants of prosocial behaviour by making use of a set of incentivized tasks retrieved from behavioural and experimental economics.

2 Experimental design

Since the aim of the paper is to investigate the relation between age and prosocial behaviour, we devised an experimental procedure involving the administration of a questionnaire that includes a set of incentivized tasks to a sample of selected children. This survey represents the first part of a wider longitudinal research, aiming at testing the effectiveness of a child sponsorship program (Distance Support Program, DSP henceforth), run by a local NGO within the AVSI Foundation network,[1] in affecting the prosocial attitudes of supported children. Therefore, the same questionnaire is planned to be administered twice to the panel of selected children, at the beginning of DSP and after the completion of two school years[2]. This paper is based on the data gathered through the first wave of questionnaires' administration.

The experiment is run on a sample of 394 children in 10 primary schools[3] located in the town of Goma, in the North Kivu province (DRC). This area is highly unstable socially, politically, environmentally and economically. It has been one of the flashpoints of armed conflicts in the region since 1998, being subject to massive refugees inflows; moreover the last eruption of Nyiragongo volcano in 2002 considerably affected city's infrastructures, producing long-lasting negative effects on local development. The map shown in Figure 1 highlights that the schools participating to our research are located at the outskirts of the town.

The main focus of the analysis is on the relation between age and the outcomes of behavioural tasks devised to elicit prosociality and truthful reporting in children. We mostly refer to the full sample including both DSP and control group children, and we provide an introductory analysis based on the comparison between the two groups.

2.1 Incentivized tasks

In order to assess whether children engage differently in prosocial behaviours according to different age, we devised an experimental setting that included six incentivized tasks, devised to elicit prosocial preferences[4]. Incentivized tasks in behavioural and experimental economics are usually performed by using money as an incentive. However, handing out pocket money could involve potentially serious threats for children's safety; a relatively large majority of these children reach the school on foot, possibly

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[1]For detailed information about the program and the NGO please refer to the NGO's official website: https://www.avsi.org/en/ and to Maggioni and Beretta (2017).

[2]The timing has been set following the indications - based on past experience and anecdotal evidence - of AVSI's staff about the time interval that is necessary for the program to exert its effects.

[3]As extensively explained in Maggioni and Beretta (2017) and in Beretta and Maggioni (2017), the choice of schools and children was made in cooperation with AVSI within a broader research project aiming at assessing the effectiveness of DSP on prosocial behaviour, exploiting the fact that DSP was about to start afresh in the area. We chose to include in our sample all the schools in which at least two sponsored children were present, and at least four control children in the same class (randomly selected by matching age and sex of DSP children) were available. In this way, we obtained a final sample consisting of 130 DSP children (treated) and 269 control ones.

[4]We also included a modified version of the "Marshmallow test" (Mischel et al., 1972), developed within behavioural psychology to elicit intertemporal discount preferences (impulsivity) in children. Since the aim of this test is not related to prosocial behaviour, we postpone the analysis of the results of this test to a further work.
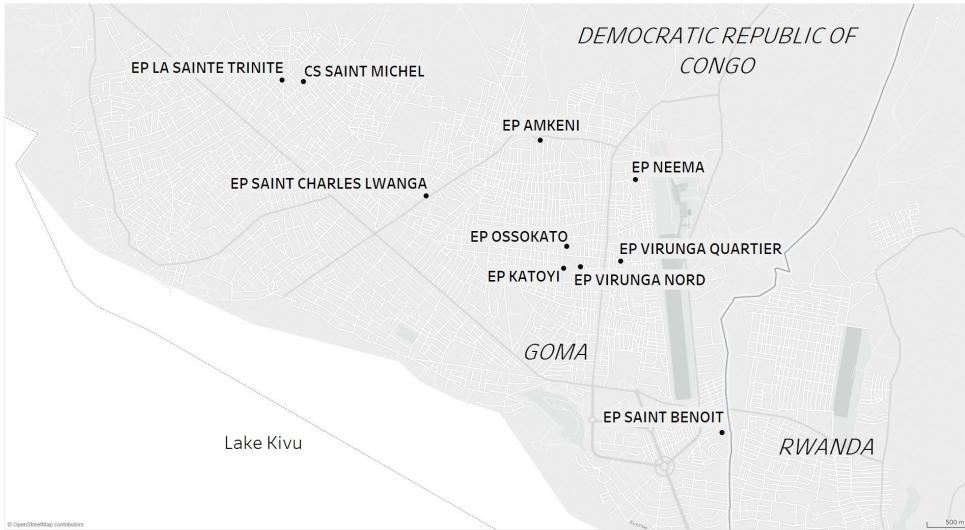
Figure 1: Location of Goma's primary schools included in our sample

walking in dangerous areas. Therefore, following the suggestions of AVSI's staff, we resorted to using packets of biscuits as incentives[5]. Each task yields a payoff in terms of packets of biscuits, depending on children's choices. At the end of the questionnaire, only one of the six incentivized task is drawn (through a die roll) and actually rewarded to the children: in this way, children need to put the same effort on all the tasks.

The six incentivized tasks are briefly described below:

- *Dice rolling task.* This task, originally developed by Fischbacher and Föllmi-Heusi (2013) and applied in different contexts (e.g. Ariely et al., 2015), exploits the statistical properties of random dice rolls to make inference about mind cheating (i.e. misreporting of chosen outcomes) in both children and adults. In our experiment, we slightly modified the original version of the task in order to make it more easily understandable by children. The child is provided with a couple of fair dice (one red and one blue) and asked by the interviewer to perform twenty rolls. Before every throw, the child has to decide in his/her mind which of the two dice he/she will choose (either the red or the blue one). After observing and reporting the outcome of the throw in the questionnaire form, he/she communicates his/her choice to the interviewer that takes note of the choice. At the end of all 20 throws, one is chosen and selected for being rewarded (in case the dice task is drawn as the rewarded task, at the end of the questionnaire). Since the choice is not declared before the throw, children have always an incentive to deviate from his/her choice and simply choose the highest outcome between the two dice. On average, if the choice of children is random and reporting is sincere, the average outcome of the chosen dice should be equal (or very close to) the expected value of the series. If the observed mean of the chosen outcomes exceeds this value, it is likely that children may have

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[5]Local AVSI staff identified the biscuits brand that children appreciate and whose packaging is well known to them; biscuits can also be easily bartered thus avoiding potential satiations problems. We avoided using the more commonly consumed street food, which safety cannot be guaranteed, thus reassuring children's families.

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misreported (cheating) their choices to maximize their payoff. This indicator yields therefore an aggregate measure of truthfulness[6]. As a robustness check, we also provide an alternative indicator, based on the proportion of maximum values in a given throw chosen by children over the total number of throws. In fact, once the child has decided which is the selected die, he/she has 50% chances that the chosen die will read a higher outcome than the one not chosen. Therefore, an average proportion of maximum choices that exceeds 50% of the throws (net of ties), signals that children, on average, are likely to have misreported their choices in order to maximize their outcomes.

- *Dictator Game.* The questionnaire includes a modified version of the Dictator Game (Kahneman et al., 1986) in which the interviewed child acts as a Proponent, being endowed with five packets of biscuits and matched to an anonymous child who has received no endowment. The task asks the child to choose how to split the biscuits he/she received between him-/herself and the other child. Within a game theoretical framework, the Proponent with self-regarding preferences is expected to retain all the endowment for him/herself. Therefore, deviations from the *selfish* equilibrium solution in the Dictator Game are used to measure empathy, altruism and/or pure generosity (Forsythe et al., 1994; Camerer, 2003; Guala and Mittone, 2010).

- *Binomial situations.* The questionnaire includes a set of three binomial situations originally devised to study prosocial behaviour in children, labelled "Costless altruism", "Costly altruism" and "Envy" retrieved from Fehr et al. (2008). Following D'Adda and Levely (2016) we expanded the above mentioned set by including also a fourth situation, labelled "Spite". These four situations require children to choose among couples of alternative allocations of packets of biscuits: the children are told they are matched with an anonymous child and their choices will affect the welfare of both. Each of the four situations implies the choice between a benchmark "fair" allocation, indicated as (1;1), where both the interviewed child and the partner child receive one packet of biscuits, and four different alternative allocations[7]. As briefly summarized in Table 1,the alternative allocation is (1;0) in the "Costless altruism" situation; (2;0) in the "Costly altruism" situation; (1;2) in the "Envy" situation; (2;3) in the "Spite" situation. On the one hand, choosing the benchmark "fair" allocation in Costless altruism signals low (i.e. coming at no costs) other-regarding preferences. Choosing it in Costly altruism signals high (i.e. costly for the child) other-regarding preferences, hence stronger prosocial behaviour. On the other hand, the same choice (1;1) in "Envy" and "Spite" may be interpreted in different ways, possibily suggesting a form of inequality aversion. Choosing the "fair" allocation, in fact, "punishes" either the partner alone (in the "Envy" situation) or both the partner and the child him/herself (in the "Spite" situation); that is, relative equality is preferred to Pareto-efficient solutions.

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[6]It should be stressed that the statistical properties of this task hold at the group level (i.e. age-classes) but not necessarily at the individual level. Please refer to Fischbacher and Föllmi-Heusi (2013) for further details.

[7]These alternatives are presented in the paper in the form (x;y) where x refers to the packets of biscuits for the interviewed child and y the packets of biscuits for the partner child.

2.2 Procedures

The experiment, implemented in paper-and-pencil, took place within the period 21st - 24th March 2016. Children's parents were adequately informed and gave their consent before the experiment took place. Furthermore, the school headmasters presented interviewers to children and parents, and explained that biscuits would be used as rewards during the questionnaire administration.

