

## **Conflict Exposure and Competitiveness:**

### **Experimental Evidence from the Football Field in Sierra Leone**

Running title: Conflict Exposure and Competitiveness

*Francesco Cecchi*<sup>1</sup>

*Koen Leuvelde*<sup>1</sup>

*Maarten Voors*<sup>1,2</sup>

<sup>1</sup> Development Economics Group, Wageningen University, Netherlands.

<sup>2</sup> Department of Land Economy, University of Cambridge, United Kingdom

Corresponding author: Francesco Cecchi

P.O. Box 8130, 6706 KN, Wageningen, The Netherlands

Email: francesco.cecchi@wur.nl

Tel: +31 317 483 482

Fax: +31 317 484 037

**Acknowledgments:** We are grateful to Erwin Bulte, James Fenske, Peter van der Windt and seminar participants in Oxford (CSAE) and Tilburg, for helpful comments. We thank the Dutch Organization for Scientific Research (N.W.O.), grant # 453-10-001 and grant # 451-14-001 for financial support. We thank John Bellows and Edward Miguel for sharing data used in Bellows and Miguel (2009). We thank Lizzy van der Wal for superb research assistance. We thank Paul Richards and Esther Mokuwa for their collaboration in this project and acknowledge the loyalty and hard work of our team of research assistants, and the patience and cooperation of interviewees.

**Abstract:** *We use data from a street football tournament and a series of lab-in-field experiments in post-conflict Sierra Leone to examine the impact of exposure to conflict violence on competitive behavior. We find that football players that experienced more intense exposure to violence are more likely to get a foul card during a game. In the lab we find that these individuals are significantly less risk averse and more altruistic towards their in-group (teammates). We then isolate competitiveness from aggressiveness and find that conflict exposure increases the willingness to compete towards the out-group. These results are in line with theory highlighting the role of inter-group conflict in increasing in-group cooperation while exacerbating out-group antagonism. Next to other-regarding preferences and risk propensity, changes in individual preferences for competition may impact long-run development trajectories and post-conflict recovery.*

**Keywords:** Competitiveness; Preferences; Conflict; Football; Africa.

**JEL Code:** D01, D74, N47, O12

## **I. Introduction**

More than two-thirds of African nations have experienced civil war during the past decades (Themnér and Wallenstein 2014). Research in the consequences of these conflicts documents the persistent effect of violence on education (Lai and Thyne 2007; Chamarbagwala and Morán 2011), health and disability (Ghobarah et al. 2003; Iqbal 2006; Iqbal and Zorn 2010), food security and poverty (Gates et al. 2012) and the working of societies as a whole. The impacts on institutions, individual behavior and preferences are less well understood (Blattman and Miguel 2010). There is a small but growing body of literature examining these impacts, predominantly highlighting changes in social and political preferences, such as participation in local collective action, voting and sharing both within and across communities. Evolutionary theory highlights the role of inter-group conflict in shaping pro-egalitarian parochial preferences – increasing in-group cooperation while exacerbating out-group antagonism (Bowles 2006; Bernhard et al. 2006; Choi and Bowles 2007). At shorter time-scales this theory has been corroborated with respect to increased in-group cooperation after civil war (Bellows and Miguel 2009; Voors et al. 2012; Gilligan et al. 2014; Bauer et al. 2014), and increased out-group antagonism (Miguel et al. 2011).

Increased out-group antagonism may impact the aggressiveness of individuals (Miguel et al. 2011), but it may also affect their willingness to compete. Taste for competition is an important non-cognitive determinant of human capital indicators, such as adult economic achievements and productivity (Niederle and Vesterlund 2007). If less competitive people shy away from direct competition (Bartling et al. 2012), non-first-best contenders have a higher chance of winning a contest, affecting allocative efficiency (Eriksson et al. 2009). For this reason, “*competitions and the right dose of competitiveness significantly determine not only the future of the individual but even the evolution of the whole species*” (Leibbrandt et al.

2013, 9305). Yet, individual variations in competitiveness need not to be solely explained by genetic endowments and long-run evolution. They may be the result of exposure to different environments and pressures. Leibbrandt et al. (2013) compare individualistic and collectivistic societies, and show that life experiences may alter individual tastes for competition. In conjunction with altered preferences for local collective action and trade-offs over risk and time, shifts in competitiveness may be a crucial determinant of regional post-war political and economic recovery and development.

This paper seeks to connect and contribute to two literatures: that on the determinants of competitiveness and on the impact of civil war (which we discuss below). Several authors argue that conflict exposure during childhood affects beliefs and behavior later in life (see Adhvaryu and Fenske 2013 for a review). Using data from a football tournament in Sierra Leone, we assess the impact of war-related violence on preferences of local youth. We carefully record the details of each match and player. After the game, we invite players to participate in a series of lab-in-field experiments and a short survey. We measure preferences towards teammates and opponents, making use of the bi-lateral antagonism and group dynamics generated by sport itself (see Weinstein et al. 1995; Duggan and Levitt 2002; Garicano and Palacios-Huerta 2006; Miguel et al. 2011). We find that individuals who experienced more intense conflict-related violence during childhood are more likely to receive a foul card during a football game, are less risk averse and more altruistic towards their in-group, but not towards the out-group. Next, we test willingness to compete through an effort game that disentangles competitiveness from aggressiveness. Out-group competitiveness appears to be exacerbated by violent conflict: conflict exposed subjects are on average 51% more likely to enter a competition against an out-group than the non-exposed.

Obviously, it is challenging to identify the exact mechanisms through which conflict affects behavior. We argue that our results are consistent with a perspective on how conflict changes preferences and beliefs. To probe the robustness of our results we run several checks. First, we investigate self-selection into violence and find little evidence of it—consistent with literature on the Sierra Leonean civil war. Next, we show that age-group fixed effects (plausibly correlated with war exposure) do not alter our main result. Also, we probe whether our results are driven by temporary migration: our main coefficient remains stable and is not significantly different across war time migration destinations. In addition, our main result is robust to the introduction of forced displacement as an additional source of war-related trauma, as well as to football match and team fixed effects, and clustering standard errors at the football team level. Finally, willingness to compete may also be a function of risk preferences, expected relative performance, and actual skills. We show that our result maintains when controlling for these covariates both separately and jointly.

The study is organized as follows. Section II discusses literature on conflict and preferences and on the determinants of competitiveness and presents our key hypothesis. Section III presents the context and background of civil war in Sierra Leone and of our study area in particular. Section IV introduces the field and lab experimental data, and outlines the experimental design and data. Section V discusses our identification strategy and Section VI contains our results. Section VII offers a discussion and conclusion.

## **II. Conflict, preferences and competition**

Competitiveness is a key determinant of individual economic achievements and productivity (Niederle and Vesterlund 2007). There are significant differences in willingness to compete both within and across societies (Liebbrandt et al. 2013). These differences can be attributed

to variations in genetic endowments, abilities and preferences (Niederle and Vesterlund 2007; Gneezy et al. 2009) as well as individual exposure to various environmental pressures and life events (Roth and Erev 1995). Most empirical studies on the origins and consequences of competitiveness use data from laboratory experiments. Using effort games, behavioral economists document that when the type of payment is exogenously imposed on subjects, competitive tournaments reveal a much larger variance of effort than equivalent piece-rate schemes (van Dijk et al. 2001; Harbring and Irlenbusch 2003). This in turn reduces their overall efficiency (Eriksson et al. 2009). Such an unexpected finding may be driven by the unwillingness of some people to enter competition. In fact, Eriksson et al. (2009) show that allowing for self-selection into a competitive tournament results in higher average effort rates and lower between-subject variance for subjects choosing to compete. Competitive environments are thus more efficient than non-competitive ones only if populated by a sufficient share of agents willing to compete.

While a complete insight is lacking, literature has highlighted several individual and behavioral determinants of competitiveness. For example, Niederle and Vesterlund (2007) find important differences with respect to gender and performance expectations. Bartling et al. (2009) find that overconfident, skilled and risk prone subjects are more likely to join a contest, while inequality-averse subjects less. Leibbrandt et al. (2013) find that fishermen from individualistic societies are far more competitive than those from neighboring collectivistic societies, and that this difference emerges with time. Individuals shape their preferences mostly during childhood (Benenson et al. 2007; Fehr et al. 2008), and continue to develop them till early adulthood (Sutter 2007). Intense shocks during childhood should thus alter individual preferences for competition. Yet, the role of early life events such as exposure to conflict as a determinant of competitiveness is still ill-understood.

Research into conflict induced changes in behavior is equally limited but growing (Blattman and Miguel 2010).<sup>1</sup> A key research line focusses on the impacts on pro-social preferences. An emerging insight points to the boundary between in-groups relative to out-groups in shaping post conflict preferences: intra-community violence appears to decrease within community social cohesion whereas inter-community conflict increases it. This mirrors contributions in evolutionary theory, which predicts how inter-group conflict shapes parochial preferences—increasing in-group cooperation while exacerbating out-group antagonism (Bowles 2006; Bernhard et al. 2006; Choi and Bowles 2007). For example, Cassar et al. (2013) find that intra-community violence in Tajikistan undermined social cohesion and in-village trust (see also Rohner et al. 2013). On the other hand, Bellows and Miguel (2009) find that Sierra Leoneans whose households directly experienced more intense violence by the RUF are more likely to attend community meetings, join local political and community groups, and vote. Blattman (2009) finds that experiencing abduction and violence increased political engagement, voting and community leadership among ex-combatants in Northern Uganda. Blattman and Miguel (2010) present a survey of literature on civil war and argue that the existing literature omits advances in behavioral economics, and advocate micro-level analysis and case studies as crucial to understand war's causes, conduct, and consequences, in particular in the behavioral and institutional domain.

In recent years, a number of studies have used lab-in-field experiments to gauge the consequences of civil wars. Voors et al. (2012) show that individuals exposed to violence

---

<sup>1</sup> Psychological literature documents the relationship between war exposure and trauma, focusing mostly on post-traumatic stress disorder (PTSD), anger and anxiety. Macksoud and Aber (1996) examine the relation between war traumas and psychosocial development, finding that the number of war traumas experienced by a child was positively related to Post Traumatic Stress Disorder (PTSD) symptoms and differentially related to other behavioural outcomes. Smith et al. (2002) and Layne et al. (2010) identify similar attitudinal outcomes among conflict exposed children in Bosnia, while (Dyregrov et al. 2002) find highly time-persistent intrusive and avoidance reactions among Iraqi children exposed to a deadly aerial bombing. Other studies explore instead positive responses to trauma—often referred to as “post-traumatic growth” (Tedeschi and Calhoun 1996; Powell et al. 2003; Staub and Vollhardt 2008; Vollhardt 2009).

display more altruistic behavior towards their neighbors, are more risk-seeking, and have higher discount rates. Gilligan et al. (2014) show that communities that suffered war-related violence during Nepal's ten-year civil war exhibit significantly greater levels of altruistic giving, public good contributions, investment in trust-based transactions, and willingness to reciprocate trust-based investments. Bauer et al. (2014) investigate how conflict experiences shape the beliefs and preferences of youth. They present two case studies – one in Georgia and one in Sierra Leone – indicating that experiencing inter-group conflict during childhood and adolescence increases egalitarian motivations toward the in-group, but not the out-group. The only work that explicitly investigates behavioral changes in out-group antagonism is Miguel et al. (2011), who examine the consequences of civil war on aggressiveness of players in European football leagues. They find that the number of years the home country of a player has been in violent conflict before the player reaches the age of eighteen is strongly and positively related to the amount of foul cards received.