The questionnaires have been administered by twenty-eight interviewers purposely recruited among students of the local university in Goma. The interviewers were independent from both the schoolteachers and AVSI and unknown to the children, thus minimizing the risk of possible strategic choices (aimed at pleasing interviewers) on the children sides. The same procedure has been applied in all 10 primary schools.

Every interviewer administered the questionnaire to one child at a time, in order to assure that the instructions were fully understood. The child was sitting at a desk in front of the interviewer, in a room where nobody else was staying. The interviewer, after introducing him/herself to the child, set the table by putting a picture of schoolchildren in the middle of the table, as a priming for the child to visualize his/her partner in the tasks. This picture was taken in a different school in DRC in order to provide an image of possible peers thus reducing as much as possible personalization effects. Thanks to the cooperation with the schools' managements, we obtained that all the children eligible for the experiment were gathered together in a courtyard, and entertained while other peers were undertaking the questionnaire. After a child completed the questionnaire, he/she was allowed to go home, in order to avoid that children could talk about the experiment to their peers still waiting to be interviewed.

All the tasks included in the questionnaire were played in an anonymous double blind setting: children were randomly assigned a code; AVSI staff held records about the matching between individual names and codes, but could not access individual outcome data; the research team could access individual outcome data, matched with anonymous codes, but could not access individual names.

To perform the incentivized tasks, the interviewers were provided with plastic cards representing packets of biscuits. The child was asked to perform his/her choice by handling the cards. When the task involved the allocation of biscuits between him/herself and the partner, the child would put the cards into envelopes: a white envelope for the biscuits that he/she was going to keep for him/herself; a yellow envelope for the biscuits eventually given to the anonymous partner. If the task involved no partner (as in the dice rolling task), only the white envelope was provided. Once all the tasks had been performed and all the envelopes appropriately filled with biscuits cards, the payment of the payoffs was administered according to the following protocol. The child rolled a die and the outcome was used to identify which of the 6 incentivized tasks was to be rewarded (the dice game involved also the selection of an individual throw for rewarding). Then, the interviewer opened the corresponding envelope, counted the packet cards inside it and accordingly rewarded the child with real biscuits.

On average, each questionnaire took about thirty minutes to be completed. The average payoff[8] for the 394 children was 2.21 packets of biscuits, ranging from a

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[8]Excluding the show up fee, consisting in 1 candy, as suggested by the local AVSI and school staff.

minimum of 0 to a maximum of 6. Once the questionnaires administration was completed, some enough packets of biscuits were also donated to the schools to be handed out to all schoolchildren, in order for them to share in some "benefits" of the school participation to the research.

3 Methodology and data

3.1 Estimation technique

The relation between age and prosocial behaviour is estimated through a set of models in which the outcomes of the behavioural incentivized tasks are regressed against the main independent variable (age group).

$$Y_i = \beta_0 + \beta_a X_{ai} + \beta_k Z_{ki} + \epsilon_{it} \tag{1}$$

where the subscript i identifies each child; Y_i is the behavioural indicator; β_0 represents the constant term; X_{ai} are dummies identifying 3 different age cohorts, indicated by subscript a, namely 7/8, 9/10, 11/12. Z_{ki} are individual children's characteristics; ϵ_i is the usual error term; while $\beta_{0...n}$ are the parameters to be estimated. To estimate the coefficient of age classes on the behavioural indicators we implemented OLS for interval level variables[9].

To estimate the models in which the dependent variable is one of the four binomial situations, we implemented the following Probit model:

$$Prob(Y_{si} = (1;1) \mid X_a, Z_k) = \beta_0 + \beta_a X_{ai} + \beta_k Z_{ki} + \epsilon_i \tag{2}$$

where the dependent variable is the probability that the child chooses the "fair" allocation (1;1) in each one of the four binomial situation ($s = 1, \ldots, 4$) outlined in subsection 2.2; $\beta_a X_{ai}$ and $\beta_k Z_{ki}$ identify - respectively - age cohorts and individual children's characteristics as defined in Equation 1, along with their respective coefficients to be estimated.

In the final part of the paper we will also explore whether DSP children behaved in a statistically different way from non supported children. Therefore, the model shown in Equation 3 is expanded to include a dummy variable DSP, taking value 1 for DSP children and 0 otherwise:

$$Y_i = \beta_0 + \beta_1 DSP_i + \beta_a X_{ai} + \beta_k Z_{ki} + \epsilon_i \tag{3}$$

Analogously, the same expanded specification is applied to the Probit models presented in Equation 2.

The variables included in the analysis are briefly described in Table 1, while Table 2 provides summary statistics for all the dependent variables (Outcome indicators) and control variables (Personal characteristics) included in our analysis.

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[9]As explained in section 4 as a robustness check, we also applied GLM for the binomial family, to take into account that these indicators are mostly proportions.

Table 1: Brief description of the variables included in the analysis

Variable	Description
Interval-level behavioural indicators	
Dictator	Number of packets of biscuits sent to anonymous partner
Cheating	Difference between average reported outcome and expected values of dice rolls
Max Choice	Proportion of choices of maximum values in dice roll task
Binomial behavioural indicators	
Costless Altruism	Proportion of (1;1) where the alternative allocation is (1;0)
Costly Altruism	Proportion of (1;1) where the alternative allocation is (2;0)
Envy	Proportion of (1;1) where the alternative allocation is (1;2)
Spite	Proportion of (1;1) where the alternative allocation is (2;3)
Individual characteristics	
Age (years)	Self-reported age of the child as of March 2016
Female	Dummy variable equals to 1 if the child is a female
Parents	Categorical variable (1=Both parents; 2=One parent absent; 3=Orphan)
Children in family	Number of children living in the same household
Daily meals	Number of daily meals, on average
House type	Categorical variable (1=Hut/Precarious; 2=Adobe; 3=Concrete)
Access to water	Categorical variable (1=Running water; 2=Spring/Natural)
Health status	Categorical variable (1=Undernourished/Ill; 2=Healthy)

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Interval-level behavioural indicators					
Dictator	2.10	0.86	0	5	394
Cheating	0.23	0.44	-1.3	1.3	394
Max Choice	0.61	0.21	0	1	394
Binomial behavioural indicators					
Costless Altruism	0.55	0.5	0	1	394
Costly Altruism	0.25	0.43	0	1	392
Envy	0.22	0.42	0	1	392
Spite	0.12	0.33	0	1	394
Individual characteristics					
Age (yrs)	7.94	1.64	5	12	394
Sex	0.51	0.50	0	1	394
Parents	1.87	0.46	1	3	393
Children in family	2.85	0.82	1	4	393
Daily meals	1.84	0.59	1	3	394
House type	2.00	0.33	1	3	394
Access to water	1.02	0.14	1	2	393
Health status	1.93	0.25	1	2	392

4 Results: the full sample

This section presents in separate subsections the results of all the incentivized tasks included in the experiment. All subsections include figures which graphically summarize the incentivized tasks outcomes, whereas the tables of regressions' results can be found in the Appendix.

4.1 Cheating

First of all we show the results of the sincerity/trustworthiness related task, namely the Dice rolling task. Figure 2 illustrates the results, by reporting two alternative indicators. The left panel reports the average value of the cheating indicator by age group. The figure suggests the existence of a non linear pattern for cheating that steeply increases at earlier age (passing from 5-6 years to 7-8 years) and finally decreases at older ages, when approaching adolescence. The result is almost identical when analysed through an alternative indicator, as shown in the right panel of Figure 2, that reports the proportions of maximum choices. As the right panel shows, all proportions are larger than 50%, suggesting that on average children misreported their mind choice, in order to maximize their payoff, and that this pattern increases with age up to 9-10 years when it slightly decreases.

Table A1 outlines the results of the estimation of the effect of age on cheating. Models in columns (1) and (2) include age as a categorical variable, as in Figure 2; models in columns (3) and (4) include age in years, as a robustness check. Furthermore, all model specifications include a set of control variable to take into account possible confounding effects and include both school fixed effects and interviewers fixed effect. The results are striking: the coefficient of age (in years) reported in columns (3) and (4) is strongly significant and positive for both Cheating and Max Choice; columns (1) and (2) show more nuanced, although consistent, results. In fact, as compared to the
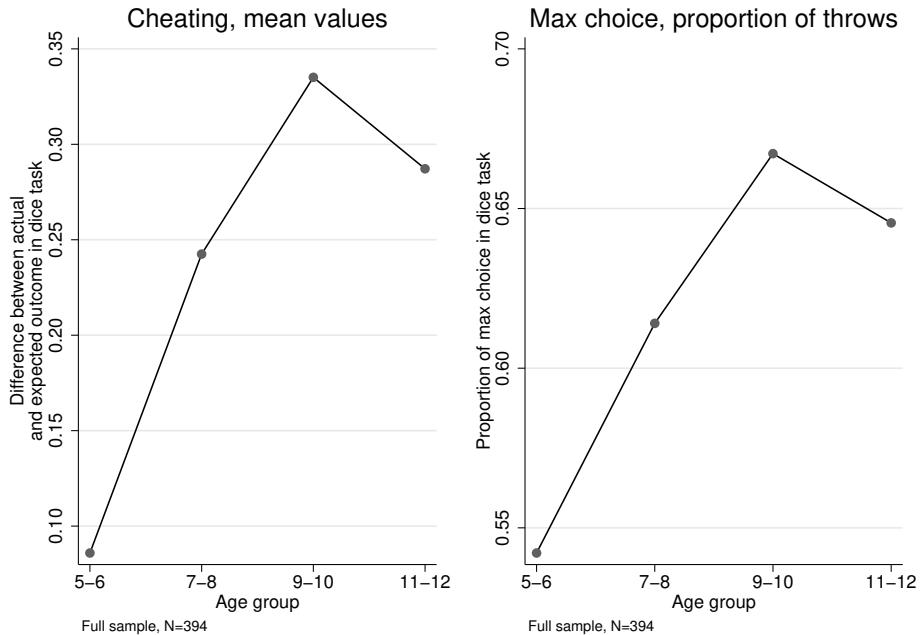
Figure 2: Dice rolling task: full sample results by age group

reference category, the lowest age class, i.e. 5 to 6 years, children are more likely to cheat as they grow older, with the largest effect at 9-10 years, while the parameter for the 11-12 age class, although still positive, is not statistically significant.

4.2 Dictator

The main outcome of the Dictator game is graphically shown in Figure 3. As the figure shows, the pattern here is less clear-cut, since the most evident movement is the very small decrease in the average number of biscuits sent to the anonymous partner between 7-8 and 9-10 age groups, anticipated and followed by even smaller increases.

Table A2 shows the estimated coefficient of age both as categorical (columns 1 and 3) and interval level variable (columns 2 and 4) and both by implementing OLS (columns 1 and 2) and GLM for the binomial family with a logit link function, as suggested by Papke and Wooldridge (1996), for bounded dependent variables. Table A2 shows that once our set of control variables is included in the sample, a weak overall negative relation between age and Dictator outcomes emerges, although only the coefficient associated to the 9-10 age group is statistically significant. In general, the outcome of the Dictator game shows no clear results, with a quite stable pattern throughout age classes.

4.3 Binomial situations

This section highlights the main results relating to the four binomial situations we submitted to children, and replicating Fehr et al. (2008) and D'Adda and Levely (2016) experiments. Figure 4 provides a graphical illustration of the results at a glance. On
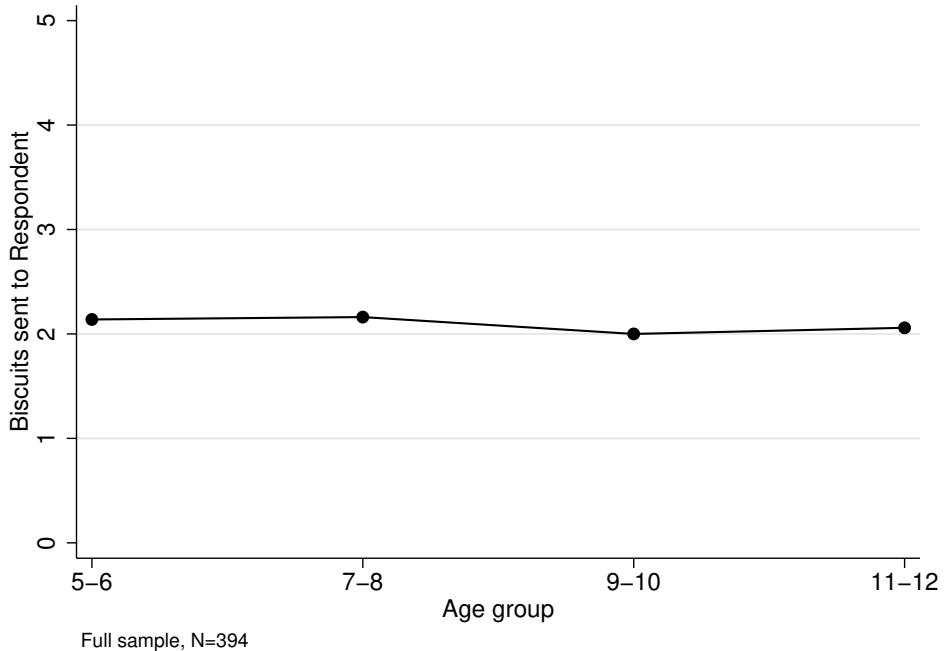
Full sample, N=394

Figure 3: Dictator: full sample results by age group

the vertical axis is reported the share of (1;1) choices made by the children in each of the four incentivized tasks: as the figure shows, three out of four situations always lay well below the dashed line representing the 50% share. In other words, as the binomial probability tests confirm, the children in the sample systematically prefer the alternative allocation to the (1:1) allocation in all situations, with the only exception of Costless altruism.

   More in details, children that are in the 5-6 age group report a systematically more generous behaviour in the Costless altruism situation, but this behaviour decreases as age increases, and ends up being indistinguishable from a random choice when age reaches 7-8. In all other situations, on average, the proportion of "fair" allocations (1;1) is always well below 50%, implying that most children behaved according to self regarding preferencesrather than according to inequity aversion. Costly altruism, exhibited by about one out of four children, increases with age, reaching a maximum at 9-10 years and subsequently slightly reversing. Finally, in the Spite and Envy situations choosing "fair" (1;1) allocation imposes a cost on the partners. Both "envious" and "spiteful" behaviours increase at older age (11-12), while showing mixed patterns at earlier age.

Table A3 reports the results of probit model estimations of the effect of age on the binary situations' outcomes. As the table shows, only a few coefficients are statistically significant. In particular, children of age 7-8 are less prone to choose the "fair" allocation than the younger reference category (5-6 years); the same occurs for the eldest group (11-12). All other situations report not significant coefficients, with the exception of Spite: here, the 9-10 group behave significantly less spitefully than the younger peers.

   Overall, the results of the binomial situations show that children report a very low
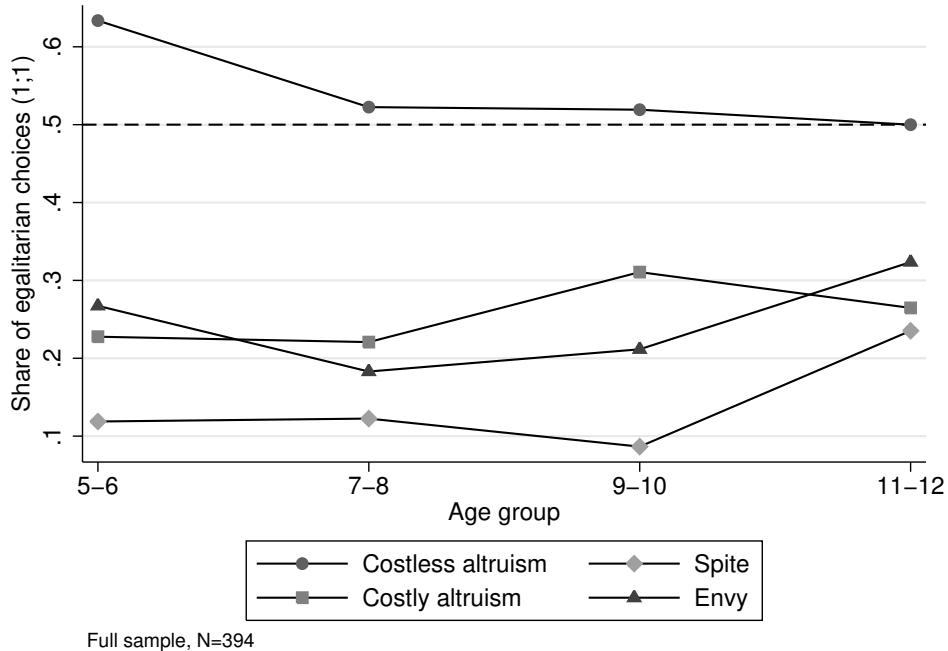
Figure 4: Binomial situations: full sample results by age group

proportion of prosocial choices, especially if compared to the earlier study by Fehr et al. (2008). However, the pattern of these choices is mostly independent of age, as shown by the econometric results reported in Table A3[10].

5 Results: comparing DSP and control group

As a final test, we expanded the cross-sectional analysis by comparing the results of children assigned to DSP with the results of the control group. As the assignment to DSP occurred in October, at the beginning of the school year, while the administration of the first wave of questionnaires took place in March, it is possible that being enrolled into the sponsorship program already exerted some effects on prosocial attitudes of children at the time we performed the first wave of the experiment. Therefore, we compared the behaviour of the two groups; the next subsections outline such comparison, following the same order of presentation of the tasks as in section 4.

5.1 DSP vs control group: Cheating

The visual comparison between DSP and control group, shown in Figure 5, reveals that DSP report lower levels of cheating, on average, according to both indicators. However, a Kruskall-Wallis test supports the occurrence of a statistically significant difference between the two groups, at a 10% significance level. Moreover, although the size of the difference between treated and control group may appear not negligible, Table A4

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[10]We implemented the same models including age in years rather as a categorical variable, obtaining substantially identical results.

shows that such differences, when tested by taking into account a full set of appropriate control variables as in Equation 3, is not supported by statistical evidence. Hence, we cannot reject the null hypothesis that the two groups are actually behaving in the same way. The effect of age is still there, consistent with our previous findings.
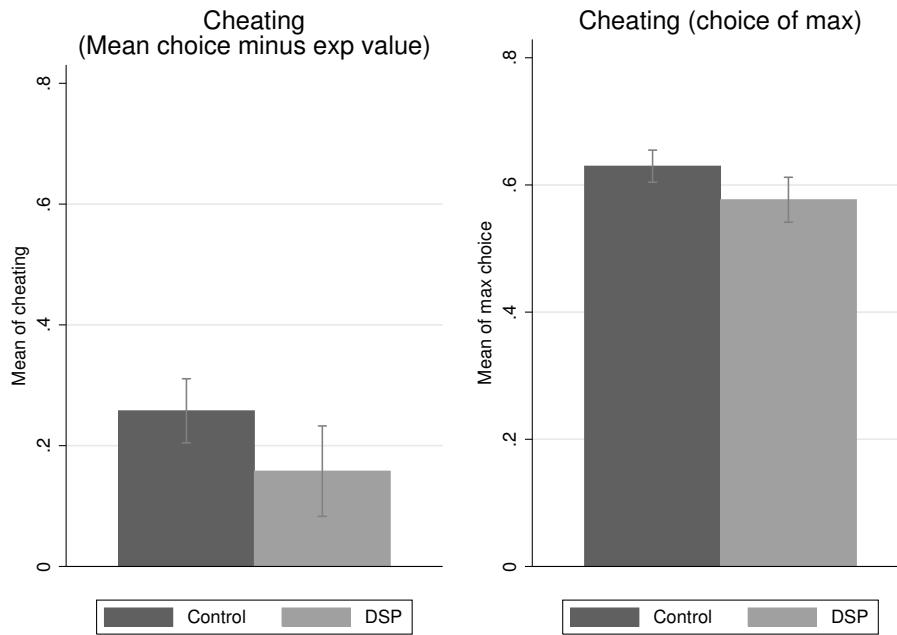
Figure 5: Dice rolling task: comparison between DSP and control group