We build on work by Miguel et al. (2011), and combine data from a field setting – the football tournament – and lab-in-the-field experiments. After providing confirmatory evidence of increased aggressiveness and increased parochial altruism, we test willingness to compete through a competitiveness game that disentangles competitiveness from aggressiveness—i.e. a player's choice to compete may only affect his own payoff, not that of other players. While the role of conflict exposure in shaping social preferences has been explored in several experimental settings, to our knowledge this is the first work attempting to investigate its effect on competitiveness.



### **III. Background: the Sierra Leone civil war**

We use data from a sample of respondents in Kenema, a regional town in Eastern Sierra Leone. Sierra Leone is amongst the poorest countries in the world recovering from an eleven years long civil war (1992-2001). At its start, a small group of rebels entered the East of the country. They found fertile ground for popular grief and discontent towards “*a decayed neo-patrimonial one-party regime*” (Richards 1999) and were nurtured by Sierra Leone’s diamond wealth (Keen 2005). It was the start of a country-wide civil war that cost over 50,000 lives, leaving many civilians amputated and abused, and hundreds of thousands temporarily displaced (Dufka 1999; Doucet and Denov 2012).

Kenema is the gateway to the eastern provinces and forested Liberia border area. The district saw many conflict events throughout the war; in fact the “Zogoda”, RUF’s headquarters, was only about 30 km from Kenema (Peters 2011). While there were many parties involved in violence in the war, most was committed by the RUF (Conibere et al. 2004). The conflict in Kenema can be separated in three phases: the initial incursion and consolidation by the RUF (1991-1993), clashes between Civil Defence Forces (CDF, or Kamajors) and the RUF, up to 1997, and a final phase which saw widespread intervention by ECOMOG, from 1997 – 2000. During all phases of the war, most violence was motivated either to cause fear and panic or to obtain supplies by the belligerent parties, both resulting in indiscriminate violence against civilians. During so-called “food finding missions” houses were looted and burned (for a broader discussion on such tactics, refer to Kalyvas 2006). Civilians were regularly captured to work in mines, raped, or mutilated. A report submitted to the Special Court for Sierra Leone (Smith et al. 2004) describes the events in detail. During a typical attack “*RUF forces fired indiscriminately at civilians, who were running here and there, dazed and confused, killing dozens. Many houses were burnt and massive looting was*

*carried out, with people of the town being forced to carry the stolen property*” (Smith et al 2004, 303). The most notable direct attack by RUF forces took place on Christmas Day in 1994. The attack, which lasted several days, resulted in the deaths and abduction of hundreds of civilians. Later in 1997, when the RUF briefly ruled the town, *“girls were raped, houses were looted continuously and civilians were harassed for food and other items”* (Smith et al 2004, 318). These events reflect the national patterns of conflict, where most violence was not motivated by religious or ethnic cleavages (see Bellows and Miguel 2009), and no ethnic group was disproportionally targeted by rebels (Conibere et al. 2004; Humphreys and Weinstein 2006).<sup>2</sup>

Most of our respondents lived in Kenema during the conflict. Figure 1 shows the distribution over time of conflict related events, war exposure and conflict induced displacements, of our sample. As a confirmatory exercise we have plotted the recorded violent events in Kenema from the SLL-LED dataset (De Bruijne 2014) in the figure as well. Two peaks, in 1994 and 1997-1998 overlap with exposure and displacement events in our sample. Over 82% of our respondents were (temporarily) displaced at least one time during the conflict. This is comparable to the nationally representative wartime displacement rates in the 2007 Institutional Reform and Capacity Building Project dataset (used in Bellows and Miguel 2009). While some of our respondents moved to places out of Sierra Leone (neighboring Guinea and Liberia), most displacements were within Kenema district (51.1%) or adjacent districts (11.9%).

<< *Insert Figure 1 about here* >>

---

<sup>2</sup> See Section V for a further discussion and analysis.

Disarmament started at the end of 2001 and President Kabbah declared the war over in January 2002 (Peters 2011). RUF and other armed groups were disarmed, demobilized and reintegrated in society. At present violence and intimidation have disappeared from Sierra Leone and the country has now known several years of peace. While the country still ranks low on close to all development indicators, the local economy is improving each year—the 2013 GDP growth rate was close to 13%.

#### **IV. Data and experimental design**

Our data was collected during a youth street football tournament organized in Kenema. The tournament spanned several weeks between November and December 2010. For the tournament, streets within the city each assembled in a team. Matches were centrally organized and a substantial cash reward awaited the winner. Team identity was strong and the players took pride in defending their street. Referees oversaw adherence to rules and distributed yellow and red cards in response to minor and major fouls.<sup>3</sup> We carefully recorded details of the matches and players of the performance of 14 teams and 162 players. Table 1 presents the descriptive statistics (see Appendix I for variable definitions). A total of 47 yellow and 3 red cards were given, involving 20% of the players. After each football match, we invited players to participate in a survey and a series of lab-in-field experiments. Our close collaboration with tournament organizers and team managers effectively cancelled attrition.

Our respondents are young males, between 14 and 31 years old (see Figure 2A). They are predominantly Muslim, and of the Mende tribe and 50% are enrolled in senior secondary

---

<sup>3</sup> Two referees oversaw all the football games. The referees were semi-professional and provided by the organisation of the tournament (a youth association in Kenema). One could worry that the referees systematically favoured one team over the other based on its composition. We have no reason to believe this is the case, but cannot rule this out completely. Unfortunately, we did not collect information about the referee's background, ethnic group, and individual characteristics.

education. We identify a series of plausible non-experimental proxies of sportive ability, which may influence the willingness to compete and to receive a foul card. Substitutes could enter and exit at any time of the match, with no limit with respect to the number of substitutions. Therefore, whether a player had not been substituted during the entire duration of the match (46%) may be seen as a good approximation of relatively greater football skills, most likely correlated to general sportive ability. In addition, we ask our respondents to rate their own level of skills compared with their teammates. We create an index ranging from 0 (self-declared least skilled) to 1 (self-declared most skilled). While we could not record the positioning of players on the football field due to the high fluidity of play, we also recorded which players scored a goal. Finally, we recorded which team won the football game,<sup>4</sup> and if the participant is left or right footed.<sup>5</sup>

<< *Insert Table 1 about here* >>

To measure exposure to conflict-related violence we ask respondents about a range of war related events, covering information on personal injury, seeing injured people, seeing and hearing combat.<sup>6</sup> Following Bellows and Miguel (2009), we create a victimization index using the average of positive responses to these violence related questions. On average, our

---

<sup>4</sup> The decision of entering the competition may be influenced by the expected ability of the counterpart. Participants could only estimate team-level ability at the team level, as counterparts are anonymous, which is proxied by winning the football game. Also, winning the football game may have implications for the morale and overconfidence of participants.

<sup>5</sup> Psychological literature highlights correlations between handedness and several non-cognitive dimensions (Goldberg et al. 1994) as well as cognitive skills (Sanders et al. 1982; Faurie et al. 2006). More recently, handedness has been placed in correlation with economic outcomes (Denny and O'Sullivan 2007) and competitiveness (Hoffman and Gneezy 2010). Less attention has been devoted specifically to footedness. However, footedness is strongly correlated with handedness – especially for right-handers (Peters and Durning 1979; Krasnegor et al. 2014) – and Elias et al. (1998) find it to be a more accurate predictor than handedness of emotional lateralization.

<sup>6</sup> In a robustness check we include displacement as an additional element of the victimization index. As 82% of our sample was temporarily displaced at least once during the conflict, this brings average victimisation up to 0.63 (0.24). See section VI for the implications of this change for our results.

respondents experienced 57% of such events.<sup>7</sup> Figure 2B shows the average conflict exposure by age in our sample. Younger generations are relatively less victimized, but overall victimization follows a rather clear quadratic trend across age groups (a more detailed discussion on this can be found in Section V).

<< *Insert Figure 2 about here* >>

We implement a range of lab-in-field experiments. We measure willingness to self-select into competitive environments using an effort game, based on Niederle and Vesterlund (2007) and Bartling et al. (2009). Respondents are invited to participate in a game where they throw a football into a standard sized basket secured to the floor, from a distance of four meters. They choose whether to play individually – at a piece rate payment scheme of 500 Leones per ball on target – or to enter a competition against an anonymous counterpart. In the competition, the respondent wins 1500 Leones for every ball on target if the total number of hits is higher than the counterpart—zero if lower.<sup>8</sup> In case of a draw with the counterpart the respondent receives 500 Leones per ball on target. It is possible for one player to enter the competition even if the counterpart does not, and vice versa. As a result, the payout of one player is determined only by his choice to compete and by the number of balls on target relative to the anonymous counterpart.<sup>9</sup> In other words, participants cannot influence or hurt their opponents' utility and earnings by choosing to enter the competition—but only by being

---

<sup>7</sup> This statistic is similar to what Bellows and Miguel (2009) find in their study. Note that, as our measure of war exposure is self-reported, one may worry that types of respondents have a different propensity to report on war time events. If this is correlated with our outcome variables, then our estimates are biased. While we cannot exclude such possibility, our data show consistent patterns results for those reporting high and low levels of conflict exposure reducing concerns over bias in reporting.

<sup>8</sup> 4400 Leones were about 1 USD at the time of data collection.