5.2 DSP vs control group: Dictator

The comparison of the outcomes of the Dictator game is mostly inconclusive. In fact, although Figure 6 shows a small difference between the average outcome of control and DSP group, this difference is very small and no statistical test, either parametric (t-test) or non parametric (Kruskall-Wallis) supports the existence of a significant difference between the two groups. The same result is obtained through the implementation of the full econometric model, as shown in Table A5.
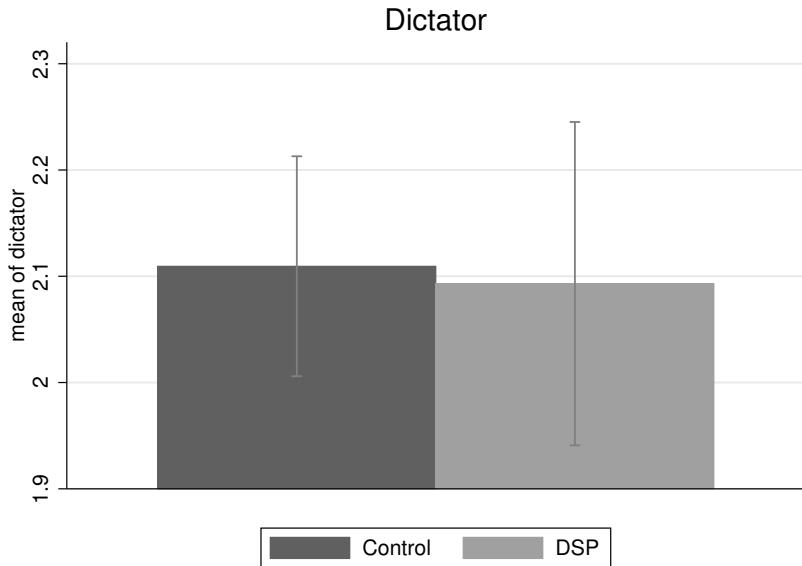
Figure 6: Dictator: comparison between DSP and control group

5.3 DSP vs control group: Binomial situations

The comparison between DSP and controls' outcomes in binomial situations yield seemingly mixed results. On the one hand, as shown in Figure 7, on average DSP choose more frequently the "fair" allocation in the "Costless altruism" and "Costly altruism" situations. This result suggests that the DSP children are more likely to behave altruistically, even at their own cost, than children in the control group. In particular, in the "Costly altruism" situation the difference is statistically significant at a 5% level (t-test) and this evidence is confirmed by the results of the full model of estimation reported in Table A6. Al tough not statistically significant, DSP children exhibit larger proportions of "fair" choices (1;1) also in the "Spite" and "Envy" situations, thus showing a more "spiteful" and "envious" behaviour than the control group. As mentioned above, this result may also be interpreted as an indicator of inequality aversion. Overall, the comparison of DSP and control group in the binomial situations suggests that DSP are only (weakly) more generous and more inequality averse than control group children, although in general their behaviour is statistically indistinguishable.

6 Conclusions

A large body of literature based on analysis conducted in high income countries shows that primary school children develop prosocial attitudes as they grow older, with school experience playing an important role in the socialisation process, whereas limited research exists in different socio-cultural and economic context.

In this paper we explored the relation between age and prosocial attitudes and behaviours by focusing on a sample of 394 children attending 10 primary schools located in peripheral areas of Goma (DRC). We implemented an experiment including a
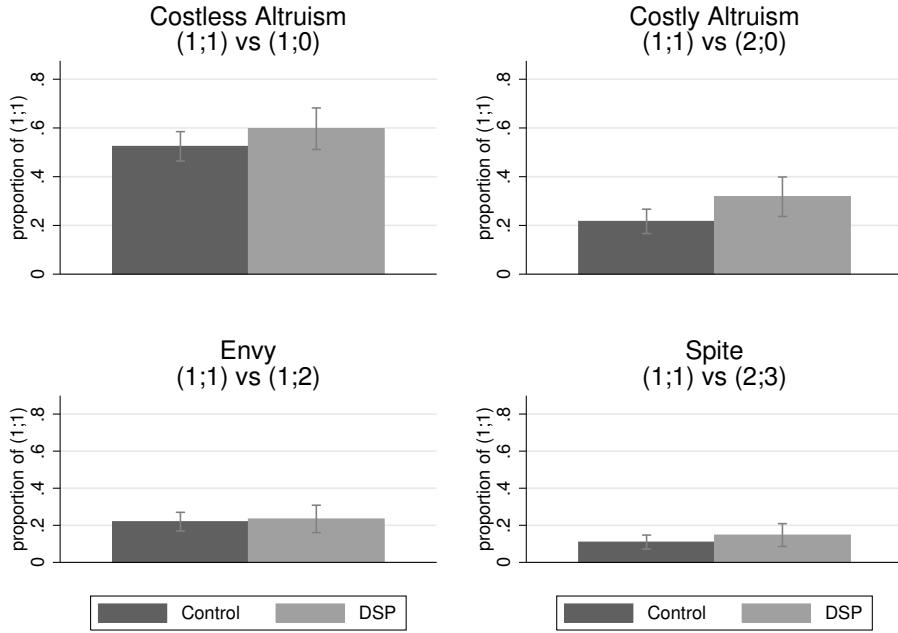
Figure 7: Binomial situations: comparison between DSP and control group

set of incentivized tasks from recent behavioural and experimental economic literature, investigating whether and how behavioural choices change with age. The evidence suggests that, as children grow, prosocial attitudes slightly increase only in specific age classes and for specific incentivized tasks. Overall, prosocial attitudes do not grow, and even decline in some situations. In particular, Goma schoolchildren become more prone to misreport their choices (cheating) in order to maximize their payoff, up to the age of 11, when this attitude reverses. This finding is robust to two alternative indicators (distance from expected value and incidence of maximum result choice), and to the inclusion of age in years and individual characteristics of children. We also found weaker evidence of a generalized decrease in altruistic choices, both costly and costless, as age increases.

Although limited in statistical significance, our results can be understood within along the lines where people (including children) can be interpreted to act as enculturated actors (Hoff and Stiglitz, 2016), where preferences and social attitudes are shaped by the socio-cultural and economic context, thus taking an endogenous dimension. Compared to standard experimental literature, we implemented our experimental setting in a substantially different social environment, which is also likely to have had an impact on the results. Differently from previous findings Fehr et al. (2008) where other-regarding preferences develop with age, our main results suggest some tendency towards stronger self-regarding preferences as children grow up. More interestingly, we found statistically significant evidence of cheating attitudes increasing with age. To our knowledge, this result connecting sincerity and age cannot be compared to other studies and offers a fresh perspective on a dimension of prosociality that is not often considered in the literature. It is worth remarking that in our experimental setting misreporting results improves children's outcomes, but does not harm peers. However,

sincerity represents in our view a crucial condition for the establishment of a well-functioning society; in the sense, these results concerning cheating reinforce the overall finding that prosocial attitudes are hard to develop among Goma schoolchildren.

This analysis represents the first stage of a longitudinal research aimed at testing the effects of a child sponsorship program (DSP) on their educational outcomes and behavioural attitudes. Testing whether children being already assigned to DSP behave differently from those assigned to the control group, we found mixed evidence with very limited statistical significance. On the one hand, DSP children were less prone to cheat in the dice rolling task, and slightly more generous in both costless and costly altruism situations. On the other hand, DSP children reported more "spiteful" and "enviuos" choices, which can also be interpreted as their being more prone to "punish" unfair distribution, to the advantage of an anonymous partner. These differences are not statistically significant and therefore data suggest that DSP and Control children actually do not display substantially different behavioural attitudes, thus allowing the research team to further investigate the effect of the full support program through a longitudinal analysis. Further research is needed in order to assess the robustness of the behavioural patterns we found in alternative environments, and also to deepen our understanding of how inequality aversion, envy and spite interact.

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Appendix

A Supplementary tables

Table A1: Outcome of Dice rolling task

	Age group		Age (years)	
	(1) Cheating	(2) Max choice	(3) Cheating	(4) Max choice
Age group:				
- 7-8	0.127**	0.055**		
	(0.057)	(0.027)		
- 9-10	0.244***	0.121***		
	(0.069)	(0.033)		
- 11-12	0.164	0.081		
	(0.105)	(0.051)		
Age (years)			0.043***	0.022***
			(0.016)	(0.008)
Female	-0.005	-0.001	-0.005	-0.002
	(0.043)	(0.020)	(0.043)	(0.020)
- One parent absent	0.004	0.020	0.023	0.030
	(0.105)	(0.054)	(0.103)	(0.052)
- Both parents	0.090	0.062	0.109	0.072
	(0.098)	(0.051)	(0.095)	(0.049)
Children in family	0.024	0.012	0.028	0.013
	(0.029)	(0.014)	(0.028)	(0.014)
Daily meals:				
- 2 Meals	0.073	0.016	0.084	0.021
	(0.057)	(0.026)	(0.058)	(0.026)
- 3 or more meals	-0.002	-0.018	-0.008	-0.020
	(0.080)	(0.037)	(0.080)	(0.037)
House type:				
- Adobe	-0.023	-0.010	-0.024	-0.010
	(0.103)	(0.047)	(0.104)	(0.048)
- Concrete	-0.054	-0.004	-0.053	-0.001
	(0.145)	(0.068)	(0.143)	(0.067)
Access to water	-0.102	-0.076	-0.080	-0.065
	(0.188)	(0.094)	(0.184)	(0.093)
Health status	0.086	0.028	0.086	0.028
	(0.072)	(0.038)	(0.070)	(0.037)
Constant	-0.394	0.361**	-0.705**	0.196
	(0.311)	(0.153)	(0.319)	(0.158)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Obs	389	389	389	389
LL	-167	125	-170	122
AIC	434	-150	435	-148
BIC	632	49	626	42

Robust s.e. in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Table A2: Outcome of Dictator Game

	OLS		GLM	
	(1) Age group	(2) Age (years)	(3) Age group	(4) Age (years)
Age group:				
- 7-8	-0.006		-0.026	
	(0.027)		(0.104)	
- 9-10	-0.054*		-0.226*	
	(0.031)		(0.121)	
- 11-12	-0.039		-0.165	
	(0.035)		(0.137)	
Age (years)		-0.010		-0.042
		(0.007)		(0.026)
Female	0.034*	0.035*	0.141*	0.145**
	(0.018)	(0.018)	(0.072)	(0.072)
- One parent absent	-0.008	-0.010	-0.035	-0.042
	(0.059)	(0.059)	(0.235)	(0.236)
- Both parents	-0.043	-0.047	-0.180	-0.195
	(0.057)	(0.057)	(0.227)	(0.228)
Children in family	-0.007	-0.006	-0.028	-0.027
	(0.012)	(0.012)	(0.047)	(0.046)
Daily meals:				
- 2 Meals	0.001	0.000	0.004	0.002
	(0.022)	(0.022)	(0.087)	(0.088)
- 3 or more meals	0.006	0.006	0.026	0.026
	(0.035)	(0.035)	(0.138)	(0.138)
House type:				
- Adobe	-0.045	-0.048	-0.184	-0.196
	(0.047)	(0.047)	(0.178)	(0.179)
- Concrete	-0.037	-0.042	-0.156	-0.175
	(0.066)	(0.066)	(0.257)	(0.258)
Access to water	-0.018	-0.019	-0.076	-0.081
	(0.095)	(0.092)	(0.393)	(0.382)
Health status	-0.033	-0.033	-0.135	-0.138
	(0.041)	(0.040)	(0.159)	(0.157)
Constant	0.474***	0.548***	-0.112	0.198
	(0.148)	(0.149)	(0.596)	(0.596)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Obs	389	389	389	389
LL	169	168	-180	-180
AIC	-239	-239	460	456
BIC	-40	-49	658	646

Robust s.e. in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.10$

Table A3: Outcome of binary choices

	(1) Costless altruism	(2) Spite	(3) Costly altruism	(4) Envy
Age group:				
- 7-8	-0.520***	-0.201	-0.056	-0.300
	(0.201)	(0.254)	(0.221)	(0.215)
- 9-10	-0.352	-0.686**	0.228	-0.305
	(0.223)	(0.322)	(0.228)	(0.234)
- 11-12	-0.538*	0.313	-0.101	-0.057
	(0.296)	(0.365)	(0.297)	(0.318)
Female	0.131	0.547***	0.100	0.101
	(0.144)	(0.203)	(0.156)	(0.160)
- One parent absent	-0.153	0.692	-0.515	0.075
	(0.390)	(0.530)	(0.383)	(0.426)
- Both parents	-0.047	0.987*	-0.687*	-0.335
	(0.375)	(0.519)	(0.363)	(0.415)
Children in family	-0.053	-0.004	-0.023	-0.032
	(0.089)	(0.115)	(0.092)	(0.102)
Daily meals:				
- 2 Meals	-0.321*	-0.545**	-0.309	-0.115
	(0.176)	(0.250)	(0.189)	(0.190)
- 3 or more meals	-0.385	-0.856*	-0.308	-0.150
	(0.278)	(0.446)	(0.296)	(0.302)
House type:				
- Adobe	-0.200	-0.539	-0.569*	-0.323
	(0.320)	(0.369)	(0.341)	(0.335)
- Concrete	0.039	-0.876	-1.012**	-0.317
	(0.459)	(0.543)	(0.510)	(0.469)
Access to water	-0.301	0.956	0.925*	0.632
	(0.486)	(0.602)	(0.495)	(0.509)
Health status	0.048	0.078	0.734**	0.266
	(0.292)	(0.482)	(0.322)	(0.361)
Constant	1.729*	-8.131***	-0.793	-0.404
	(1.036)	(1.510)	(1.079)	(1.120)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.11	0.21	0.11	0.12
Obs	389	306	375	378
LL	-238	-104	-191	-181
AIC	576	293	478	460
BIC	774	449	666	653

Robust s.e. in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Table A4: Outcome of Mind Cheating Task

	(1) Dice outcome	(2) Max choice	(3) Dice outcome	(4) Max choice
Assigned to DSP	-0.053	-0.035	-0.053	-0.036
	(0.054)	(0.026)	(0.054)	(0.026)
Age group:				
- 7-8	0.135**	0.059**		
	(0.058)	(0.027)		
- 9-10	0.250***	0.125***		
	(0.070)	(0.033)		
- 11-12	0.176*	0.089*		
	(0.106)	(0.051)		
Age (yrs)			0.045***	0.024***
			(0.017)	(0.008)
Female	-0.004	-0.001	-0.005	-0.002
	(0.043)	(0.020)	(0.043)	(0.020)
- One parent absent	0.003	0.019	0.022	0.029
	(0.105)	(0.054)	(0.102)	(0.052)
- Both parents	0.079	0.055	0.098	0.065
	(0.098)	(0.051)	(0.095)	(0.049)
Children in family	0.025	0.012	0.029	0.014
	(0.029)	(0.014)	(0.028)	(0.014)
Daily meals:				
- 2 Meals	0.063	0.009	0.074	0.014
	(0.059)	(0.027)	(0.060)	(0.028)
- 3 or more meals	-0.010	-0.023	-0.016	-0.026
	(0.081)	(0.037)	(0.081)	(0.037)
House type:				
- Adobe	-0.031	-0.016	-0.033	-0.016
	(0.102)	(0.046)	(0.103)	(0.047)
- Concrete	-0.065	-0.011	-0.065	-0.009
	(0.144)	(0.067)	(0.142)	(0.066)
Access to water	-0.092	-0.069	-0.070	-0.059
	(0.183)	(0.090)	(0.178)	(0.088)
Health status	0.082	0.025	0.082	0.025
	(0.073)	(0.038)	(0.072)	(0.038)
Constant	-0.360	0.383**	-0.680**	0.212
	(0.312)	(0.153)	(0.318)	(0.157)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Obs	389	389	389	389
LL	-166	126	-169	123
AIC	435	-149	437	-148
BIC	637	53	631	46

Table A5: Outcome of Dictator Game

	(1) OLS	(2) OLS	(3) GLM	(4) GLM
Assigned to DSP	-0.012	-0.010	-0.053	-0.043
	(0.026)	(0.026)	(0.101)	(0.101)
Age group:				
- 7-8	-0.004		-0.018	
	(0.027)		(0.105)	
- 9-10	-0.053*		-0.219*	
	(0.031)		(0.121)	
- 11-12	-0.037		-0.153	
	(0.035)		(0.137)	
Age (yrs)		-0.010		-0.040
		(0.007)		(0.026)
Female	0.034*	0.035*	0.141**	0.146**
	(0.018)	(0.018)	(0.072)	(0.073)
- One parent absent	-0.008	-0.010	-0.036	-0.043
	(0.059)	(0.059)	(0.236)	(0.237)
- Both parents	-0.045	-0.049	-0.191	-0.204
	(0.058)	(0.058)	(0.230)	(0.231)
Children in family	-0.006	-0.006	-0.027	-0.026
	(0.012)	(0.012)	(0.047)	(0.046)
Daily meals:				
- 2 Meals	-0.002	-0.002	-0.006	-0.006
	(0.023)	(0.023)	(0.091)	(0.092)
- 3 or more meals	0.004	0.005	0.018	0.019
	(0.036)	(0.036)	(0.140)	(0.140)
House type:				
- Adobe	-0.047	-0.050	-0.192	-0.204
	(0.047)	(0.047)	(0.177)	(0.177)
- Concrete	-0.040	-0.044	-0.167	-0.184
	(0.066)	(0.066)	(0.257)	(0.258)
Access to water	-0.016	-0.017	-0.066	-0.073
	(0.095)	(0.092)	(0.391)	(0.382)
Health status	-0.034	-0.034	-0.139	-0.141
	(0.041)	(0.040)	(0.160)	(0.157)
Constant	0.482***	0.553***	-0.078	0.218
	(0.148)	(0.149)	(0.594)	(0.596)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Obs	389	389	389	389
LL	169	168	-180	-180
AIC	-237	-238	461	458
BIC	-35	-43	664	652