<sup>9</sup> For example, even if player 1 decides to not compete, player 2 would get zero pay-out in case player 2 decides to compete and scores less than player 1. Oppositely, even if player 1 decides to compete, player 2 would not lose if he decides not to compete.

better, regardless of their choice to compete or not. This setup allows us to disentangle willingness to compete from aggressiveness, as the decision to compete or not taken by each participant only affects their own private outcome, and not that of the counterpart. Respondents are randomly divided into two groups: one group plays against an anonymous player of the opponent team (out-group) and another against an anonymous player of their own team (in-group). 42% of the respondents chose to participate in the tournament. Figure 3 shows the distribution of balls on target and relative frequency across groups. On average, respondents scored 6.27 hits (out of 10 tries), with a standard deviation of 1.82.<sup>10</sup>

<< *Insert Figure 3 about here* >>

To measure risk preferences, we use a simple dichotomous choice game based on Harbaugh et al. (2002). In this risk game subjects are required to choose several times between receiving an amount of money for certain and playing a simple gamble. Six choice sets are presented; each time we ask whether the respondent prefers (1) to toss a coin and make the chance of winning 3000 Leones or zero (if tails), or (2) not toss a coin and win an amount of money for certain, growing in each choice set, from 100 Leones to 2500 Leones. The expected value of the gamble is thus kept constant, while the certain option increases progressively: the point of switch from the gamble to the certain option is used to determine the risk preferences of the respondent (see Harbaugh et al 2002)—the later the switch, the less risk-averse (Table 2). We then standardize the resulting discrete variable to improve the interpretability of the findings.

---

<sup>10</sup> To control for expected performance in a sensitivity analysis, we ask respondents to assess their expected performance prior to playing the game. We create an index ranging from 0 (self-declared worst expected performance) to 1 (self-declared best expected performance).

<< *Insert Table 2 about here* >>

To gauge other-regarding preferences we use a simple non-strategic dictator game. Each participant made two choices about how to allocate a given endowment, once paired with a teammate and once with an opponent, in random order. Players received 1000 Leones and were told these were theirs to keep at the end of the experiment. Alternatively, they could donate any 50 Leones portion of it to an anonymous counterpart. To avoid income effects potentially confounding our results, participants were notified that their final pay-off would be determined by the outcome of one randomly selected game they played, plus a possible donation from either a teammate or an opponent. Also in this case, we standardize out-group and in-group donations for the sake of interpretability.

## **V. Identification and empirical strategy**

Our empirical strategy relies on local comparisons across war and non-war exposed subjects. The key identifying assumption is that exposure to violence was exogenous with respect to individual characteristics. This assumption may be violated in the presence of systematic targeting by belligerents along some individual dimension—i.e. religion, ethnic group, etc. While undoubtedly some elements of violence were targeted, most violence in Sierra Leone was essentially a random process (Conibere et al. 2004; Humphreys and Weinstein 2006; Bellows and Miguel 2009). To test these assumptions on our own sample of respondents, below we regress war exposure on a set of variables capturing individual characteristics.<sup>11</sup>

---

<sup>11</sup> Our sample does not include traditional authority households – significantly more likely to experience violence during the civil war according to Bellows and Miguel (2009). We do have information on participation in civic defence forces (CDF). Individuals whose parents participated in CDFs or independently fought during the civil war may have experienced more

We find no evidence of selective violence, except for age (and age squared); responding to intuition, older participants faced a higher probability of war exposure (Table 3 and Figure 2B).<sup>12</sup>

<< *Insert Table 3 about here* >>

Previous experimental evidence shows that children develop their preferences mostly between the age of three and eight (Benenson et al. 2007; Fehr et al. 2008), reaching stability around the early twenties (Sutter 2007). Our sample's mean age at the beginning of the civil war was less than one-year-old, eleven by the end of it. War exposure hence occurred at a young age. This provides additional supporting ground for the causal relationship between exposure to violence during childhood, and the behavioral changes we observe. If anything, given the slightly wider age range, we are likely to underestimate the true impact of exposure to war violence. Nonetheless, the absence of base-line behavioral data – rarely available for this type of studies – makes it impossible to completely rule out potential correlations between pre-war parental behavioral characteristics and the degree of war exposure experienced by children.

Additionally, results could be biased due to selective migration. If displaced people are significantly different from people who did not migrate, selective migration might play a role

---

violence. In particular, if those individuals were more competitive, and competitive behaviour is correlated across generations, the main coefficient might reflect selection rather than the treatment effect of exposure to violence. Columns 3 and 4 of Table 3 show how there is no evidence of a significant self-selection effect into war related violence for the children of combatants. Also, Column 4 highlights how war exposure does not significantly correlate with any of the proxies for athletic ability identified during the football game.

<sup>12</sup> Of course, there may be selection bias due to unobservable characteristics not captured in our data, for example ethnic or political cleavages may make people more prone to be targeted. If political cleavages are related to competitive behavior, then this will bias our estimates. While we cannot rule out such hypotheses entirely, the nature of violence in Sierra Leone does not indicate such cleavages matter for victimization, and the results of Table 3 seem to indicate homogeneous victimization across ethnic groups (see also Bellows and Miguel 2009).



in determining who experienced violence, as well as the composition of communities.<sup>13</sup> Gilligan et al. (2014) identify two mechanisms through which war may impact social preferences: (1) a collective coping mechanism by which people band together to deal with threats, and (2) a purging mechanism by which less social individuals disproportionately flee communities. In our case, more competitive people may have permanently migrated into Kenema, and less competitive people may have migrated out of Kenema and would therefore not be part of the investigation. Our study focuses on comparisons across individuals that have experienced varying degrees of war exposure and are currently residing in Kenema. It does not attempt to draw conclusions on the overall intent-to-treat impact of the Sierra Leone civil war on the competitiveness and willingness to compete of Sierra Leoneans, nor does it expect to generalize the conclusions across countries.<sup>14</sup>

The core of our analysis lies in a set of regressions that seek to explain differences in our outcome variables through a set of individual and football-related characteristics, and our measure of exposure to war violence. We set out by assessing the probability a player received a foul card, and compare individuals who experienced conflict to those who did not:

$$FoulCard_i = \beta_1 + \beta_2 War_i + \beta_3 X'_i + \beta_4 S'_i + \varepsilon_i, \quad (1)$$

where  $FoulCard_i$  is a dummy taking value of 1 if the player  $i$  received at least one foul card during the football game (where  $i=1, \dots, 162$ ),  $War_i$  is our victimization index,  $X'_i$  a vector of individual characteristics and  $S'_j$  is a vector of football match related controls, including our self-declared skills index.

We continue by examining the impacts of violence in a series of lab-in-field experiments:

$$Risk_i = \beta_1 + \beta_2 War_i + \beta_3 X'_i + \beta_4 S'_i + \varepsilon_i, \quad (2)$$

---

<sup>13</sup> According to the UN, from April 2001 to November 2002, all the 223,000 registered IDPs were reintegrated within their original communities and many more unregistered refugees have been returning home ever since (Norwegian Refugee Council 2003).

<sup>14</sup> For a complementary perspective on war exposure across countries in Africa, see Adhvaryu and Fenske (2013).

$$Donation_i = \beta_1 + \beta_2 War_i + \beta_3 X'_i + \beta_4 S'_i + \varepsilon_i, \quad (3)$$

where  $Risk_i$  refers to individual risk propensity,  $Donation_i$  to the portion of endowment donated in the dictator game, to an anonymous teammate or opponent, and other notations are the same as in (1).

Finally, we empirically investigate the effect of war-related violence exposure on the willingness to compete:

$$Competition_i = \beta_1 + \beta_2 War_i + \beta_3 X'_i + \beta_4 S'_i + \varepsilon_i, \quad (4)$$

where  $Competition_i$  takes value of 1 if the participant has opted for the competitive choice, 0 if he opted for the piece-rate payment in the effort game. All other notations are as in (1).

Table 3 and Figure 2B show that age is a strong predictor of exposure to conflict related violence. In our model we include age and age squared as controls, and to rule out that age is driving our main result we include age fixed effects, as well as 2-year, 3-year and 4-year age-group fixed effects in a robustness check. In a further sensitivity analysis, we assess whether selective migration explains our results. We split the sample between participants that never left Kenema district,<sup>15</sup> and those who (temporarily) migrated outside Kenema district. Next, we include forced displacement as an additional source of war-related trauma, football match fixed effects, team fixed effects, and team-level clustering of standard errors. As final robustness check, we include measures of performance expectation, skills, and risk preferences (Niederle and Vesterlund 2007; Bartling et al. 2009). In addition to self-declared football skills and playing the whole football game – proxies of sportive ability in general – we add expected relative performance in the effort game, a standardized measure of the actual number of balls on target, and our measure of risk preferences, into equation (4).

---

<sup>15</sup> This includes participants who had been displaced but always remained within Kenema district.

## VI. Experimental results

We start by analyzing our football field data. We find that individuals strongly exposed to conflict-related violence are 28% more likely to commit a card-deserving foul during the football game, significant at  $\alpha = 0.05$  (Table 4, columns 1-2).<sup>16</sup> Next, we regress violence exposure on our standardized measure of risk propensity. We find that it increases the propensity to risk by around 2/3 of a standard deviation (Table 4, columns 3-4).<sup>17</sup>

*<< Insert Table 4 about here >>*

We test the hypothesis that individual war exposure fosters parochial pro-egalitarian preferences. Indeed exposure to conflict-related violence increases in-group donations by 1/2 to 2/3 of a standard deviation (Table 5, columns 3-4). On the other hand, war exposure does not seem to significantly alter altruistic behavior towards out-groups (Table 5, columns 1-2), although the interaction term does not enter significantly (Table 5, column 5). In other words, in-group sharing is significantly higher when war exposure is high, while out-group sharing is harder to interpret. We can neither reject the null that altruistic behavior towards out-group is unrelated to conflict nor the null of indifference across groups. In light of the small sample size this is likely indicative of relatively low power.

*<< Insert Table 5 about here >>*

---

<sup>16</sup> A Pearson  $\chi^2$  test on victimization strongly rejects the null hypothesis of independence between war exposure and receiving a foul card ( $p=0.02$ ).

<sup>17</sup> 17 out of 162 respondents do not meet the Single-Crossing Property (SCP), switching twice between options. Dropping these from the analysis does not change our the results, the coefficient for exposure to conflict is 0.542 (0.316), significant at 10%.

Our main results on the relationship between civil war exposure and competitiveness is presented in Figures 4A-D and Table 6. Figure 4A shows the percentage of football players receiving a foul card during the football tournament for each level of war exposure. We find that higher levels of conflict exposure are associated with a higher propensity to receive a foul card (at the median of all covariates). None of the unexposed players received a foul card. While indicative of increased out-group antagonism, this result *per se* is not symptomatic of increased willingness to compete. We therefore proceed to look into our laboratory style competitiveness experiment. We find that the results parallel the field setting: across the two treatments, 18% of the completely war unexposed respondents decide to join the competition, compared to 64% of the fully war exposed respondents (Figure 4B). A Pearson  $\chi^2$  test on the pooled dataset strongly rejects the null hypothesis of independence between war exposure and choosing to compete ( $p=0.003$ ). Figure 4C and 4D show a breakdown for subjects playing against the out-group and those playing against the in-group respectively.