Table A6: Outcome of binary choices, controlling for treatment group

	(1) Costless altruism	(2) Spite	(3) Costly altruism	(4) Envy
Assigned to DSP	0.197	0.282	0.546**	0.336
	(0.204)	(0.306)	(0.223)	(0.224)
Age group:				
- 7-8	-0.551***	-0.251	-0.127	-0.345
	(0.203)	(0.257)	(0.227)	(0.223)
- 9-10	-0.376*	-0.721**	0.140	-0.354
	(0.226)	(0.324)	(0.234)	(0.239)
- 11-12	-0.585**	0.250	-0.234	-0.135
	(0.296)	(0.368)	(0.316)	(0.324)
Female	0.133	0.534***	0.105	0.096
	(0.144)	(0.203)	(0.159)	(0.161)
- One parent absent	-0.151	0.739	-0.529	0.078
	(0.389)	(0.552)	(0.382)	(0.438)
- Both parents	-0.008	1.075**	-0.605*	-0.274
	(0.376)	(0.546)	(0.362)	(0.432)
Children in family	-0.057	-0.003	-0.040	-0.032
	(0.089)	(0.115)	(0.093)	(0.102)
Daily meals:				
- 2 Meals	-0.285	-0.496**	-0.222	-0.049
	(0.181)	(0.250)	(0.193)	(0.189)
- 3 or more meals	-0.355	-0.823*	-0.243	-0.097
	(0.280)	(0.450)	(0.295)	(0.302)
House type:				
- Adobe	-0.175	-0.521	-0.474	-0.271
	(0.322)	(0.372)	(0.334)	(0.329)
- Concrete	0.077	-0.867	-0.905*	-0.266
	(0.460)	(0.554)	(0.509)	(0.463)
Access to water	-0.335	0.916	0.876*	0.600
	(0.488)	(0.620)	(0.511)	(0.522)
Health status	0.062	0.114	0.830**	0.282
	(0.296)	(0.489)	(0.333)	(0.364)
Constant	1.612	-8.426***	-1.230	-0.655
	(1.046)	(1.532)	(1.098)	(1.130)
School FE	Yes	Yes	Yes	Yes
Interviewer FE	Yes	Yes	Yes	Yes
Pseudo R-sq.	0.11	0.22	0.12	0.12
Obs	389	306	375	378
LL	-238	-104	-188	-180
AIC	577	294	474	460
BIC	779	454	666	657

Robust s.e. in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Table A7: List of schools included in our sample, as in Figure 1

School name	Latitude	Longitude
EP LA SAINTE TRINITE	-1.64259	29.1915
CS SAINT MICHEL	-1.64276	29.19407
EP SAINT CHARLES LWANGA	-1.65635	29.20867
EP OSSOKATO	-1.66236	29.22544
EP AMKENI	-1.64971	29.22231
EP KATOYI	-1.66497	29.22504
EP VIRUNGA NORD	-1.66479	29.22704
EP VIRUNGA QUARTIER	-1.66411	29.23186
EP NEEMA	-1.65437	29.23365
EP SAINT BENOIT	-1.68449	29.24393

B   Supplementary materials

B.1   Questionnaire (Swahili with French translation)

The following 10 pages provide the full text of the questionnaire as it has been administered to the schoolchildren in Goma.

The instruction to the children were read in Swahili: below each sentence in Swahili we reported in Italic small font the French translation.

The interviewer could read and speak both Swahili and French, therefore the instruction for the interviewer have been provided in French also in the original text.

**CETTE FICHES DE DONNEES DOIT ETRE COMPILEE
A LA FIN DU QUESTIONNAIRE!**

Fiche de données de l'enfant - AVSI / CSCC   **Nom et Prénom** [   ]

IDCODE: [   ]

Age [   ]

Sexe [   ]

Nom de l'école [   ]

Classe [   ]

Section (répartition) de classe [   ]

Est-ce que l'enfant travaille informellement?   Oui [   ]   Non [   ]

Combien heures la semaine ? [   ]

Distance de la maison à l'école (en Km) [   ]

Statut de l'enfant

Deux parents vivants		Orphelin de père ou de mère, ou un parent absent		Orphelin total ou parents absents	
	[ ]		[ ]		[ ]

Etat de Santé de l'enfant

Bon		Malnutrition		Maladie mentale / Ha___ic		Maladie chronique / HIV	
	[ ]		[ ]		[ ]		[ ]

Occupation du chef de ménage

Ouvrier à salaire fixe		Petit commerce		Travail occasionnel/ Artisan		Cultivateur		Chômeur	
	[ ]		[ ]		[ ]		[ ]		[ ]

Niveau de scolarisation de l'enfant

Déscolarisé		Scolarisé	
	[ ]		[ ]

Alphabétisation du tuteur

lettré		Pas lettré	
	[ ]		[ ]

Nombre d'enfants dans la famille (vivant avec l'enfant)

Moins que 2		de 2 à 4		De 5 à 7		Plus que 7	
	[ ]		[ ]		[ ]		[ ]

Type d'habitation

Maison en blocs ciment/briques cuites		Maison en planche/ Blocs à dobe		Case (maison couverte en paille et en pisée)		Habitat précaire (bâche, tôles usées)	
	[ ]		[ ]		[ ]		[ ]

Source d'eau

Eau courante dans la maison		Robinet/ Borne fontaine		Source naturelle aménagée		Source naturelle non aménagée	
	[ ]		[ ]		[ ]		[ ]

Nombre de repas par jour

1		2		3		4 et plus	
	[ ]		[ ]		[ ]		[ ]

QUESTIONNAIRE AVSI-CSCC

Nota Bene: Ceci est le texte que l'enquêteur doit utiliser pour conduire les questions. Ce texte est destiné à l'enquêteur et va rester en Français: dans ce format l'enquêteur trouve les instructions qui sont destinées pour lui seulement.

Par contre, le texte en gras est traduit en Swahili pour communiquer les instructions efficacement aux enfants. [*La traduction en français du texte en Swahili est en italique et entre crochets*].

L'enquêteur écrit la date du jour: | **____ / Mars / 2016** | et son Nom et Prénom …………………………………………

L'enquêteur accueille l'enfant dans la classe destinée à l'enquête, salut l'enfant et lui donne un bonbon.

TRES IMPORTANT! A partir de ce moment, en posent le demandes l'enquêteur devra suivre le texte en Swahili. Il est très important d'utiliser seulement les mots du texte.

Tuna sema aksanti kwa kuitika ku huzuriya ma jifunzo yetu. Kamata hii bonbon juu ya kusema shukrani (aksanti) kwa ku itika ku huzuriya majufunzo yetu. Unaweza kula saa hii ama saa ingine.

[*Soyez le bienvenue; nous vous remercions d'avoir accepté de participer à notre étude. Voici un bonbon pour récompenser votre participation. Vous pouvez le manger maintenant ou le conserver pour un autre moment.*]

Wakati wamajifunzo, mutajibia ku maulizo na kukamata makusudiyo peke yenu. Uchaguzi wenu na ma jibu zenu hazita julikana kwa mtu. Kwa hali zimoja zimoja uta ambatana na mwengine mtoto. Vitambulisho vya mtoto mwengine havita julikana saa hii ama kisha majifuzo.

[*Au cours de l'étude, vous aurez à répondre aux questions et à prendre des décisions vous même. Tous vos choix et réponses seront enregistrées de façon anonyme. Dans certaines situations, tu seras jumelé avec un autre enfant.L'identité de l'autre enfant ne sera jamais révélé , que ce soit maintenant ou après la fin de l'étude.*]

Jibu zote ambazo mutapana hazitajulikana ku AVSI ama kwa watumishi wa AVSI leo ata kesho. Jibiya kwa uhuru, hakuna jibu nzuri na mbaya.

[*Les réponses que vous donnez ne seront pas connues par AVSI, ni aucun de leurs employés. Les enquêteurs ne seront pas impliqué dans les phases ultérieures de la recherche. Répondez librement, il n'y a pas des bon et des mauvais réponses.*]

Uchaguzi mtakayofanya, itawapatiya uwezo wa kupata paketi ya biskwiti. Kwa ma kusudiyo ya upekee, matendo yenu ita hakikisha paketi ngapi ya biskwiti mtapata. Kwa mwisho wa maulizo, moja kwa matukiyo sita ita chaguliwa kwa kutaka kwenu kupitiya mchezo ya kutupa kete. Kisha mutapata zingine paketi za biskwiti kufatana na matukiyo ya mchezo.

[*Les choix que vous ferez vous donneront la possibilité d'obtenir un certain nombre de paquets de biscuits. Vos actions détermineront directement le nombre de paquets de biscuits.À la fin du questionnaire, une seule des six situations seront tirés au hasard par le rouleau de dés. Immédiatement après vous recevez les paquets de biscuits obtenu dans la seule situation extraite, en plus du bonbon que vous avez déjà reçu pour récompenser votre participation.*]

Kuna maulizo makimi mawili na kenda kwa jumla zita kamata dakika makumi ma wili. Tuna wa sii kutosema ao kuto julisha ma kusudiyo yenu kwa wengine.

[*Ce questionnaire durera vingt minutes. Nous vous demandons de ne pas communiquer vos choix jamais à vos camarades.*]

Asksanti kwa ku huzuriya! [*Merci pour votre participation!*]

– –
ne pas écrire en dessous de cette ligne pointillée!

IDCODE:

Situation 1/ Hali ya Kwanza

Avant de commencer, l'enqueteur met la photo des enfants sur la table.