<< *Insert Figure 4 about here* >>

We find that war exposure results in out-group competition. At the median of all covariates, subjects most exposed to conflict-related violence are 51% more likely to join a competition against the out-group, significant at  $\alpha = 0.05$  (Table 6, columns 1-2).<sup>18</sup> On the

---

<sup>18</sup> The coefficient on exposure to war-related violence increases when observable controls are included. Following Bellows and Miguel (2009), this suggests that omitted bias is unlikely to explain away the effect (see also Altonji et al., 2005).

other hand we cannot reject the null of no effect for in-group competitive behavior (Table 6, columns 3-4), as well as across groups (Table 6, column 5).<sup>19</sup>

<< *Insert Table 6 about here* >>

To probe the robustness of this result we run several additional analyses. As mentioned in the previous section, our results may be driven by age. In Table 6, column 2 we control for age and age squared. In Appendix Table A1 we run a more flexible specification of the regression—adding age and age-group fixed effects. The coefficient of conflict exposure remains stable and robustly significant. Next, we assess whether selective migration drives our result. In Appendix Table A2 we separate participants that never moved out of Kenema district from those who did. The coefficient on the two separate groups is stable (Table A2, columns 1-2), and the interaction term insignificant (Table A2, columns 3-4).<sup>20</sup> This attenuates the concern that our results are due to selective migration patterns. In addition, our results are robust to the introduction of forced displacement as an additional source of war-related trauma, as well as football-match fixed effects, team fixed effects and clustering standard errors at the football team level (see Appendix Table A3). Finally, while we control for proxies of proxies of sportive ability throughout (i.e. playing the whole football game and self-declared skills), willingness to compete may also be a function of risk preferences, expected relative performance in the effort game, and actual skills. Our result holds to introducing these controls both separately and jointly – and the coefficients maintain relative constancy (see Appendix Table A4).

---

<sup>19</sup> The coefficient on the group interaction term is large and negative, as expected. This is suggestive of a substantial though not significant difference in coefficients across groups. As a further test, we allow for different residual variation across groups and compute Allison's delta (-0.570)—the effect of conflict exposure on competition can thus be interpreted as being 57% smaller towards the in-group than towards the out-group (Allison 1999; Williams 2009).

<sup>20</sup> Note that due to the small sample size measurement error inflates standard errors.

## **VII. Discussion and conclusion**

We explore whether exposure to war-related violence affects the competitiveness of youth participating in a local street football tournament and a series of lab-in-field experiments in Sierra Leone. Previous economic literature on the consequences of civil war on preferences documents increases in-group cooperation, political activeness and altruism. The main contribution of this study is to provide insight into the determinants of competitive behavior and its relation with exposure to violent conflict. We bring new evidence that increased parochial altruism is a two-fold process—increasing in-group cooperation while exacerbating out-group antagonism.

Increased antagonism matters for post-conflict development as it shapes aggressiveness and, perhaps more saliently, competitiveness. To study war induced out-group dynamics we look both at aggressiveness during a football game and competitive behavior in laboratory experiment. We find that subjects more exposed to war violence during early childhood and preadolescence are not only robustly more likely to commit fouls during a football game, but are also more likely to self-select into a competition against an out-group in our experiment. Civil war does not only seem to foster cooperation towards perceived in-groups, but curbs distaste for free competition against perceived out-groups. Being more prone to cooperate and engage in public debates affects the community level provision of public goods, potentially promoting economic development (Bellows and Miguel 2009). Similarly, accepting inequality-averse outcomes driven by a fair and regulated competition is a fundamental element of economic growth (Bartling et al. 2009).

Our findings are tentative; different types of conflicts could have varying legacies, and the human cost of conflict may never be justified by its “externalities” (Cassar et al. 2013). Yet, a

growing body of evidence about war violence victims' profound changes in individual beliefs, values, and preferences poses new challenges to policy makers and post-conflict recovery strategists. It rejects the notion of conflict as "*development in reverse*" (Collier et al. 2003). Not only has war historically promoted state formation and nation building – ultimately strengthening institutional capacity (Tilly and Ardant 1975) – it may also be at the core of inclusive and dynamic societal transformations. Policy makers responsible for post-war recovery should be aware of the extent of these transformations and recognize heterogeneity among communities and individuals, not overlooking the significance of autonomous responses.

## References

- Acemoglu, Daron, and James A. Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, New York: Crown Business.
- Adhvaryu, Achyuta, and James Fenske. 2013. “War Resilience and Political Engagement in Africa”. CSAE Working Paper WPS/2013-08.
- Allison, Paul. 1999. “Comparing Logit and Probit Coefficients Across Groups”. *Sociological Methods and Research* 28(2): 186–208.
- Altonji, Joseph G., Todd E. Elder, Christopher R. Taber, Glen Cain, Tim Conley, Thomas Deleire, and Steven D. Levitt. 2005. “Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools”. *Journal of Political Economy* 113(1): 151–184.
- Bartling, Björn, Ernst Fehr, Michel A. Maréchal, and Daniel Schunk. 2009. “Egalitarianism and Competitiveness”. *American Economic Review* 99(2): 93–98.
- Bartling, Björn, Ernst Fehr, and Daniel Schunk. 2012. “Health Effects on Children’s Willingness to Compete”. *Experimental Economics* 15(1): 58–70.
- Bauer, Michael, Alessandra Cassar, Julie Chytilová, and Joseph Henrich. 2014. “War’s Enduring Effects on the Development of Egalitarian Motivations and In-Group Biases”. *Psychological science* 25(1): 47–57.
- Bellows, John, and Edward Miguel. 2009. “War and Local Collective Action in Sierra Leone”. *Journal of Public Economics* 93(11–12): 1144–1157.
- Benenson, Joyce F., Joanna Pascoe, and Nicola Radmore. 2007. “Children’s Altruistic Behavior in the Dictator Game”. *Evolution and Human Behavior* 28(3): 168–175.
- Bernhard, Helen, Urs Fischbacher, and Ernst Fehr. 2006. “Parochial Altruism in Humans”. *Nature* 442(7105): 912–915.



- Blattman, Christopher. 2009. "From Violence to Voting: War and Political Participation in Uganda". *American Political Science Review* 103(2): 231–247.
- Blattman, Christopher, and Edward Miguel. 2010. "Civil War". *Journal of Economic Literature* 48(1): 3–57.
- Bowles, Samuel. 2006. "Group Competition, Reproductive Leveling, and the Evolution of Human Altruism". *Science* 314(5805): 1569–1572.
- Boyd, Robert, Herbert Gintis, Samuel Bowles, and Peter J. Richerson. 2003. "The Evolution of Altruistic Punishment". *Proceedings of the National Academy of Sciences of the United States of America* 100(6), 3531–3535.
- Camerer, Colin F., 2003. *Behavioral Game Theory: Experiments in Strategic Interaction*. Princeton, NJ: Princeton University Press.
- Cassar, Alessandra, Pauline Grosjean, and Sam Whitt. 2013. "Legacies of Violence: Trust and Market Development". *Journal of Economic Growth* 18(3): 285–318.
- Chamarbagwala, Rubiana, and Hilcías E. Morán. 2011. "The Human Capital Consequences of Civil War: Evidence from Guatemala". *Journal of Development Economics* 94(1): 41–61.
- Choi, Jung-Kyoo, and Samuel Bowles. 2007. "The Coevolution of Parochial Altruism and War". *Science* 318(5850): 636–640.
- Collier, Paul, V. L. Elliott, Havard Hegre, Anke Hoeffler, Marta Reynal-Querol, and Nicholas Sambanis. 2003. *Breaking the Conflict Trap: Civil War and Development Policy*. Washington, DC: World Bank and Oxford University Press.
- Conibere, Richard, Jana Asher, Kristen Cibelli, Jana Dudukovich, Rafe Kaplan, and Patrick Ball. 2004. *Statistical Appendix to the Report of the Truth and Reconciliation Commission of Sierra Leone*. Human Rights Data Analysis Group.

- De Bruijne, K. 2014, "Introducing the Sierra Leone Local - Location Event Dataset (SLL-LED)." Armed Conflict Location Event Dataset, [www.acleddata.com](http://www.acleddata.com)
- Denny, Kevin, and Vincent O'Sullivan. 2007. "The Economic Consequences of Being Left-Handed: Some Sinister Results". *Journal of Human Resources* 42(2): 353–374.
- Doucet, Denise and Myriam Denov. 2012. "The Power of Sweet Words: Local forms of Intervention with War-affected Women in Rural Sierra Leone". *International Social Work* 55(5): 612–628.
- Dufka, Corinne. (1999). "Sierra Leone: Getting Away with Murder, Mutilation, and Rape". Human Rights Watch report.
- Duggan, Mark and Steven D. Levitt. 2002. "Winning isn't Everything: Corruption in Sumo Wrestling". *American Economic Review* 92(5): 1594–1605.
- Dyregrov, Alte, Rolf Gjestad, and Magne Raundalen. 2002. "Children Exposed to Warfare: a Longitudinal Study". *Journal of Traumatic Stress* 15(1): 59–68.
- Elias, Lorin J., M. Phil Bryden, and M. Barbara Bulman-Fleming. 1998. "Footedness is a Better Predictor than is Handedness of Emotional Lateralization". *Neuropsychologia*, 36(1): 37–43.
- Eriksson, Tor, Sabrina Teyssier, and Marie-Claire Villeval. 2009. "Self-Selection and the Efficiency of Tournaments". *Economic Inquiry* 47(3): 530–548.
- Faurie, Charlotte, Nicolas Vianey-Liaud, and Michel C. Raymond. 2006. "Do Left-handed Children have Advantages Regarding School Performance and Leadership Skills?" *Laterality: Asymmetries of Body, Brain and Cognition* 11(1): 57–70.
- Fehr, Ernst, Helen Bernhard, and Bettina Rockenbach. 2008. "Egalitarianism in Young Children". *Nature* 454(7208): 1079–83.

- Garicano, Luis, and Ignacio Palacios-Huerta. 2006. "Sabotage in Tournaments: Making the Beautiful Game a Bit Less Beautiful". CEPR Discussion Papers 5231.
- Gates, Scott, Håvard Hegre, Håvard M. Nygård, and Håvard Strand. 2012. "Development Consequences of Armed Conflict". *World Development* 40(9): 1713–1722.
- Ghobarah, Hazem A., Paul Hurt, and Bruce Russett. 2003. "Civil Wars Kill and Maim People – Long after the Shooting Stops". *American Political Science Review* 97(2): 189–202.
- Gilligan, Michael J., Benjamin J. Pasquale, and Benjamin, and Cyrus Samii. 2014. "Civil War and Social Cohesion: Lab-in-the-Field Evidence from Nepal". *American Journal of Political Science* 58(3): 604–619.
- Gneezy Uri , Kenneth L. Leonard, and John A. List. 2009. "Gender Differences in Competition: Evidence from a Matrilineal and a Patriarchal Society". *Econometrica* 77(5):1637–1664.
- Goldberg, Elkhonon, Richard Harner, Mark Lovell, Kenneth Podell, and Silvma Riggio. 1994. "Cognitive Bias, Functional Cortical Geometry, and the Frontal Lobes: Laterality, Sex, and Handedness". *Journal of Cognitive Neuroscience* 6(3): 276–296.
- Harbaugh, William T., Kate Krause, and Lise Vesterlund. 2002. "Risk Attitudes of Children and Adults: Choices over Small and Large Probability Gains and Losses". *Experimental Economics* 84(1): 53–84.
- Harbring, Christine, and Bernd Irlenbusch. 2003. "An experimental study on tournament design". *Labour Economics* 10(4): 443–464.
- Hoffman, Moshe, and Uri Gneezy. 2010. "Left Handed Women are More Competitive than Right Handed Men: On the Biological Basis of Gender Differences in Competitiveness". Working Paper, University of California, San Diego.

- Humphreys, Macartan, and Jeremy M. Weinstein. 2006. "Handling and Manhandling Civilians in Civil War". *The American Political Science Review* 100(3): 429–447.
- Iqbal, Zaryab. 2006. "Health and Human Security: The Public Health Impact of Violent Conflict". *International Studies Quarterly* 50(3): 631–649.
- Iqbal, Zaryab, and Christopher Zorn. 2010. "Violent Conflict and the Spread of HIV/AIDS in Africa". *The Journal of Politics* 72(1): 149–162.
- Keen, David. 2005. *Conflict and Collusion in Sierra Leone*. Oxford: James Currey.
- Kalyvas, Stathis N. 2006. *The Logic of Violence and Civil War*. New York: Cambridge University Press.
- Krasnegor, Norman A., Duane M. Rumbaugh, Richard L. Schiefelbusch, and Michael Studdert-Kennedy. 1991. *Biological and Behavioral Determinants of Language Development*. 1st ed. Hove: Psychology Press.
- Lai, Brian, and Clayton Thyne. 2007. "The Effect of Civil War on Education, 1980—97". *Journal of Peace Research* 44(3): 277–292.
- Layne, Christopher M., Joseph A. Olsen, Aaron Baker, John-Paul Legerski, Brian Isakson, Alma Pasalić, Elvira Duraković-Belko, Nermin Dapo, Nihada Campara, Berina Arslanagić, William R. Saltzman, and Robert S. Pynoos. 2010. "Unpacking Trauma Exposure Risk Factors and Differential Pathways of Influence: Predicting Postwar Mental Distress in Bosnian Adolescents". *Child Development* 81(4): 1053–1076.
- Leibbrandt, Andreas, Uri Gneezy, and John A. List. 2013. "Rise and Fall of Competitiveness in Individualistic and Collectivistic Societies". *Proceedings of the National Academy of Science* 110 (23): 9305–9308.

- Liu, Elaine M. 2013. "Time to Change What to Sow: Risk Preferences and Technology Adoption Decisions of Cotton Farmers in China". *The Review of Economics and Statistics* 95(4): 1386-1403.
- Macksoud, Mona S., and J. Lawrence Aber. 1996. "The War Experiences and Psychosocial Development of Children in Lebanon". *Child Development* 67(1): 70–88.
- Miguel, Edward, Sebastián M. Saiegh, and Shanker Satyanath. 2011. "Civil War Exposure and Violence". *Economics and Politics* 23(1): 59–73.
- Niederle, Muriel, and Lise Vesterlund. 2007. "Do Women Shy Away from Competition? Do Men Compete Too Much?" *The Quarterly Journal of Economics* 122(3): 1067–1101.
- Norwegian Refugee Council. 2003. "Profile of Internal Displacement: Sierra Leone".  
<http://www.refworld.org/docid/3ae6a6340.html>
- Peters, Krijn. (2011) *War and the Crisis of Youth in Sierra Leone*, Cambridge University Press
- Peters, Michael, and Bruce M. Durdin. 1979. "Footedness of Left- and Right-Handers". *The American Journal of Psychology* 92(1): 133-142.
- Powell, Steve, Rita Rosner, Willi Butollo, Richard G. Tedeschi, and Lawrence G. Calhoun. 2003. "Posttraumatic Growth after War: A Study with Former Refugees and Displaced People in Sarajevo". *Journal of Clinical Psychology* 59(1): 71–83.
- Richards, Paul. 1999. "New political violence in Africa: Secular Sectarianism in Sierra Leone". *GeoJournal*, 47: 433–442.
- Rohner, Dominic, Mathias Thoenig, and Fabrizio Zilibotti. 2013. "Seeds of Distrust: Conflict in Uganda". *Journal of Economic Growth* 18(3): 217-252.

- Roth, Alvin E., and Ido Erev. 1995. "Learning in Extensive-form Games: Experimental Data and Simple Dynamic Models in the Intermediate Term". *Games and Economic Behaviour* 8(1): 164–212.
- Sanders, Barbara, James R. Wilson, and Steven G. Vandenberg. 1982. "Handedness and Spatial Ability." *Cortex* 18(1): 79–89.
- Smith, Patrick, Sean Perrin, William Yule, Berima Hacam, and Rune Stuvland. 2002. "War Exposure Among Children from Bosnia-Herzegovina: Psychological Adjustment in a Community Sample". *Journal of Traumatic Stress*, 15(2): 147–156.
- Spolaore, Enrico, and Romain Wacziarg. 2013. "How Deep are the Roots of Economic Development?" *Journal of Economic Literature*, 51(2): 325–369.
- Staub, Ervin, and Johanna Vollhardt. 2008. "Altruism Born of Suffering: the Roots of Caring and Helping after Victimization and other Trauma". *The American Journal of Orthopsychiatry* 78(3): 267–280.
- Sutter, Matthias. 2007. "Outcomes Versus Intentions: On the Nature of Fair Behavior and its Development with Age". *Journal of Economic Psychology* 28(1): 69–78.
- Tedeschi, Richard G., and Lawrence G. Calhoun. 1996. "The Posttraumatic Growth Inventory: Measuring the Positive Legacy of Trauma". *Journal of Traumatic Stress* 9(3): 455–471.
- Themnér, Lotta, and Peter Wallensteen. 2014. Armed Conflicts, 1946–2013. *Journal of Peace Research* 51(4): 541–554.
- Tilly, Charles, and Gabriel Ardant. 1975. *The Formation of National States in Western Europe*, Princeton, NJ: Princeton University Press.

Vollhardt, Johanna. 2009. "Altruism Born of Suffering and Prosocial Behavior Following Adverse Life Events: A Review and Conceptualization". *Social Justice Research* 22(1): 53–97.

Voors, Maarten J., Eleonora M. Nillesen, Philip Verwimp, Erwin H. Bulte, Robert Lensink, and Daan P. van Soest. 2012. "Violent Conflict and Behavior: A Field Experiment in Burundi". *American Economic Review* 102(452): 941–964.

Weinstein, Marc D., Michael D. Smith, and David L. Wiesenthal. 1995. "Masculinity and Hockey Violence". *Sex Roles* 33(11-12): 831–847.

## Tables

**TABLE 1**

DESCRIPTIVE STATISTICS

Variable	Observations	Mean	Std. Dev.	Min	Max
<i>Individual characteristics</i>					
War Exposure	162	0.57	0.26	0	1
Parents Fought in War	162	0.12	0.33	0	1
Age	162	19.75	3.44	14	31
Education Level	162	2.64	0.75	1	4
Meals per Day	162	2.41	0.63	1	3
Muslim Religion	162	0.79	0.41	0	1
Mende Tribe	162	0.54	0.50	0	1
Fula Tribe	162	0.16	0.37	0	1
Mandingo Tribe	162	0.11	0.32	0	1
Temne Tribe	162	0.07	0.26	0	1
Always in Kenema	162	0.52	0.50	0	1
<i>Football Tournament</i>					
Foul Card in Football Game	162	0.20	0.40	0	1
Played the Whole Football Game	162	0.46	0.50	0	1
Self-declared Skills	162	0.86	0.23	0	1



Scored	162	0.17	0.38	0	1
Won the Football Game	162	0.42	0.50	0	1
Left Footed	162	0.19	0.39	0	1
<i>Lab-in-Field Experiments</i>					
Risk Propensity	162	0	1.00	-1.6	1.2
Sharing in Out-Group Dictator Game	162	0	1.00	-2.9	2.4
Sharing in In-Group Dictator Game	162	0	1.00	-3.7	4.4
Self-selection into Out-Group Competition	70	0.43	0.50	0	1
Self-selection into In-Group Competition	92	0.41	0.50	0	1
Expected Relative Performance	162	0.91	0.13	0.6	1
Balls on Target	162	6.27	1.82	1	10

---

*Notes:* See Appendix I for variable definitions.

---

**TABLE 2****RISK PROPENSITY GAME CHOICE SETS**

---

Coin Toss			
Choice set	If heads	If tails	For certain
(1)	3000	0	100
(2)	3000	0	500
(3)	3000	0	1000
(4)	3000	0	1500
(5)	3000	0	2000
(6)	3000	0	2500

---

*Notes:* monetary amounts are reported in Leones. 4400 Leones were about 1 USD at the time of data collection.