Katika hiyo hali,uta kuwa na mwengine mtoto mwenye iko kwa hii picha mwenye uta ambatana naye lakini hauta juwa vitambulisho vyake kwa muda wote wamchezo,nayeye hata kujuwa kamwe. Hamuta juwana binafsi.
[*Dans cette situation, vous êtes jumelé avec un des enfants que vous voyez dans la photo, dont l'identité ne sera pas révélée pendant ou après la fin de l'étude. La même règle vaut pour l'autre enfant: il/elle ne saura pas qui vous êtes.*]

Uta pata paketi tano ya biskwiti(en ce moment, l'enquêteur donne à l'enfant 5 pièces de papier, chacun avec l'image d'un paquet de biscuits). **Mwengine mtoto hakupata paketi ya biskwiti. Uta chagua kama utamupa paketi ngapi ya biskwiti ao hapana. Kwa mwisho utabakiya na paketi ya biskwiti zenye ulichaguwa kutosha zenyi ulipatiya mwengine. Mwengine mtoto ata pata paketi ya biskwiti zenyi uli kubali ku mupa.**
[*Vous recevez 5 paquets de biscuits*(en ce moment, l'enqueter donne à l'enfant 5 pièces de papier, chacun avec l'image d'un paquet de biscuit). *L'autre enfant n'a pas reçu de paquets de biscuits. Votre choix est de décider si et combien de ces paquets de biscuits envoyer à l'autre enfant. À la fin de la situation vous obtiendrez les paquets de biscuits que vous avez reçu moins ceux que vous avez envoyé à l'autre enfant. L'autre enfant obtiendra les paquets de biscuits que vous avez décidé de lui envoyer.*]

1a. Ni paketi ngapi ya biskwiti una penda ku mpatiya mwengine mtoto?
[*Combien de paquets de biscuits choisissez-vous de donner à l' autre enfant*]

L'enfant donne sa réponse et l'enquêteur écrit le nombre (entre 0 et 5) dans la boite dessous

Je donne à l'autre enfant		paquets de biscuits
Na mupa mwengine mtoto paketi ya biskwiti		

Puis l'enquêteur identifie le choix de l'enfant dans le tableau ci-dessous en encerclant la paire de valeurs de la même colonne dans la table suivante .

Si à la fin de l'enquête, cette situation est extraite par l'enfant pour le lancement du dé, le nombre de paquets de biscuits à donner à l'enfant est indiqué dans la rangée inferieure blanche (par exemple : si l'enfant a choisi de donner à l'autre enfant 3 paquets de biscuits, le nombre de paquets de biscuits obtenu par l'enfant est 2 !)

Réponse de l'enfant	0	1	2	3	4	5
Paquets de biscuits obtenus par l'enfant	5	4	3	2	1	0

1b. Unaweza tufasiriya kidogo sababu gani umechaguwa hivi?
[*S'il vous plaît, pouvez-vous décrire brièvement les raisons de votre choix*]

L'opérateur va poser la question et écrit la réponse de l'enfant. On écrira la réponse de l'enfant en Swahili et puis on la traduira en Français.

2

Situation 2 / Hali ya Pili

Dans cette situation l'enfant va lancer deux dés pour 20 fois. Vous vous devez écrire dans le tableau ci-dessous la valeur des deux dés et encercler la valeur choisie par l'enfant.

Kwa hii kipindi, muta tupa hii mpira ama kete mara makumi ma wili kwa kupata paketi ya biskwiti. Kila alama yenyi kuwa juu ya kete ni paketi moja ya biskwiti. Zile kete mbili niza rangi tofauti, moja ni rangi ya blu na ingine ni rangi nyekundu. Mbele ya kutupa kete, una pashwa chaguwa ndani mwako kwa siri bila ku mwambiya mtu yeyote rangi ya kete ambayo unapenda (blu ao nyekundu) usi sahabu na usi mwambiye mtu.

[*Dans cette situation vous aurez à lancer les dés 20 fois, pour obtenir des paquets de biscuits. Chaque point correspond à un paquet de biscuits. Les deux dés sont de couleur différente : l'un est bleu; l'autre est rouge. Avant de lancer le dé, vous devez décider (à l'esprit, sans le dire à personne) si vous choisissez le dé bleu ou le dé rouge. Rappelez votre choix sans la communiquer à personne.*]

Mutapata alama (paketi ya biskwiti) kufatana na namba inayo andikwa kwa ile kete ulichaguwa.

[*Vous obtiendrez des points (et par conséquent, des paquets de biscuits) correspondant au numéro indiqué sur le dé que vous avez choisi.*]

Muanze!

[*Commencez-vous!*]

L'enquêteur, une fois l'enfant a lancé les dés, prendra note des valeurs des dés en remplissant le tableau ci-dessous. Il va aussi prendre note des points gagnés par l'enfant en encerclant la valeur choisie par l'enfant. Chaque lancement correspond à une lettre de **A** à **T** dans la table dessous.

Prenons un exemple.

Avant chaque lancement (lancement **A**),l'enfant a fait son choix ("ROUGE" ou "BLEU") sans le dire à personne. Après avoir jeté les dés, le dé rouge montre 5 et le dé bleu montre 2. L'enquêteur va écrire "5" et "2" dans la première cellule de la table (boîte **A**). L'enfant déclare son choix: «ROUGE» et l'enquêteur va encercler le numéro "5" dans la première cellule de la table (boîte **A**)**.**

Ou bien: l'enfant a fait son choix. Après avoir jeté les dés, le dé rouge montre 5 et le dé bleu montre 2. L'enquêteur va écrire "5" et "2" dans la première cellule de la table (boîte **A**). L'enfant déclare son choix: «BLEU» et l'enquêteur va encercler le numéro "2" dans la première cellule de la table (boîte **A**).

Ainsi de suite pour tous les vingt lancements des dés.

L'interaction entre l'enquêteur et l'enfant doit être comme sa:

- **Umewaza (umefikiriya) juu ya rangi (Nyekundu ama blu)?**
  [*As-tu pensé à une couleur (rouge ou bleu)?*]

- **Tupa kete**
  [*Lance les dés*]

- L'enfant lance les dés
- **Njoo niambiye umechaguwa rangi gani?**
  [*Dis-moi ton choix*]

2. L'enfant jette les dés et l'enquêteur remplit la table et encercle la choix de l'enfant

Dés	lancement																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Rouge																				
Bleu																				

3

Après le dernier lancement, l'enquêteur demande à l'enfant d'extraire une lettre d'un sac. La lettre dessinée indique lequel des 20 lancements sera récompensé (si cette situation sera finalement extraite).

Tafadhali, ingiza mkono wako ndani ya gunia na uchukuwe sarufi moja bila kuyaona)
*[s'il te plaît mette ta main dans ce sac et prendre une lettre sans le voir.]*

L'enquêteur écrit la lettre dessinée dans la boite dessous.

boîte extraite par l'enfant: ☐

4

Situations de 3 à 6: instructions préliminaires
## (seulement pour l'enquêteur!)

Les sections suivantes (de 3 à 6) sont construites comme de situations dans lesquelles l'enfant va choisir entre deux possibles options.

Avant de poser les questions, l'enquêteur va arranger la table selon la figure suivante:

Place de l'enfant →

A pour moi

B pour moi

A pour l'autre enfant

B pour l'autre enfant

Place de l'enquêteur →
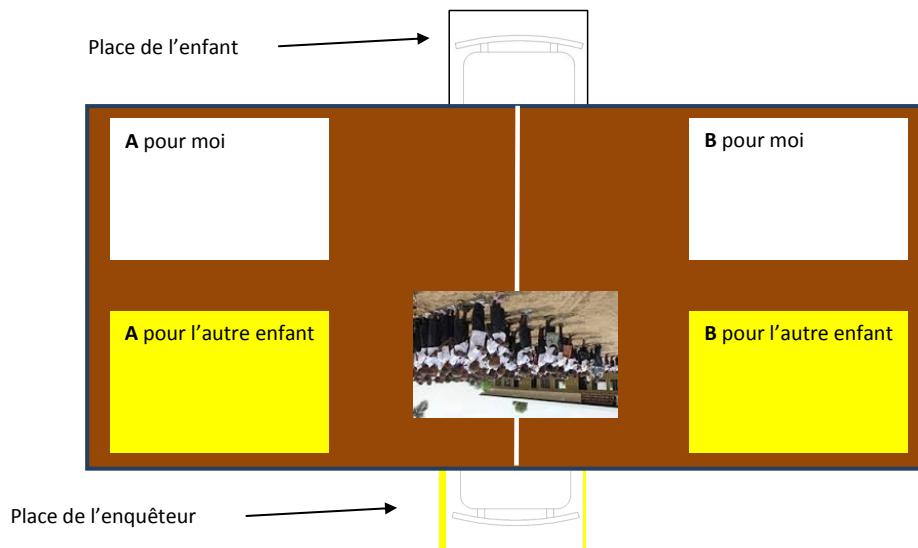
L'enquêteur, va poser des image des paquets de biscuits sur le quatre feuilles de papier selon la disposition des sections suivantes.

Ici on peut voir l'arrangement de la table correspondent, par exemple, à la situation 3.

Place de l'enfant →

A pour moi

B pour moi

A pour l'autre enfant

B pour l'autre enfant

Place de l'enquêteur →
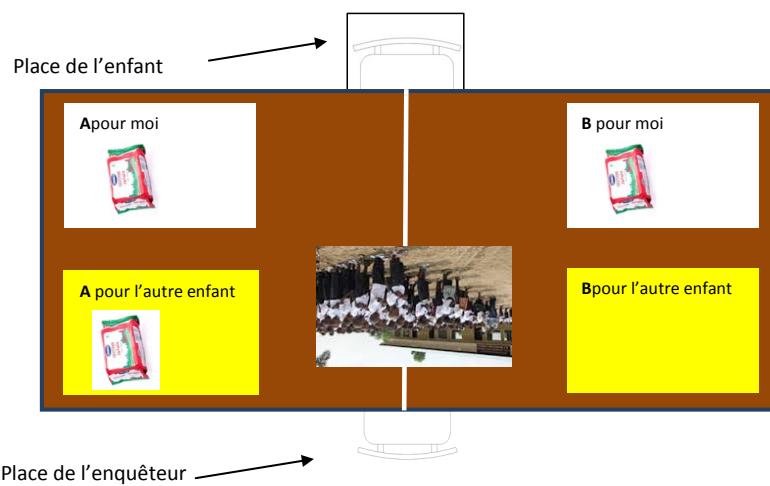
L'enquêteur va commencer les 4 situations suivantes (3,4,5, et 6) :

5

Situation 3/ Hali ya Tatu

Dans cette situation l'enfant va choisir entre deux possibles options. L'enquêteur doit noter le choix de l'enfant dans le tableau ci-dessous en encochant la boite choisie par l'enfant.

Hapa kuna namna mbili ya uchaguzi: ngambo moja (kushoto yako) uta pata paketi moja ya biskwiti na ingine itapewa kwa mtoto mmoja kwa wale ambao unaona kwenyi picha. Ngambo ingine (kulia kwako) utapata paketi ya biskwiti na hakuna paketi ya biskwiti moja yenye utapatiya mtoto mmoja mwenye utaona kwenyi picha. Kwa hii namna mbili una chaguwa ya wapi?
[*Ici il y a deux choix: d'un côté (à votre manche) vous allez avoir un paquet de biscuits et un autre paquet de biscuits est donné à un des enfant que vous voyez dans la photo; de l'autre côté (à votre droite) vous allez avoir un paquet de biscuits et aucun paquet de biscuits est donné à un des enfant que vous voyez dans la photo. Quelle est l'option que vous choisissez?*]

3. Quelle option a choisi l'enfant?

3A		3B	
1 paquet de biscuits à moi		1 paquet de biscuits à moi	
1 paquet de biscuits à l'autre enfant		0 (aucun) paquet de biscuits à l'autre enfant	

Situation 4/ Hali ya Ine

Dans cette situation l'enfant va choisir entre deux possibles options. Vous vous devez noter le choix de l'enfant dans le tableau ci-dessous en encochant la boite choisie par l'enfant.

Hapa kuko namna mbili ya uchaguzi: ngambo moja (kushoto yako) utapata paketi moja ya biskwiti na ingine itapewa kwa mtoto mmoja kati ya hawa unaona kwenyi picha. Ngambo ingine (kulia yako) utapata paketi mbili ya biskwiti na tatu zina paniwa kwa mtoto mmoja kati ya wale unaona kwenyi picha. Kwa hii namna mbili una chaguwa ya wapi?
[*Ici il y a deux choix: d'un côté (à votre manche) vous allez avoir un paquet de biscuits et un autre paquet de biscuits est donné à un des enfant que vous voyez dans la photo; de l'autre côté (à votre droite) vous allez avoir deux paquets de biscuits et trois paquets de biscuits sont donnés à un des enfant que vous voyez dans la photo. Quelle est l'option que vous choisissez?*]

4. Quelle option a choisi l'enfant?

4A		4B	
1 paquet de biscuits à moi		2 paquets de biscuits à moi	
1 paquet de biscuits à l'autre enfant		3 paquets de biscuits à l'autre enfant	

6

Situation 5/ Hali ya Tano

Dans cette situation l'enfant va choisir entre deux possibles options. Vous vous devez noter le choix de l'enfant dans le tableau ci-dessous en encochant la boite choisie par l'enfant.

Hapa kuko namna mbili ya uchaguzi: ngambo moja (kushoto yako) utapata paketi moja ya biskwiti na ingine itapewa kwa mtoto mmoja kati ya wale ambao unaona kwenyi picha. Ngambo ingine (kulia kwako) utapata paketi mbili ya biskwiti na hakuna yenye itapaniwa kwa mtoto mmoya kati ya wenye unaona kwenyi picha. Kwa hii namna mbili unachaguwa ya wapi?
[*Ici il y a deux choix: d'un côté (à votre manche) vous allez avoir un paquet de biscuits et un autre paquet de biscuits est donné à un des enfant que vous voyez dans la photo; de l'autre côté (à votre droite) vous allez avoir deux paquets de biscuits et aucun paquet de biscuits est donné à un des enfant que vous voyez dans la photo. Quelle est l'option que vous choisissez?*]

5. Quelle option a choisi l'enfant?

5A	
1 paquet de biscuits à moi	
1 paquet de biscuits à l'autre enfant	

5B	
2 paquets de biscuits à moi	
0 (aucun) paquet de biscuits à l'autre enfant	

Situation6/ Hali ya Sita

Dans cette situation l'enfant va choisir entre deux possibles options. Vous vous devez noter le choix de l'enfant dans le tableau ci-dessous en encochant la boite choisie par l'enfant.

Hapa kuna namna mbili ya uchaguzi: ngambo moja (kushoto yako) utapata paketi moja ya biskwiti na ingine itapewa kwa mtoto mmoja kati ya wenyi kuwa kwenyi picha. Ngambo ingine (kuliakwako) utapata paketi moja ya biskwiti na mbili zina paniwa kwa mtoto mmoja kati ya wenyi kuwa kwenyi picha. Kwa hii namna mbili una chaguwa ya wapi?
[*Ici il y a deux choix: d'un côté (à votre manche) vous allez avoir un paquet de biscuits et un autre paquet de biscuits est donné à un des enfant que vous voyez dans la photo; de l'autre côté (à votre droite) vous allez avoir un paquet de biscuits et deux paquets de biscuits sont donné à un des enfant que vous voyez dans la photo. Quelle est l'option que vous choisissez?*]

6. Quelle option a choisi l'enfant?

6A	
1 paquet de biscuits à moi	
1 paquet de biscuits à l'autre enfant	

6B	
1 paquet de biscuits à moi	
2 paquets de biscuits à l'autre enfant	

7

B-TEST

Avant de conclure l'enquête, l'enquêteur donne à l'enfant un paquet de biscuits et lui propose un choix: soit manger les biscuits tout de suite, soit attendre le retour de l'enquêteur – qui doit sortir de la classe pour effectuer une autre tâche – pour obtenir deux paquets de biscuits. Le temps de l'absence de l'enquêteur ne vient pas communiqué à l'enfant (mais est fixé en 10 minutes).

Hapa kuna kuwa paketi moja ya biskwiti yako. Natoka nje ya somo ili nimalize kazi ingine. Unaweza chaguwa ku ifungula na kuikula saa hii ama unaweza kungojea ili ni rudi. Niki rudi ndani ya somo kama haukufungula ile paketi ya biskwiti, ndakupatiya ingine paketi moja ya biskwiti. Ukingojea, utapata paketi mbili ya biskwiti.

[*Ici il y a un paquet de biscuit pour toi. Je dois sortir de la classe pour terminer un autre travaille. Tu peux décider de manger le paquet de biscuits tout de suite ou d'attendre. Si, quand je reviendrais dans la classe tu n'as pas ouvert le paquet de biscuits, je vais te donner un autre paquet de biscuits. Donc, si tu attends, tu obtiendras deux paquets de biscuits.*]

L'enquêteur pose un paquet de biscuits sur la table en face de l'enfant et puis, il sort de la classe.

Il retour dans la classe après 10 minutes chrono et,

- si l'enfant a mangé les biscuits ou ouvert le paquet il dit:

Sawa, utafiti wetu imekwisha (majifunzo yetu imekwisha).

[*D'accord, on n'a terminé l'enquête.*]

- si l'enfant n'a pas mangé le paquet de biscuits il dit:

Ulisikiya, ingine bikwiti yako ndiyo hii. (et lui donne le deuxième paquet de biscuits)

[*Tu as attendu, voici un autre paquet de biscuits pour toi*]

L'enquêteur doit noter le choix de l'enfant dans le tableau ci-dessous encochant la boite correspondent à l'action de l'enfant.

A l'enfant ha ouvert le paquet et/ou mangé un biscuit		B l'enfant n'a pas ouvert le paquet et/ou n'a pas mangé aucun biscuit	

Sawa, majifunzo (utafiti) yetuimekwisha.

[*D'accord, on n'a terminé l'enquête.*]

8

Conclusion

L' enquêteur remercie l'enfant pour la participation à l'étude; demande à l'enfant de lancer un dé pour sélectionner une des 6 situations.

Aksanti sana, tuna maliza maulizo. Sasa tupakete juu upate matabishi.
[*Très bien! Nous avons terminé l'enquête. S'il vous plait, lance le dé pour sélectionner la situation que va être récompensé.*]

L'enfant lance le dé et l' enquêteur identifie la situation et le nombre de paquet de biscuits qui doit être donné à l'enfant. L'enquêteur montre le résultat de la situation extraite à l'enfant et lui donne les paquets de biscuits correspondant.

L'enquêteur registre, dans la boite grise, la situation que a été extraite et, dans la boite blanche, le numéro des paquets de biscuits que il a donné à l'enfant.

situation extraite	
Nombre des **paquets de biscuits** donné à l'enfant	

Hizo ndizo paketi za biskwiti ambazo umepata kwa ushindi. Aksanti kwa kuweza ku sherekeya majifunzo hii!! Umefanya kazi nzuri!!!
[*Voici les paquets de biscuits que tu as gagné. Merci bien pour ta participation à ce étude. Tu as fait un super boulot!*]

9

B.2   Setting and administration of the questionnaire

Figure 8: Interviewer administering a questionnaire