**TABLE 3****EXPOSURE TO CONFLICT**

	(1)	(2)	(3)	(4)
Age	0.196 <sup>***</sup>	0.172 <sup>***</sup>	0.193 <sup>***</sup>	0.160 <sup>***</sup>
	(0.053)	(0.056)	(0.053)	(0.056)
Age squared	-0.004 <sup>***</sup>	-0.004 <sup>***</sup>	-0.004 <sup>***</sup>	-0.003 <sup>**</sup>
	(0.001)	(0.001)	(0.001)	(0.001)
Muslim religion		0.001		0.022
		(0.046)		(0.052)
Mende tribe		0.025		0.033
		(0.061)		(0.065)
Fula tribe		-0.095		-0.073
		(0.084)		(0.090)
Mandingo tribe		-0.086		-0.066
		(0.089)		(0.098)
Temne tribe		-0.055		-0.068
		(0.095)		(0.097)
Always in Kenema				0.029
				(0.038)
Education level				0.000
				(0.031)
Meals per day				-0.049 <sup>*</sup>
				(0.029)

Left footed			0.045	
			(0.056)	
Play whole football match			-0.011	
			(0.040)	
Self-declared skills			0.105	
			(0.085)	
Scored			-0.008	
			(0.053)	
Won the football match			-0.024	
			(0.041)	
Parents fought in war		0.053	0.047	
		(0.058)	(0.063)	
N	162	162	162	162
R <sup>2</sup>	0.151	0.188	0.156	0.218

*Notes:* Ordinary Least Squares regressions. Robust standard errors in parentheses. Column 1 reports the marginal effect of age and age squared on exposure to conflict related violence (as measured by the individual victimization index, see Appendix I for variable definitions). Column 2 adds individual controls. Column 3 tests for the effect of active parental belligerence at any moment and for any faction during the civil war. Column 4 includes education, number of meals per day, and a series of football related variables as additional controls. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE 4****AGGRESSIVENESS AND RISK PROPENSITY**

DEPENDENT	Foul card	Foul card	Risk propensity	Risk propensity
	(1)	(2)	(3)	(4)
Exposure to conflict	0.266 <sup>**</sup> (0.125)	0.284 <sup>**</sup> (0.133)	0.580 <sup>**</sup> (0.282)	0.636 <sup>*</sup> (0.341)
Age		-0.031 (0.082)		0.098 (0.203)
Age squared		0.000 (0.002)		-0.002 (0.004)
Education level		0.042 (0.049)		-0.090 (0.129)
Meals per day		0.046 (0.049)		0.083 (0.136)
Muslim religion		-0.082 (0.091)		0.128 (0.211)
Mende tribe		0.081 (0.061)		-0.042 (0.179)
Play whole football match		0.083 (0.064)		0.104 (0.170)
Self-declared skills		-0.231 <sup>*</sup> (0.123)		0.016 (0.345)

Scored		0.166 <sup>*</sup>		-0.120
		(0.099)		(0.222)
Won the football match		0.175 <sup>**</sup>		-0.216
		(0.068)		(0.162)
Left footed		-0.108 <sup>**</sup>		0.098
		(0.052)		(0.205)
<hr/>				
N	162	162	162	162
Pseudo-R <sup>2</sup> and R <sup>2</sup>	0.025	0.157	0.022	0.054

*Notes:* Probit marginal effects in (1) and (2), Ordinary Least Squares estimates in (3) and (4).

Column 1 reports the univariate marginal effect of exposure to conflict on the likelihood of having received at least one foul card. Column 2 adds individual and football game related controls. Column 3 reports the univariate marginal effect of exposure to conflict on an experimental measure of risk propensity (see Appendix I for variable definitions). Column 4 adds individual and football game related controls. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE 5****DICTATOR GAME DONATIONS**

SAMPLE	Out-group	Out-group	In-group	In-group	Pooled
	(1)	(2)	(3)	(4)	(5)
Exposure to conflict	0.293	0.188	0.443 <sup>*</sup>	0.619 <sup>**</sup>	0.329
	(0.394)	(0.401)	(0.238)	(0.278)	(0.401)
In-group					0.465 <sup>*</sup>
					(0.274)
Exposure to conflict × in-group					0.150
					(0.449)
Age		0.219		-0.049	0.085
		(0.188)		(0.153)	(0.115)
Age squared		-0.004		0.000	-0.002
		(0.004)		(0.003)	(0.002)
Education level		-0.044		0.027	-0.009
		(0.115)		(0.099)	(0.077)
Meals per day		0.292 <sup>*</sup>		-0.005	0.144
		(0.171)		(0.111)	(0.108)
Muslim religion		0.129		0.046	0.088
		(0.223)		(0.138)	(0.136)
Mende tribe		-0.052		-0.149	-0.100
		(0.170)		(0.129)	(0.098)
Play whole football match		0.216		-0.010	0.103

		(0.188)		(0.140)	(0.123)
Self-declared skills		0.244		0.480**	0.362
		(0.404)		(0.206)	(0.231)
Scored		-0.163		0.069	-0.047
		(0.239)		(0.177)	(0.153)
Won the football match		0.063		0.143	0.103
		(0.180)		(0.140)	(0.113)
Left footed		0.064		0.189	0.126
		(0.239)		(0.178)	(0.152)
N	162	162	162	162	324
R <sup>2</sup>	0.005	0.088	0.020	0.097	0.117

*Notes:* Ordinary Least Squares regressions. Column 1 reports the univariate marginal effect of exposure to conflict on dictator game donations towards the out-group (see Appendix I for variable definitions). Column 2 adds individual and football game related controls. Column 3 reports the univariate marginal effect of exposure to conflict on dictator game donations towards the in-group. Column 4 adds individual and football game related controls. Column 5 reports the pooled marginal effect of exposure to conflict on dictator game, including individual and football game related controls, a group dummy, and an interaction term. Robust standard errors in parentheses. 162 individual-level clusters in (5). \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



**TABLE 6**

**WILLINGNESS TO COMPETE**

SAMPLE	Out-group	Out-group	In-group	In-group	Pooled
	(1)	(2)	(3)	(4)	(5)
Exposure to conflict	0.485 <sup>**</sup>	0.510 <sup>**</sup>	0.274	0.266	0.500 <sup>**</sup>
	(0.222)	(0.244)	(0.227)	(0.270)	(0.227)
In-group					0.154
					(0.202)
Exposure to conflict × in-group					-0.305
					(0.322)
Age		0.104		-0.228	-0.132
		(0.183)		(0.160)	(0.114)
Age squared		-0.002		0.005	0.003
		(0.004)		(0.004)	(0.003)
Education level		0.171 <sup>*</sup>		0.130	0.132 <sup>**</sup>
		(0.099)		(0.083)	(0.063)
Meals per day		-0.018		-0.137	-0.095
		(0.110)		(0.097)	(0.070)
Muslim religion		0.305 <sup>***</sup>		-0.079	0.038
		(0.118)		(0.150)	(0.104)
Mende tribe		-0.084		0.011	-0.022
		(0.148)		(0.116)	(0.089)
Play whole football match		0.405 <sup>***</sup>		0.191 <sup>*</sup>	0.204 <sup>**</sup>

		(0.136)		(0.111)	(0.085)
Self-declared skills		0.021		-0.222	-0.059
		(0.254)		(0.299)	(0.191)
Scored		-0.267*		-0.125	-0.148
		(0.147)		(0.138)	(0.104)
Won the football match		0.123		-0.075	0.005
		(0.135)		(0.114)	(0.085)
Left footed		-0.178		-0.213*	-0.204**
		(0.140)		(0.121)	(0.091)
N	70	70	92	92	162
R <sup>2</sup>	0.055	0.207	0.011	0.106	0.105

*Notes:* Probit marginal effects. Column 1 reports the univariate marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the out-group (see Appendix I for variable definitions). Column 2 adds individual and football game related controls. Column 3 reports the univariate marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the in-group. Column 4 adds individual and football game related controls. Column 5 reports the pooled marginal effect of exposure to conflict on our experimental measure of willingness to compete, including individual and football game related controls, a group dummy, and an interaction term. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

## **Figure legends**

**Figure 1:** Exposure to conflict, and displacement in our sample over time, combined with SLL-LED attacks events in Kenema District over the same time period.

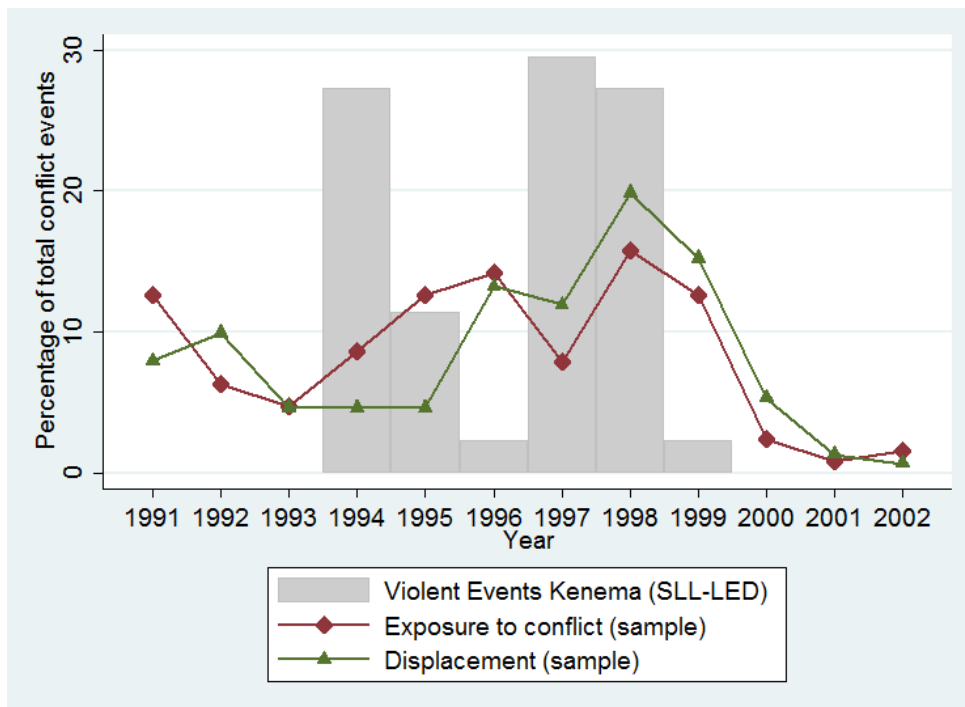
**Figure 2:** A: Distribution of ages in sample; B: Age and conflict exposure

**Figure 3:** A: Out-group competition; B: In-group competition; C: Out-group no-competition;  
D: In-group no-competition

**Figure 4:** A: Foul Card – all; B: Competition – all; C: Competition – out-group only; D:  
Competition – in-group only

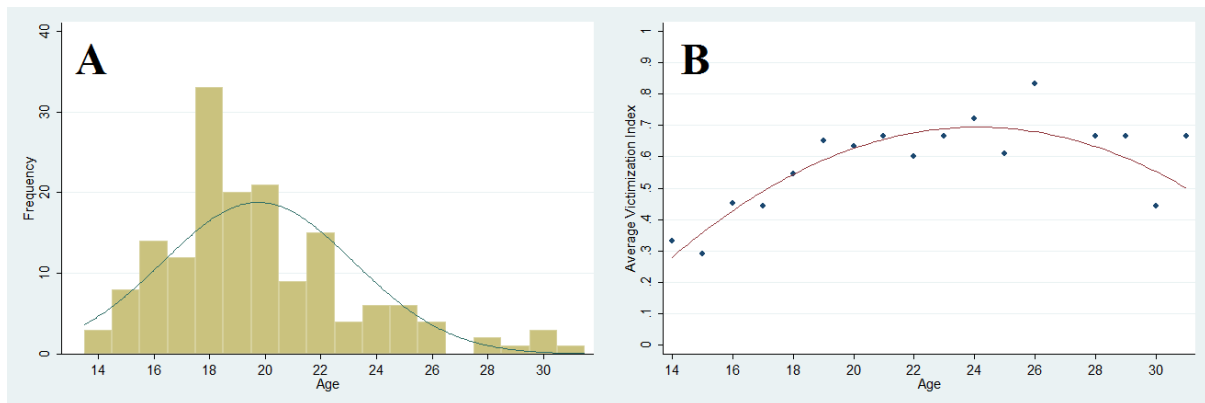
## Figures

**Figure 1:** Violent events in Kenema (sample and SLL-LED data)



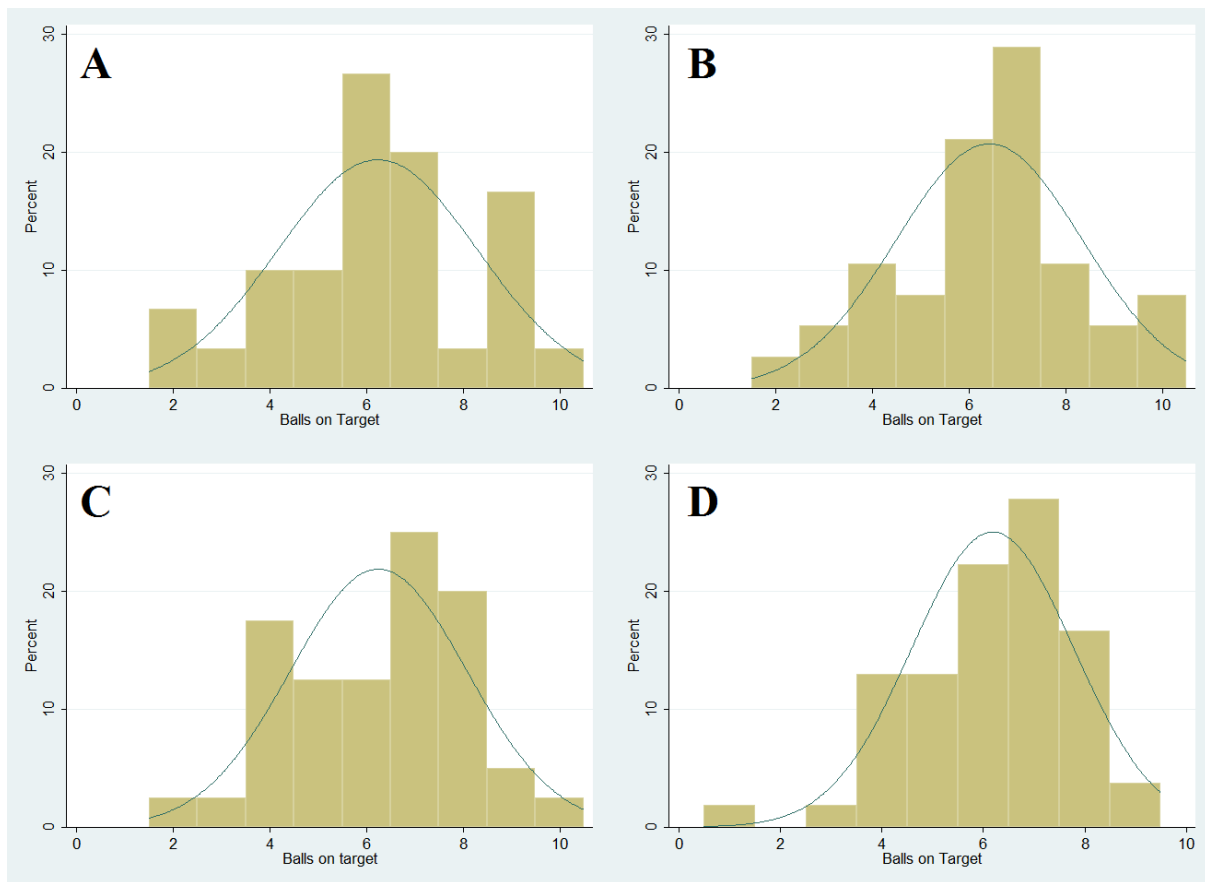
*Notes:* distribution of SLL-LED events in Kenema (De Bruijne 2014), conflict events reported by participants and displacement events reported by participants over the course of the war in Sierra Leone. All data is presented as column totals, so 20% of all displacement events took place in 1998.

**Figure 2:** Age in sample and exposure to conflict



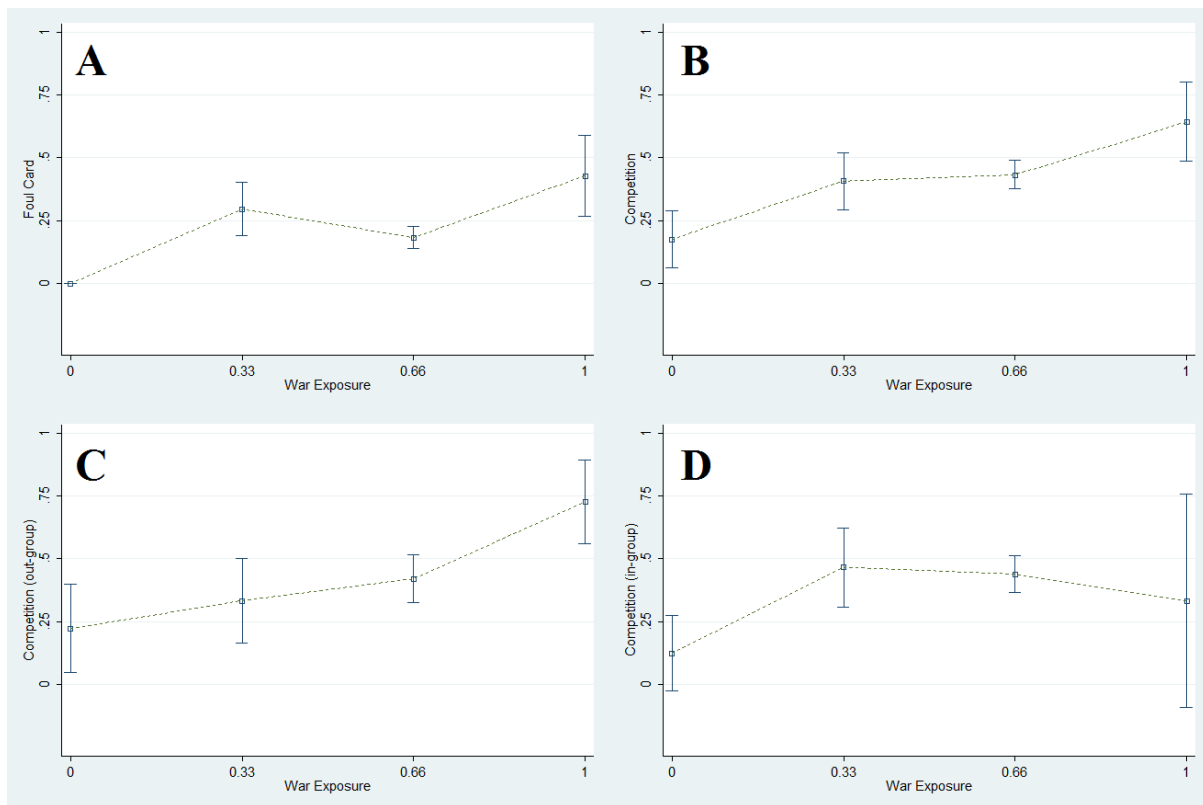
*Notes:* panel A shows the distribution of age in our sample. Panel B shows the relationship between age and victimization index.

**Figure 3:** Balls hit in the effort game



*Notes:* distribution of number of balls hit for four subsamples: Panel A: Out-group, opted for tournament; Panel B: In-group, opted for tournament; Panel C: Out-group, did not opt for tournament; Panel D: In-group, did not opt for tournament

**Figure 4:** Foul cards, competitiveness and exposure to violence



*Notes:* Competition and war expose: Panel A: Foul Card and war exposure for the entire sample; Panel B: willingness to compete and war exposure, entire sample; Panel C: willingness to compete and war exposure, out-group only; Panel D: willingness to compete and war exposure, in-group only

## **Appendix I: Data definitions**

*Exposure to Conflict.* An individual victimization index resulting from the average response to these violence related questions: “during war time...” “did you ever witness combat, shooting and explosions?”, “did you ever see a person injured because of war-related violence?” and “did you personally suffer from physical injury because of war-related violence?”.

*Parents Fought in War.* Individual level dummy variable taking value of unity if any one of parents of respondent  $i$  have been active belligerents during the civil conflict, regardless of combatting sides.

*Age.* Age of respondent  $i$  as measured in years, rounded down to the age at the last birthday.

*Education Level.* Individual level variable taking value 1 if the respondent was currently in primary school, 2 if the respondent was currently in junior secondary school, 3 if the respondent was currently in senior secondary school, 4 if respondent was enrolled or had completed tertiary education.

*Mende (Fula, Mandingo, Temne) Tribe.* Individual level dummy taking value of unity if the  $i$ -th respondent self-declared to be ethnically Mende (Fula, Mandingo, Temne), zero if else.

*Muslim Religion.* Individual level dummy taking value of unity if the  $i$ -th respondent self-declared to be Muslim by religion, zero if else.

*Meals per Day.* Household level index representing the self-reported full meal consumption patterns of respondent  $i$ 's household.

*Always in Kenema.* Individual level dummy variable taking value of unity if the  $i$ -th respondent never left Kenema district over the course of the war.

*Left Footed.* Individual level dummy variable taking value of unity if the  $i$ -th respondent self-



declared to be predominantly left-footed, zero if else.

*Played Whole Game.* Individual level dummy variable taking value of unity if the  $i$ -th respondent had responded positively to the question “*did you play the whole football game?*”, zero if else. The answer was crosschecked with the control questions “*how many minutes did you play in this game?*” and “*How many minutes did the game last in total?*”; the dummy would take a value of zero if the ratio of their responses differed from unity.

*Self-declared Skills.* Individual level index constructed as the answer to the question “*Compared to your team mates, how skillful would you say you are?*”; on a scale of 1 (least skilled) to 5 (most skilled), standardized between 0 and 1.

*Scored.* Individual level dummy variable taking value of unity if the  $i$ -th respondent had scored at least one goal during the football game, zero if else.

*Won the Football Game.* Team level dummy variable taking value of 1 if the team of respondent  $i$  has won the football game, zero if else. Out of 14 games 1 ended up in a draw and the penalty kicks were postponed to the next day due to insufficient light.

*Foul Card in Football Game.* Individual level dummy variable taking value of unity if the  $i$ -th respondent had received at least one yellow/red card up to that stage of the tournament.

*Risk Propensity.* Individual level variable based on the respondents’ six choices in the risk game, spanning from zero (i.e. never gamble) to one (i.e. always gamble), and allowing for indifference by taking the last switch point as significant. The index is standardized.

*Sharing in Dictator Game.* The value donated in the relevant dictator game (standardized).

*Expected Relative Performance.* Individual level index constructed as the answer to the question “*Compared to the rest of today’s players, how well do you think you will perform in this game?*”; on a scale of 0 (the worst) to 5 (the best), standardized between 0 and 1.

*Balls on Target.* The number of balls shot by the  $i$ -th subject in the effort game, successfully

entering the basket (out of 10).

## Appendix II: Sensitivity Analysis

<b>TABLE A1</b>				
WILLINGNESS TO COMPETE (out-group)				
Age Fixed Effects	1-year	2-year	3-year	4-year
	age-group f.e.	age-group f.e.	age-group f.e.	age-group f.e.
	(1)	(2)	(3)	(4)
Exposure to conflict	0.693 <sup>*</sup>	0.520 <sup>**</sup>	0.524 <sup>**</sup>	0.480 <sup>**</sup>
	(0.367)	(0.239)	(0.230)	(0.239)
Education level	0.383 <sup>**</sup>	0.250 <sup>**</sup>	0.223 <sup>**</sup>	0.171 <sup>*</sup>
	(0.153)	(0.0991)	(0.0916)	(0.0964)
Meals per day	-0.0176	0.0397	0.0179	0.000450
	(0.156)	(0.110)	(0.115)	(0.112)
Muslim religion	0.582 <sup>***</sup>	0.408 <sup>***</sup>	0.325 <sup>***</sup>	0.300 <sup>**</sup>
	(0.108)	(0.0929)	(0.116)	(0.119)
Mende tribe	0.00397	-0.0666	-0.121	-0.0658
	(0.196)	(0.149)	(0.143)	(0.147)
Play whole football match	0.642 <sup>***</sup>	0.445 <sup>***</sup>	0.494 <sup>***</sup>	0.402 <sup>***</sup>
	(0.166)	(0.138)	(0.132)	(0.135)
Self-declared skills	-0.285	-0.00472	0.0568	0.0849
	(0.316)	(0.257)	(0.272)	(0.255)
Scored	-0.502 <sup>***</sup>	-0.302 <sup>**</sup>	-0.370 <sup>***</sup>	-0.277 <sup>*</sup>

	(0.102)	(0.123)	(0.102)	(0.145)
Won the football match	0.307	0.167	0.0849	0.119
	(0.188)	(0.142)	(0.139)	(0.136)
Left footed	-0.113	-0.0498	-0.125	-0.181
	(0.219)	(0.147)	(0.158)	(0.143)
N	56	65	69	70
Pseudo-R <sup>2</sup>	0.412	0.309	0.256	0.207

*Notes:* Probit marginal effects. Column 1 reports the marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the out-group (see Appendix I for variable definitions), including individual and football game related controls, as well as 1-year age fixed effects. Column 2 replaces 1-year age fixed effects with 2-year age fixed effects. Column 3 replaces 2-year age fixed effects with 3-year age fixed effects. Column 4 replaces 3-year age fixed effects with 4-year age fixed effects. 14 observations dropped in (1), 5 observations dropped in (2) and 1 observation dropped in (3), due to quasi-separation issues related to small group fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A2**

**WILLINGNESS TO COMPETE**

SAMPLE	Out-group			Pooled
	Always in Kenema	Migrated	All	
	(1)	(2)	(3)	(4)
Exposure to conflict	0.755 (0.497)	0.622 (0.430)	0.553** (0.282)	0.621** (0.259)
Always in Kenema			-0.350 (0.325)	-0.055 (0.207)
Exposure to conflict × always in Kenema			0.214 (0.506)	-0.217 (0.327)
In-group				0.139 (0.197)
Exposure to conflict × in-group				-0.278 (0.314)
Age	-0.263 (0.303)	1.217** (0.491)	-0.003 (0.210)	-0.135 (0.119)
Age squared	0.007 (0.008)	-0.028** (0.011)	0.001 (0.005)	0.003 (0.003)
Education level	0.181 (0.116)	0.065 (0.185)	0.167 (0.103)	0.138** (0.063)
Meals per day	-0.083	0.051	-0.054	-0.073

	(0.135)	(0.243)	(0.126)	(0.073)
Muslim religion	0.276**	-0.075	0.286**	0.011
	(0.120)	(0.248)	(0.122)	(0.103)
Mende tribe	-0.179	-0.109	-0.157	-0.032
	(0.226)	(0.271)	(0.153)	(0.090)
Play whole football match	0.212	0.602***	0.395***	0.220**
	(0.173)	(0.191)	(0.143)	(0.086)
Self-declared skills	-0.084	-0.004	-0.044	-0.069
	(0.347)	(0.406)	(0.263)	(0.193)
Scored	-0.134	-0.409	-0.277*	-0.136
	(0.183)	(0.454)	(0.155)	(0.110)
Won the football match	0.028	0.391*	0.161	0.014
	(0.169)	(0.222)	(0.142)	(0.086)
Left footed	-0.250**	-0.159	-0.184	-0.219**
	(0.112)	(0.400)	(0.142)	(0.087)
N	36	34	70	162
R <sup>2</sup>	0.304	0.329	0.234	0.128

*Notes:* Probit marginal effects. Column 1 reports the marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the out-group (see Appendix I for variable definitions), including individual and football game related controls, for the subsample of respondents who were born and had never moved out of Kenema district. Column 2 presents the outcomes for the remaining subsample, born elsewhere or temporarily out-migrated from Kenema district during the conflict. Column 3 reports the marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the

out-group, including individual and football game related controls, and a variable capturing the absence of temporary out-migration. Column 4 presents the outcome for the pooled sample (in-group and out-group). Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

**TABLE A3****WILLINGNESS TO COMPETE (out-group)**

	Exposure + displacement	Football match fixed effects	Team fixed effects	Team clustered s.e.
	(1)	(2)	(3)	(4)
Exposure to conflict	0.709** (0.292)	0.510** (0.239)	0.628** (0.281)	0.574** (0.255)
Age	0.095 (0.185)	0.104 (0.187)	0.0605 (0.216)	0.156 (0.183)
Age squared	-0.001 (0.004)	-0.002 (0.004)	-0.000722 (0.00496)	-0.003 (0.004)
Education level	0.161 (0.102)	0.171** (0.077)	0.159 (0.101)	0.139 (0.098)
Meals per day	-0.039 (0.112)	-0.018 (0.107)	-0.0189 (0.161)	0.046 (0.120)
Muslim religion	0.304*** (0.117)	0.305** (0.148)	0.332** (0.156)	0.359*** (0.131)
Mende tribe	-0.125 (0.154)	-0.084 (0.150)	-0.185 (0.201)	-0.064 (0.176)
Play whole football match	0.399*** (0.137)	0.405*** (0.074)	0.447** (0.174)	0.342** (0.153)
Self-declared skills	0.046 (0.260)	0.021 (0.259)	-0.152 (0.292)	-0.012 (0.259)

Scored	-0.288** (0.141)	-0.267** (0.127)	-0.112 (0.244)	-0.189 (0.185)
Won the football match	0.161 (0.143)	0.123 (0.108)		0.062 (0.152)
Left footed	-0.201 (0.136)	-0.178** (0.078)	-0.228* (0.136)	-0.186 (0.149)
N	70	70	63	70
Pseudo-R <sup>2</sup>	0.218	0.207	0.253	0.258

*Notes:* Probit marginal effects. Column 1 reports the marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the out-group (see Appendix I for variable definitions), including individual and football game related controls, were the exposure to conflict includes a dummy for forced displacement as additional measure of victimization. Column 2 includes football match fixed effects. Column 3 includes team fixed effects. Column 4 clusters standard errors at the team level. 7 Observations dropped in (3) due to quasi-separation issues related to small group fixed effects. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .



**TABLE A4****WILLINGNESS TO COMPETE (out-group)**

	Risk preferences	Expected relative performance	Actual performance	Risk, expected, and actual performance
	(1)	(2)	(3)	(4)
Exposure to conflict	0.516** (0.243)	0.535** (0.250)	0.470* (0.253)	0.495* (0.256)
Risk preferences	0.0262 (0.0722)			0.0179 (0.0714)
Expected relative performance		0.489 (0.580)		0.467 (0.591)
Balls on target			-0.0230 (0.0386)	-0.0233 (0.0396)
Age	0.0992 (0.185)	0.0872 (0.186)	0.0889 (0.183)	0.0699 (0.188)
Age squared	-0.00145 (0.00420)	-0.00126 (0.00421)	-0.00117 (0.00417)	-0.000842 (0.00427)
Education level	0.172* (0.0988)	0.159 (0.101)	0.180* (0.101)	0.169 (0.104)
Meals per day	-0.0191 (0.111)	-0.0299 (0.109)	-0.0198 (0.110)	-0.0318 (0.111)
Muslim religion	0.306** (0.119)	0.311*** (0.118)	0.315*** (0.117)	0.320*** (0.117)
Mende tribe	-0.0966 (0.147)	-0.0740 (0.152)	-0.0828 (0.149)	-0.0821 (0.150)
Play whole match	0.403*** (0.138)	0.373** (0.146)	0.429*** (0.140)	0.397*** (0.151)

Self-declared skills	-0.268*	-0.253	-0.288**	-0.277*
	(0.148)	(0.155)	(0.141)	(0.146)
Scored	0.0257	-0.0621	0.0430	-0.0318
	(0.256)	(0.275)	(0.261)	(0.283)
Won the football match	0.131	0.114	0.146	0.143
	(0.137)	(0.134)	(0.141)	(0.143)
Left footed	-0.187	-0.156	-0.212	-0.199
	(0.140)	(0.150)	(0.143)	(0.150)
N	70	70	70	70
Pseudo-R <sup>2</sup>	0.209	0.215	0.211	0.219

*Notes:* Probit marginal effects. Column 1 reports the marginal effect of exposure to conflict on our experimental measure of willingness to compete towards the out-group (see Appendix I for variable definitions), including individual and football game related controls, and our experimental measure of risk preferences. Column 2 includes expected relative performance, standardized between 0 (the worst) and 1 (the best). Column 3 includes actual performance in terms of the number of balls on target (standardized). Column 4 includes all three measures risk preferences, performance expectation, and skills. Robust standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .