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Children at risk of being recruited for armed conflict, 1990–2020

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Abstract

Although armed conflicts and crises affect people of all ages, children are particularly susceptible to the effects of war. One significant consequence of armed conflict that is especially critical for children's well-being, is when the belligerents use tactics specifically focused on harming children, including child soldier recruitment. Despite the increased attention of policy-makers, we still lack systematic knowledge of how many children are directly and indirectly at risk of being recruited by state and non-state actors. In overcoming this gap, we have collected data on the use of children by state and non-state actors from 2010 onwards. Moreover, we estimate the number of children at risk of recruitment. The results of our mapping and estimation sketch a dark picture. According to our estimates, in 2020, approximately 337 million children (or 14%, or more than one in eight of all children globally) were living in a conflict zone with reported child soldier recruitment—that is less than 50 km from ongoing conflict, which involved at least one actor who has been reported to recruit children. We close the paper by taking stock of the current knowledge on the root causes of child soldiering, and we discuss some policy implications.

KEYWORDS

child soldier, children at risk, recruitment, state and nonstate actors

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INTRODUCTION

Although armed conflicts and crises affect people of all ages, children are particularly susceptible to the effects of war. The issue of war's impact on children has been high on the international agenda for the past decades. One significant consequence of armed conflict that is especially critical for children's well-being, is when the belligerents use tactics specifically focused on harming children, including child soldier recruitment. Children in many parts of the world are being recruited by armed groups, assuming both ancillary and combat roles in conflict.

In 2005, as a reaction to this heinous practice, the United Nations Security Council established a working group on Children and Armed Conflict to address issues related to children in armed conflict situations. A Monitoring and Reporting Mechanism was introduced to systematically monitor, document and report on six types of grave violations committed against children in situations of concern around the world. Recruitment or use of children as soldiers features as one of these grave violations, alongside killing and maiming of children; sexual violence against children, abduction of children; attacks against schools and hospitals; and denial of humanitarian access for children.

According to the 2020 report on Impact of Armed Conflict on Children, 8521 children were recruited as child soldiers in 2020 (UNSG, 2021). Although these numbers are extremely valuable, the data collected by the United Nations (UN) suffer from some significant problems. Among others, the UN does not analyse the situation in all conflict-affected countries nor do they provide always very specific information. Hence, it is not possible to deduce from these data where within countries child soldier recruitment is happening. Moreover, estimating the exact number of child soldiers recruited even at the country level is far from easy, and we have reason to believe that the actual figures are higher than those reported by the UN. It is not our aim to estimate the actual number of all children who are recruited as child soldiers globally. Rather, we try to roughly estimate the number of children globally who are *at risk* of such recruitment. More specifically, we estimate the global number of children at risk of being recruited by (state and non-state) armed actors as the number of children who reside in an area where one or more conflict actors are active that are known to recruit minors in a given year. In doing so, we aim to sketch a general picture of the global trends of child soldier recruitment as well as the differences across continents and countries. It is important to note that we assume that *all* minors living in these areas have a heightened risk of being recruited as child soldiers, compared with children who live further away from these areas.[1]

For our estimation, we primarily rely on data collected by Haer and Böhmelt (2016a, 2016b, 2018), the Dallaire Institute for Children, Peace and Security (data version 13 September 2021), and new data collected by the University of Leiden and Peace Research Institute Oslo (PRIO). According to our estimates, in 2020, approximately 337 million children (or more than 1 in 8 of all children globally) were living in a conflict area with reported child soldier recruitment—that is less than 50 km from ongoing conflict, which involved at least one actor is active who has been known to recruit children. We show significant variation across countries, actors and over time, with the highest recorded number of children at risk recorded in 2020.

The article proceeds as follows. We first provide some core definitions, including armed conflict, and explain how we operationalize and measure child soldier recruitment. Thereafter, we explain the process of linking this information to geographical population data, allowing us to estimate the risk of child soldier recruitment. After describing the results, we discuss some drivers of child soldier recruitment. We conclude with some policy recommendations.

DEFINING ARMED CONFLICT AND CONFLICT AREA

As for *armed conflict*, we rely on the Uppsala Conflict Data Program (UCDP)'s definition, that is, when armed force is used by an organized actor against another organized actor, or against civilians, resulting in at least 25 battle-related deaths in one calendar year (Croicu & Sundberg, 2017). UCDP's Georeferenced Event Dataset (hereafter, UCDP GED; Sundberg & Melander, 2013) distinguishes between three types of organized violence: (i) *State-based conflict* takes place between two states (inter-state conflict), or between one state and one or more rebel groups (civil conflict). Examples of inter-state conflicts include the armed conflict between Russia and Ukraine, and between India and Pakistan in the Kashmir region. Examples of the more common intra-state conflicts, or 'civil wars', are the conflicts between the Nigerian state and Boko Haram and the ongoing civil war in Syria between the government and multiple rebel groups. (ii) *Non-state conflict* is fought between two organized, armed actors, of which neither is the government of a state. These are typically pastoral conflicts, or regional, ethnic or religious identity conflicts. One example is the conflict between the Kalenjin and Kikuyu ethnic groups in Kenya. Another example is the criminal cartels fighting each other in Mexico. Finally, (iii) *one-sided violence* is perpetrated by an organized armed group, either a state's military forces or a rebel group, against civilians (this includes both genocide and terrorism).

UCDP GED records the single conflict events of lethal violence occurring at a given time and place. We use these events to create what we refer to as conflict areas. To do so, for each event we fit a circle (buffer) with a radius of 50 km around it, which allows us to define areas within which people live at a distance of 50 km or less from where the fighting actually takes place in a given year.

MEASURE THE RISK OF CHILD SOLDIER RECRUITMENT

Estimating the exact number of child soldiers is extremely difficult, if possible at all. Rather, we calculate the number of children who are at risk of being recruited as child soldiers. To estimate this risk, we need spatiotemporal information about whom is recruiting child soldiers and need to link this information with age-specific subnational population data.

Collecting information on child soldier recruitment

For the coding of child soldier recruitment, we largely relied on the efforts of the Dallaire Institute for Children, Peace and Security (data version September 13; 2021). Building on Haer and Böhmelt's data set (2016a, 2016b, 2018), they coded the use of child soldiers by nonstate actors during the period 2010 to 2019. For this report, we extended the coding of the Dallaire Institute to the year 2020 and have also coded the use of child soldiers by government actors for the years 2010–2020 (Save the Children, 2021).

We coded the recruitment of child soldiers for a range of different types of non-state and state actors. The actors that we have included are groups that are mentioned in the UCDP GED (Sundberg & Melander, 2013) data set. These groups vary significantly. Some are well known armed groups (e.g. Al Shabaab and the Lord's Resistance Army), less known because they were only active for a couple of months (e.g. South Sudan Defence Movement/Army), splinter groups

(e.g. Sudan People's Liberation Movement/Army-North Malik Agar-faction), gangs (e.g. Los Zetas in Mexico), violent cults (e.g. Greenlanders in Nigeria), ethnic groups that were engaged in communal violence (e.g. the Bahemba in Congo) and terrorist groups (e.g. Al-Qaida).

For coding the recruitment of child soldiers by these diverse set of actors, we used the Paris Principles' (UNICEF, 2007) definition adopted in 2007. These principles lay out detailed guidelines for protecting children from recruitment and for aiding those already involved with armed groups or forces. They complement the political and legal mechanisms already in place at the UN Security Council, the International Criminal Court and other bodies trying to protect children from exploitation and violence. In the last 10 years, 105 states have endorsed these principles and guidelines. In the Paris Principles, a child soldier is defined as:

> Any person below 18 years of age who is, or who has been, recruited or used by an armed force or armed group in any capacity, including but not limited to children, boys and girls, used as fighters, cooks, porters, messengers, spies or for sexual purposes.

To find information on the use and recruitment of child soldier by state and non-state actors, we primarily relied on the internet to identify—primarily English—sources (academic books, newspapers, reports of national and international [non-governmental and intergovernmental] organizations, reports of governments on human rights situations, etc.) to determine whether a particular actor recruited or used these children in a particular year. We used, for instance, the yearly human rights country reports of the United States Department of State, academic articles of experts, reports of Human Rights Watch, reports published by the United Nations, and newspaper articles. In searching for information, we used several standard search terms such as the following: 'child soldier', 'children', 'young', 'abduction', 'kidnapping', 'boys', 'girls', 'adolescents' and 'recruit'. These terms were used in combination with the name and/or abbreviation of the armed group and the name of the country. We also emphasized to our coders to be creative with the use of search terms. For instance, if they found some information suggesting that children were used in a particular attack they searched for the name of this village or attack to confirm the use of children. General descriptions of the recruitment of children by an actor or within the conflict were disregarded since they do not provide any detailed information on the specific timing of such a recruitment event or the specific actor who recruited the children. Whenever sources were found, individual coders made the decision to code whether a group used or recruited children or whether the evidence was not yet convincing enough. These decisions were validated by at least one other coder. In case no sources were found, the group was coded as having no child soldiers.

Coding the use of child soldiers by government actors required several additional considerations. First, most governments around the world have military law in which the conscription age is specified. However, some governments conscript only adults although their national law allows them to recruit children, while other governments recruit children although their law specifies that they are only allowed to recruit people 18 years of age or older. To capture these informal applications, we only coded the use of children by governmental forces if we found information that proved that they recruited people below the age of 18 years. As such, our coding of governmental actors did not solely rely on national laws. Second, in certain conflicts nonstate actors are hired by governments. During our coding process, these so-called paramilitary organizations were only considered to be part of the government when clear evidence was available that show that these organizations were financed or fighting on behalf of the government.

It is important to consider certain issues that might have occurred during our coding process. First, there might have been a problem of selection; only particular incidents of child soldier recruitment show up in newspapers and policy reports. We have, for instance, much more detailed information about incidences of child recruitment that occurred closer to a town or closer to the location where NGOs and IGOs are present than about recruitment occurring in remote rural areas. Second, small-scale recruitment events may not be sensational enough to be reported, thus never making it into the plethora of source material that we have used in coding. There is no clear solution to these problems. Our coding of child soldier recruitment by armed groups may hence underestimate the occurrence of this horrendous phenomenon.

Linking child soldier data to conflict and population data

We linked our child soldier data to specific geo-referenced conflict events. As mentioned above, the UCDP GED data includes conflict events related to state-based conflicts, non-state conflicts and one-sided violence. Each conflict event with at least one fatality, is coded as involving child soldier recruitment if at least one conflict actor engaged in the event (be it a state and/or a non-state actor) is reported to have recruited child soldiers in that particular year.[2] Hence, not all conflict events are so-called recruitment events.

To estimate the number of children at risk of recruitment, we link our data to subnational population estimates from Center for International Earth Science Information Network's (CIESIN) 'Gridded Population of the world[3]' and age-composition data from the UN Population Prospects.[4] More specifically, we overlay a map of geographical coordinates of individual conflict events with child soldier recruitment with a map of subnational population estimates. Although we have subnational data on population density, age-distribution data only exists at the national level, with a few exceptions.[5] Consequently, we make the important assumption that the age-distribution within a country is the same in all locations. Important to note, however, is that we can then also not say anything about potential differences between rural and urban regions and how this difference might affect the risk of recruitment. Thereafter, we fit buffers of 50 km radius around each conflict event with child soldier recruitment and count the under 18 population size in this conflict area. The rationale for this is that 50 km is arguably a reasonable distance within which conflict events could be expected to impact people's daily lives. We here follow the convention in the literature that examines the local impacts of conflict (see e.g. Bendavid et al., 2021; Kotsadam & Østby, 2019; Østby et al., 2018, 2021).[6]

Based on this exercise, we define children at risk of child soldier recruitment as follows:

> Children (under the age of 18) who live within 50 km of one or more conflict events with at least one fatality where at least one active conflict actor reported to have recruited child soldiers in a year.

THE RISK OF CHILD SOLDIER RECRUITMENT

Below, we provide descriptive statistics for the risk of child soldier recruitment across time and space. All estimations—and time trends in particular—should be interpreted with extreme caution as they could be influenced by data quality and availability. Notably, we are likely to have better data on child soldier recruitment for later years.

In 2020, 60 countries experienced conflict. In 39 of these conflicts, children were recruited as soldiers either by the government, non-state actors or both (Figure 1). In the period 1990–2008, the share of conflict countries recruiting child soldiers varied between 40% and 50%. However, after 2008 we see an increase in the share of countries in which child recruitment occurred. This share has varied between 55% and 65% over the years, with a peak year in 2017 when child soldier recruitment happened in about two-thirds of all conflict-affected countries.

HOW MANY CHILDREN ARE AT RISK OF BEING RECRUITED?

Over time, as shown in Figure 2, the number of children at risk of child soldier recruitment has increased significantly, from 99 million in 1990 to 337 million in 2020 (grey line). This corresponds to the general increase of children living in proximity to violent conflict (orange line). We see a sharp increase in number of children at risk of recruitment from 217 million in 2018 to 337 million 2020. This is mainly caused by two populous countries: India and Nigeria. Together, they constitute about 34% of the children at risk of becoming recruited in 2020. Also, Africa experienced a large increase in this period. The blue line indicates an increase in the overall child population in the world from 2.05 billion in 1990 to 2.34 billion in 2020. This cannot alone explain the more than tripling we see in child soldier recruitment in this period.

The stacked graph in Figure 3, shows the total number of children living in conflict areas. The orange area indicates how many of them are at risk of recruitment by state and non-state actors. In 2020, approximately 452 million children were living in conflict areas. Out of these conflict-affected children, approximately 337 million children (75%) were at risk of recruitment.

The share of conflict-affected children who are also at risk of becoming child soldiers has fluctuated more—between the lowest share (35%) in 1992 to the highest share (79%) in 2010. After the mid-1990s the share has mostly varied between 50% and 65%. However, we see that after 2009 it increases slightly.

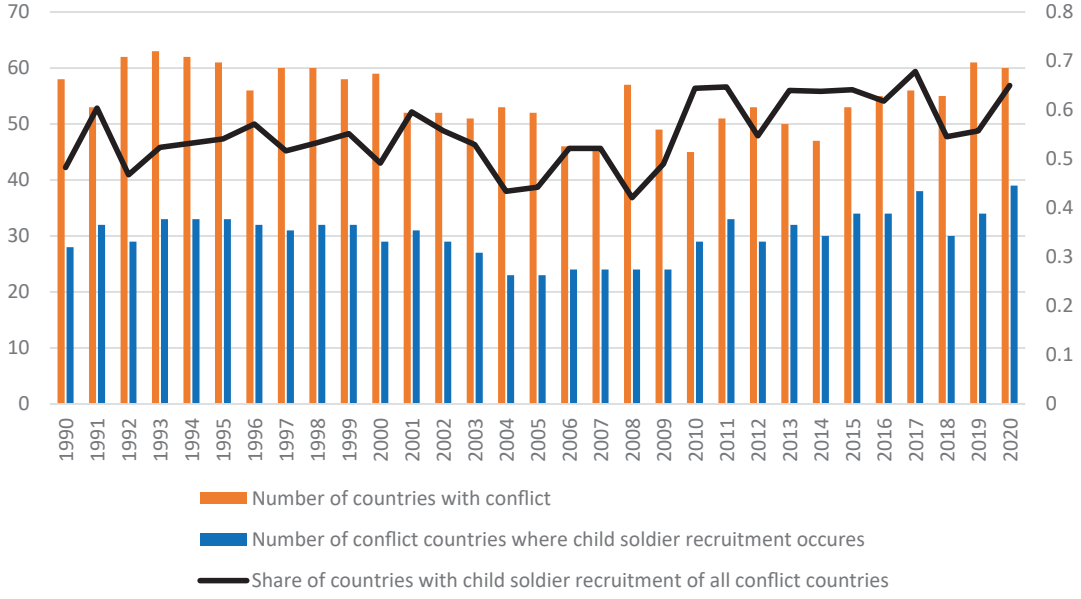

FIGURE 1 Number of countries with conflict and with child soldier recruitment, 1990–2020.

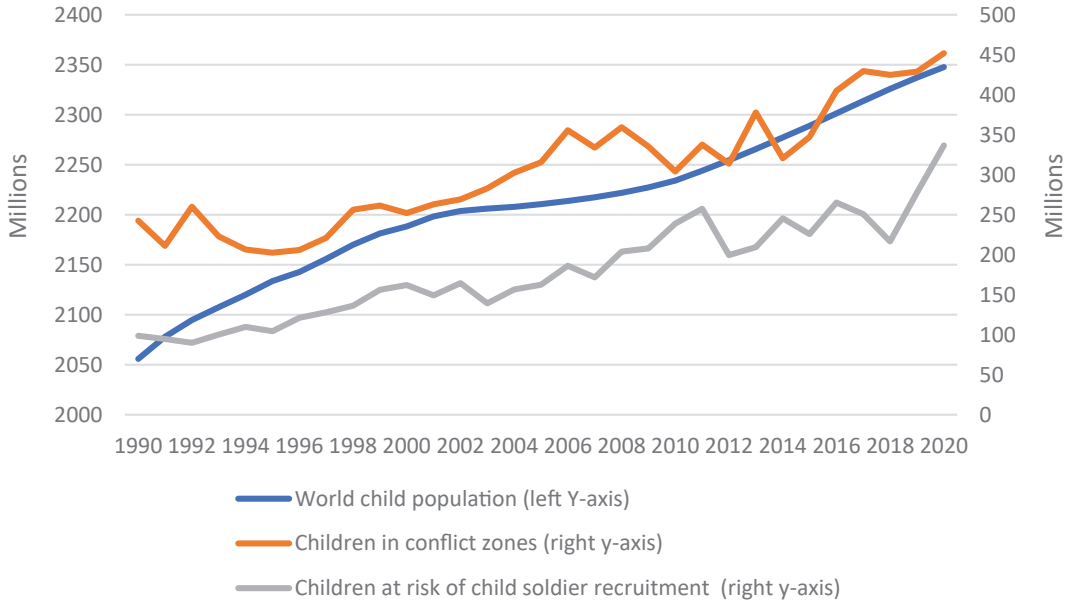

FIGURE 2 Children at risk of child soldier recruitment, 1990–2020.

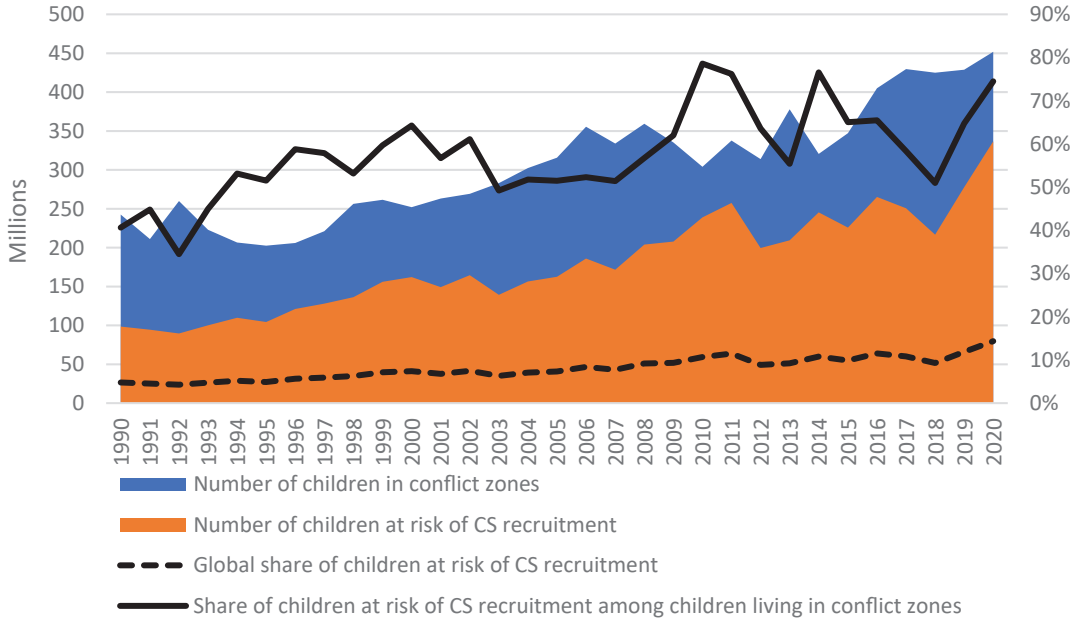

FIGURE 3 Children at risk of conflict and child soldier recruitment, 1990–2020.

The dotted line in Figure 3 indicates that the share of children at risk of being recruited of the total number of children in the world has steadily increased over the past 30 years. In 1990 less than 5% of the global child population where at risk, in 2020 this had increased to 14%, that is, more than one in eight children, were living in an area where there have been reports of child soldier recruitment by one or more of the conflict-actors. This is the highest share recorded so far.

WHERE ARE CHILDREN AT RISK OF BEING RECRUITED?

The map in Figure 4 highlights all the conflict areas in 2020. The red colour shows conflict areas where children were at risk of recruitment, and the blue colour denotes conflict areas where we could not find any reports of child soldier recruitment by any conflict actor. Many countries experienced conflict events both with and without child soldier recruitment. A few conflict-ridden countries had no reported child soldier recruitment, such as Azerbaijan, Burundi and Eritrea.

Figure 5 shows the number of children at risk of recruitment by world region, indicated by the blue colour. The red colour refers to the number of children living in conflict areas but with no reports of child soldier recruitment by the conflict actors, whereas the green colour represents the percentage of children in peaceful areas in both conflict and non-conflict countries. Asia is the world region with the highest number of children at risk of child soldier recruitment (164 million), followed by Africa (118 million) and the Middle East (29 million).

Only looking at absolute numbers of children living in areas of recruitment does not capture the relative risk for these children being recruited. For this purpose, Figure 6 shifts the focus on the share of the child population at risk of recruitment (blue) by world region. This changes the story. The relative risk of being recruited as a child soldier is highest for children living in the Middle East followed by Africa, Asia, Europe, and the Americas. In the Middle East, child soldier recruitment occurs in most conflict areas, that is, almost all children (95%) that are exposed to conflict are also at risk of being recruited as child soldiers. In Asian conflicts, child soldier recruitment is quite widespread as well, with approximately 90% of conflict-affected children being at risk of recruitment, or approximately 13% of the total child population in the region. In Africa, approximately two-thirds (65%) of the conflict-affected child population were at risk of recruitment. This corresponds to 19% of the entire child population in Africa, or more than one in six children.

Turning to time trends, Figure 7 shows that Asia has the highest absolute number of children at risk of being recruited by armed actors, with a peak in the late 2000, and a current increase over the past 2 years. This increase is mainly driven by populous countries, like India and Pakistan. Africa has seen a major increase in the number of children at risk since 2013. This can be partly explained by the increase of non-state conflicts during this period, where the use of children as soldier is widespread.

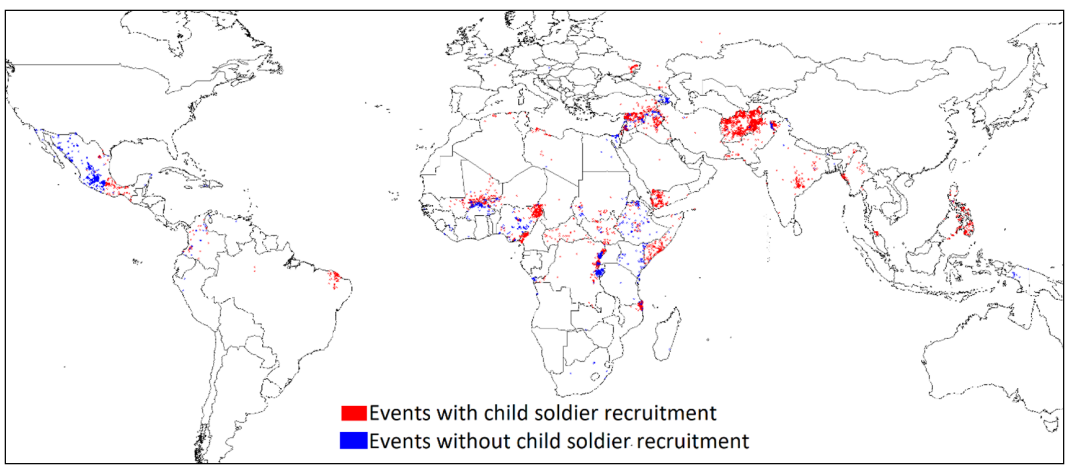

FIGURE 4 Conflict areas with and without child soldier recruitment, 2020.

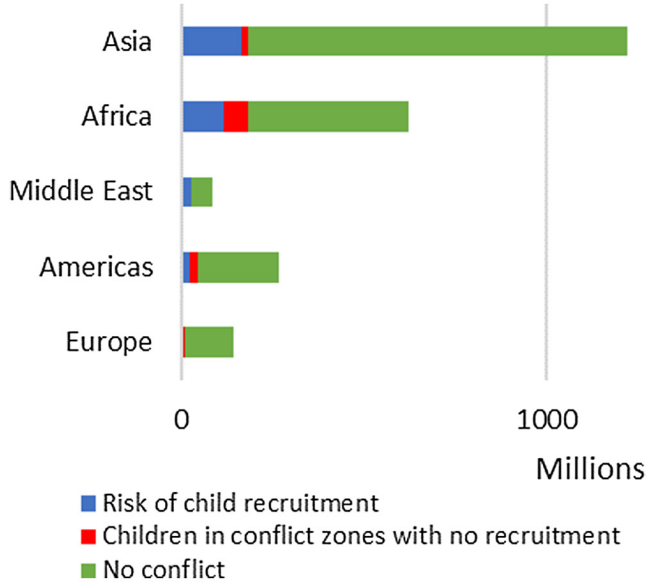

FIGURE 5 Total number of children exposed to conflict and child soldier recruitment per world region.

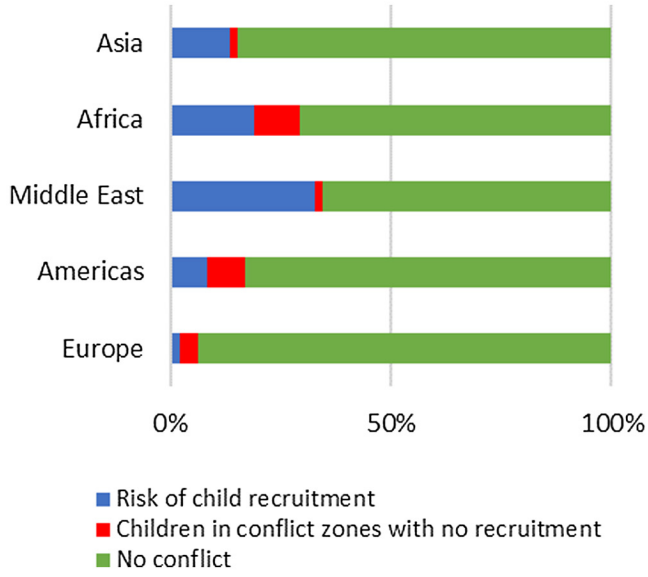

FIGURE 6 Share of children (%) exposed to conflict and child soldier recruitment per world region.

Figure 8 shows the share of children at risk of recruitment relative to the total child population by world region. In most regions the share is relatively stable, and rarely passes more than 15%. However, after 2010 there is a dramatic increase in the Middle East, with an all-time high in 2017 with 41% of the children in the region at risk of child soldier recruitment. This is largely explained by the Syrian war and the expansion of Islamic State. We also see a worrying trend in Africa with an increase after 2013, culminating in the all-time high estimate of 19% of all African children being at risk of child soldier recruitment in 2020.

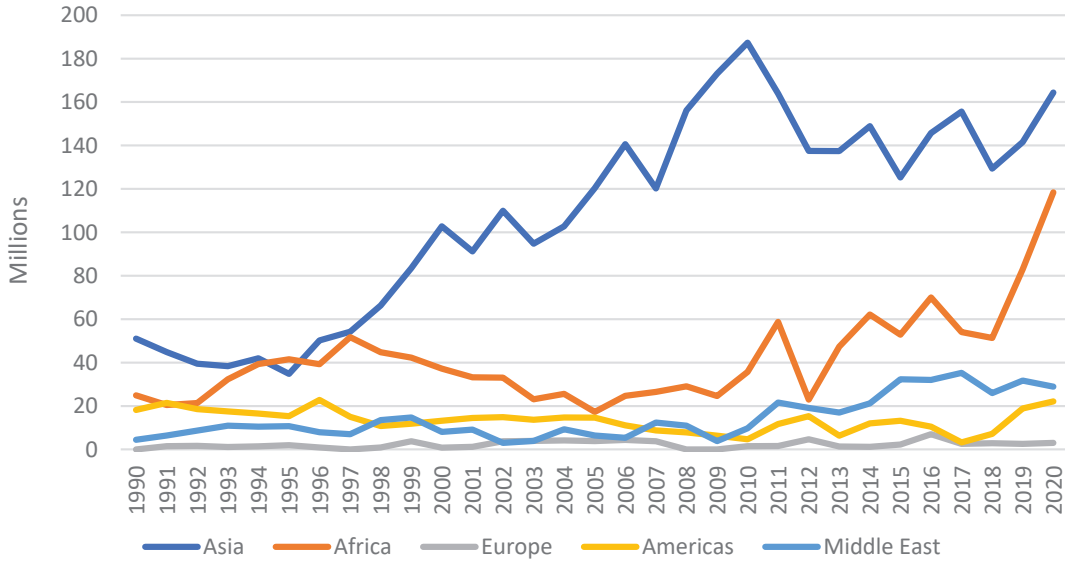

FIGURE 7 Number of children at risk of child soldier recruitment by region, 1990–2020.

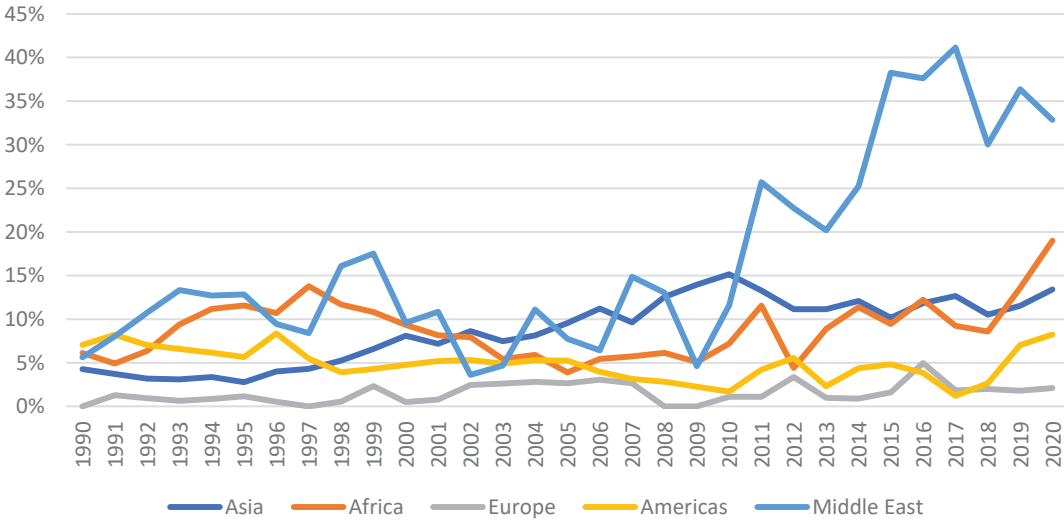

FIGURE 8 Share of children at risk of child soldier recruitment of total child population, by region 1990–2020.

THE WORST COUNTRIES

Figure 9 shows the 10 countries with the highest number of children at risk of child soldier recruitment in 2020 and compares them with the corresponding numbers for 2018 and 2019. India is the country with the highest total number of children living in conflict areas with armed actors recruiting children in all 3 years. This is not surprising, due to the large population size of the country. The sharp increase in 2020 can be explained by an increase of one-sided conflict events in large densely populated cities in 2020, thus affecting a high number of children. Nigeria is

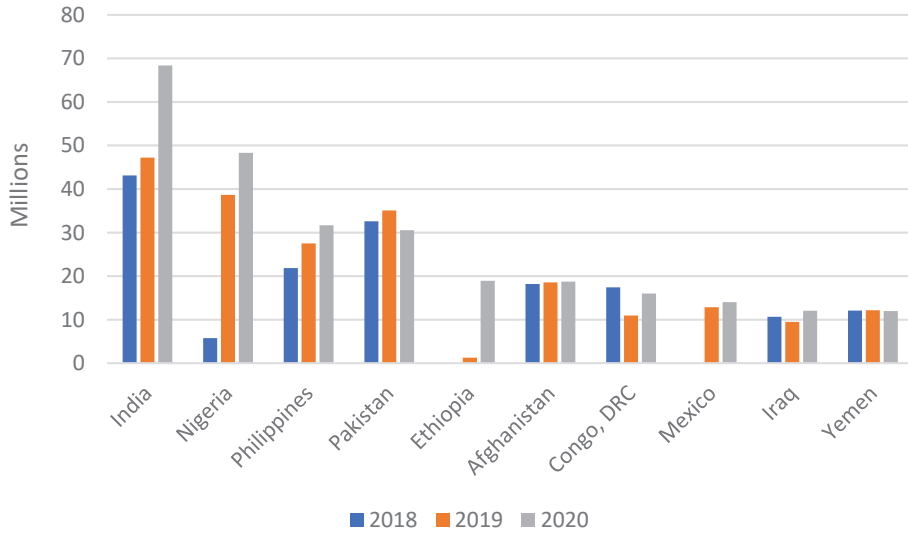

FIGURE 9 Top then countries according to highest number of children at risk of recruitment.

placed in the second position both in 2019 and 2020, and is recognized by a sharp increase from 2018. This increase is largely due to an increase in the recruitment of children by government actors in the years 2019 and 2020. The Philippines is placed third on this unpleasant ranking, just surpassing Pakistan, placed fourth, in 2020. Ethiopia, in fifth place, had a very large increase from 2019 to 2020. This is due to the conflict that erupted in the fall of 2020. The rest of the countries have had a relatively stable level of the past 3 years.

Figure 10 shows the 10 countries in the world with the highest risk of child soldier recruitment relative to the overall child population. Sadly, in countries like Afghanistan, Syria and Yemen all children are at risk of being recruited as soldiers. In the Philippines, the number has been increasing over the past 2 years due to an increase of conflict events in the entire country. Tunisia is maybe somewhat surprisingly placed in tenth place. This is caused by two attacks by the Islamic State in two major cities during 2020. Although this is a relatively small area, a large share of the children is living in these areas and thus affected.

CONFLICT TRENDS AND CHILD SOLDIER RECRUITMENT

Figure 11 depicts the number of children at risk of child recruitment (grey line) in relation to the number of conflict events (orange line) and conflict fatalities (blue line). The figure reveals that it is not evident that whenever conflict increases (the number of conflict events rise) or the intensity increases (the number of fatalities increases) the risk of child soldier recruitment also increases.

CHILD SOLDIER RECRUITMENT BY TYPE OF CONFLICT ACTORS

Both non-state actors and state actors recruit children as soldiers. For the period 2010 to 2020, we have coded the recruitment by both actor types. Figure 12 shows that over the past

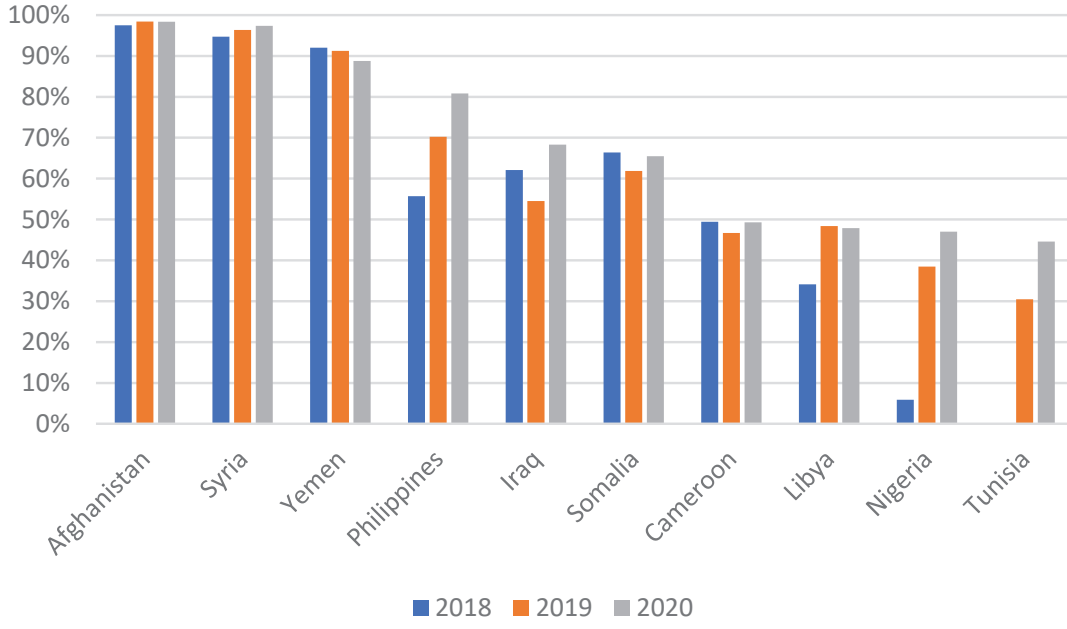

FIGURE 10 Top then countries according to highest share of children at risk of recruitment.

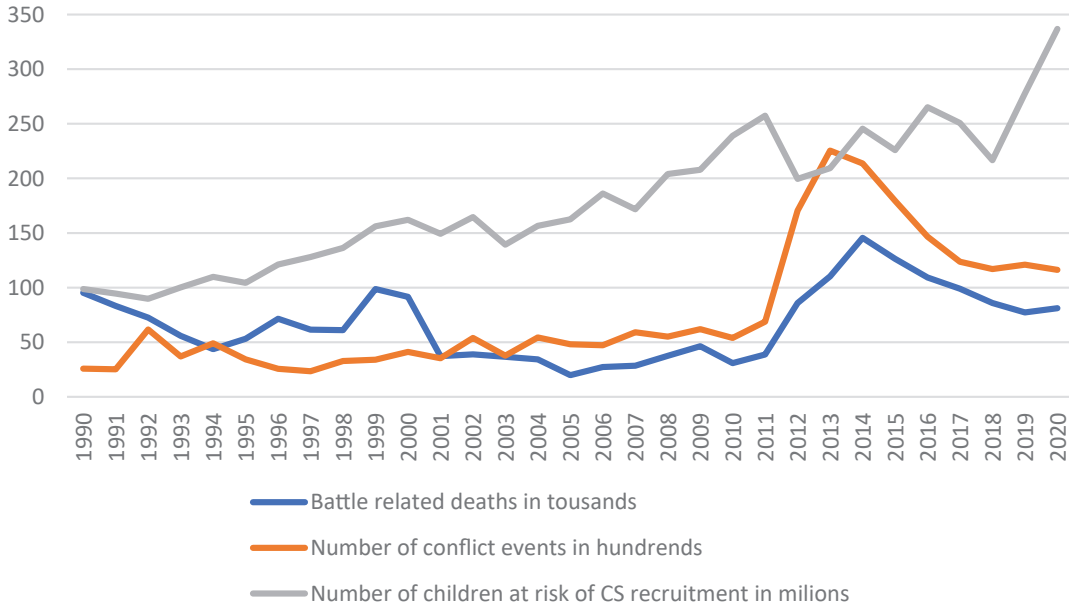

FIGURE 11 Battle deaths, conflict events, and children at risk of child soldier recruitment, 1990–2020. In the data for battle related deaths the Rwandan genocide is excluded, as this number is so high (approximately 550 000) that including it would not allow us to see the trends.

11 years, the number of governments recruiting children has been stable, around 20. Most notable state perpetrators are the Democratic Republic of the Congo, India, and Nigeria. However, the number of non-state actors recruiting child soldiers has increased steadily, with

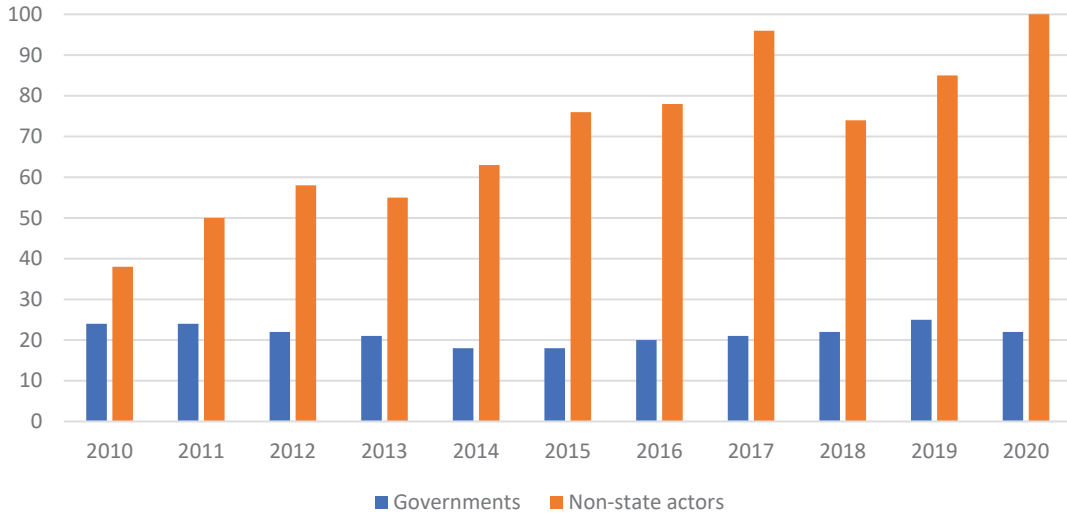

FIGURE 12 Number of government and non-state actors recruiting children, 2010–2020.

an all-time high in 2020 with 110 active non-state groups recruiting child soldiers. This is probably related to the increase in non-state conflicts in the same period. In several countries, such as Afghanistan, Pakistan and Yemen, children were at risk to become recruited by both non-state actors and state actors.

DRIVERS OF CHILD SOLDIER RECRUITMENT: WHAT DO WE KNOW?

Having seen all these statistics on the numbers of children at risk of child soldier recruitment, it is natural to ask: What are the root causes of child recruitment? Generally, we can categorize this literature into three interrelated, albeit different strands: those who investigate the influence of general and *structural factors*, those who emphasize the importance of the *supply side* of child soldiering, those who examine the *demand side* (Haer, 2019).

Structural explanations

The existing literature provides several structural explanations for the use of child soldiers in armed conflicts (Tynes & Early, 2015). These explanations tend to link broad social, political, and economic conditions to the recruitment of children. Three factors are repeatedly mentioned. First, several authors have pointed to the influence of the technological advancement of personal weaponry and the proliferation of small weapons as a factor that might influence the increase in child soldier recruitment (Singer, 2006; Stohl et al., 2007). The small arms argument, however, is heavily debated in academic circles (e.g. Achvarina & Reich, 2006; Shepler, 2004). Scholars have pointed out that many children are unable to handle light weapons, that children are often sent into battle unarmed or solely armed with traditional weapons (such as machetes) and that due to the lack of existing data, empirically testing this association is extremely difficult, especially given the extensive volume of the illicit arms trade.

Another structural factor that is often mentioned influencing child recruitment is globalization. Based on ethnographic work in military camps in Mozambique and Angola, Honwana (2006) argues that due to these social and economic crises, many low-income countries endure serious cuts in basic services and the public sector, which in turn widens existing inequalities, negatively influencing livelihoods and straining and weakening the 'social fabric'. Honwana (2006) further argues that this has impacted not only social norms and values but also the capacity of households and communities to nurture and protect children against child labor and the recruitment of children to be used as soldiers.

Related to this globalization argument is the idea that the state's poverty level is the driving force behind child recruitment (e.g. Cohn & Goodwin-Gill, 1994; Honwana, 2006; Machel, 1996; Singer, 2006). The linkage makes intuitive sense; many former child soldiers when interviewed give poverty as a reason for their recruitment (Brett & Specht, 2004; Cohn & Goodwill-Gill, 1994; Singer, 2010). Joining armed groups might allow them to earn perhaps some money or get access to food via looting. An early cross-sectional analysis of Achvarina and Reich (2006) on a limited number of conflict-affected countries showed, however, that country-level poverty rates are unable to explain the variation in child soldier recruitment.

The sheer number of children constitutes another frequently mentioned structural variable. For example, Peters et al. (2003) note that Africa is the world's youngest continent, with nearly half of the population between the ages of 5 and 24. As a result, actors may have an easier time recruiting from the ranks of children (Dallaire, 2011; Tynes & Early, 2015). A version of this argument examines the relationship between the size of the orphan population within countries and the usage of child soldiers (e.g. Brett & McCallin, 1998; Cohn & Goodwin-Gill, 1994; Wessells, 2006). Being orphaned makes potential child recruits especially susceptible to either incentives or threats. Without parental guidance or care, they are far more likely to join government or rebel forces. However, Achvarina and Reich (2006) empirically shows that no relation can be found between orphan rates and child soldier usage. Their analysis did reveal, however, that refugee camps comprised of internally displaced persons were positively correlated with child soldier usage in the African conflicts they analysed. The influence of displacement on child soldier recruitment is also confirmed by a recent study of Atkinson (2020).

Supply-side explanations

Two central points of criticism regarding the structural perspective can be raised: these factors neglect individual agency, and they cannot explain the significant variation in child soldier rates across countries and armed groups over time and space (e.g. Beber & Blattman, 2013; Denov, 2007). Consequently, many researchers have turned to examine the individual motivation of children to join armed groups, that is, the supply side of child soldiering (Haer & Böhmelt, 2016a, 2016b). These supply motivations are the micro-mechanisms that link social structures with preferences and decisions. They are variegated and complex and can be generally divided into push and pull factors (e.g. Gutiérrez-Sanín, 2010).

Push factors are negatives that children escape by joining an armed group (Wessells, 2006: 45). For example, many have pointed to the lack of educational opportunities as important example of such a factor (Cohn & Goodwin-Gill, 1994; Machel, 1996; Wessells, 2006). Along the same lines, a lack of employment opportunities can also invoke a sense of despair and can make fighting in the armed conflict seem like a viable job option (Brett & McCallin, 1998; Tynes &

Early, 2015). Sesay and Ismail (2003), for example, state that in the decade-long Sierra Leonean civil war, youth joined armed groups or forces because they perceived soldiering as an opportunity to earn a living in the absence of educational opportunities and the existing limited economic prospects in the country. Other researchers have argued that children often join to escape insecure situations. For example, they may want to leave home to escape (sexual) abuse (Brett & Specht, 2004). Avoiding insecurity is also mentioned as an important factor by Rosen (2005), who shows that children are sometimes forced to choose 'fighting' over 'not fighting' because 'not fighting' is too dangerous.

Equally compelling are the pull factors, or positive rewards and incentives for joining armed groups (Wessells, 2006: 46). Besides the obvious promise of money and security, some children are attracted to armed groups by the 'adventure', 'the sheer fun of belonging', a desire to become 'famous and admired', or simply because they believe in what they are fighting for or want to take revenge (e.g. Brett & McCallin, 1998: 60; Wessells, 2006: 32). It can be reasonably be conjectured, however, that both pull and push factors and the interactions between them play a crucial role (e.g., Gutiérrez-Sanín, 2010; Haer, 2019).

Demand-side explanations

A third stream recently emerged as a response to the inability of the first two to explain variation in child soldier usage across warring parties active in the same period and the same country (or a common region; Andvig & Gates, 2010; Beber & Blattman, 2013). To explain such variation, recent studies focus more on the demand side (e.g., Beber & Blattman, 2013; Haer et al., 2020; Haer & Böhmelt, 2016a, 2016b; Lasley & Thyne, 2015). Scholars working in this strand of research investigate factors influencing the decision of recruiters to enlist children. Prima facie, recruiting children would not seem to be a very good business model for an armed group: children can be undisciplined, they lack the necessary weight-bearing abilities and tactical and strategic judgement that might be necessary in combat situations, they are psychologically unprepared for the sustained hardships of war, and consequently, they are more likely to defect (e.g., Beber & Blattman, 2013; Gutiérrez-Sanín, 2010; Haer, 2019). Despite all these shortcomings, many armed groups do recruit children.

Several solutions to this puzzle are offered. The first centers on troop shortages and the need to maximize recruitment (e.g., Blattman & Annan, 2008; Twum-Danso, 2003). As Woods (1993) explains, recruiters often target children based on the simple need to fill ranks. Even when armed groups are able to fight effectively in the early stages of a conflict without using child soldiers, Machel (1996) explains, they often find themselves needing to recruit children as the war lengthens. Faulkner and Doctor (2021) contend that rebels that form as splinter factions are more likely to recruit child soldiers because they face unique constraints as they materialize in the midst of an active conflict environment, necessitating that they mobilize quickly a sufficient force to contend with existing competitors. The underlying rationale is that children are an easy-to-recruit, that is, a 'low-cost way for armed forces to generate force' (Tynes & Early, 2015: 83). A related argument is that some armed groups consider child recruitment to be a huge moral and political victory: it represents the group's capacity to incorporate new social layers into the public sphere (Gutiérrez-Sanín, 2007).

Second, some scholars have argued that the answer to the 'Why children?' question lies in important differences between children and adults (Haer, 2019). They assert that children possess certain characteristics that make them more effective fighters in comparison with

adults. For example, children are more malleable, adaptable and obedient; thus, they are more readily indoctrinated and deceived and are consequently easier to control and retain (e.g., Beber & Blattman, 2013; Boyden, 2003; Gutiérrez-Sanín, 2007, 2010). A former child soldier that was active in the Sierra Leonean conflict confirms this idea: 'There were small boys who were not even my rank. Fifteen, fourteen [years old] and even younger, small boys. They are braver than the bigger boys. A person [not yet reaching] adolescence does not think much. What he desires to do, he will do it' (quoted in Peters & Richards, 1998: 97). The idea that children are unable to evaluate the consequences of their actions has been at least partially confirmed by psychological research and experiments performed by some behavioural economists (e.g., O'Donoghue & Rabin, 2001). A related argument is that using children for rebellion is cost-effective for other reasons; it significantly reduces operational costs as they are cheaper to feed and clothe. Moreover, children are often satisfied with a disproportionate share of resources and can easily be prevented from sharing them. By limiting the number of members eligible for revenue-sharing, leaders maintain more resources for themselves and the armed struggle (e.g., Haer et al., 2020).

Lastly, other researchers have argued that certain groups focus on the recruitment of children due to the moral shock it creates on the battlefield (Dallaire, 2011; Singer, 2006; Tynes & Early, 2015). Such reasoning features in the literature on the use of children by terrorist organizations (e.g., Bloom, 2012). This literature argues that children are strategically targeted by groups relying on terror tactics because they are the least likely suspects, which maximize the shock of the attack. For example, rebel groups in Colombia, Liberia, Sierra Leone and the Democratic Republic of Congo have been known to take advantage of their opponents' reticence for harming child soldiers by using them to 'spearhead' their attacks (Singer, 2006: 86). Moreover, by leveraging the international media attention and sentiment that favours the protection of children in conflict, terrorist organizations and other armed groups can force governments to adopt more constrained rules of engagement, lessening their efficiency and lethality (e.g. Singer, 2005, 2006; Tynes & Early, 2015).

CONCLUDING REMARKS

Despite the increased attention among policy-makers, we still lack systematic knowledge of how many children are directly and indirectly impacted of armed conflict. In this article, we contribute to fill this gap by estimating the number of children at risk of child soldier recruitment. Our mapping shows that the global share of children at risk of being recruited has steadily increased over the past 30 years. In 2020, approximately 337 million children (more than 1 in 8) were living in a conflict area with one or more actors known to recruit child soldiers.

In our attempt to estimate the risk of child soldier recruitment across time and space, we made several assumptions that need to be explored in future research. First, due to data limitations we used country-level population estimates. However, one can imagine that there are significant differences within a country. This, of course, can affect our estimates. Second, we have not explored the mode of recruitment in detail. Existing research (Haer, 2019; Singer, 2010) shows that there exists important difference in the way that children join these groups. Some group rely largely on voluntary recruits while others rely primarily on abduction. Future research might examine these nuances in more detail over times. Third, besides the mode of recruitment, our presented analysis excludes many other possible nuances that can be explored in future research. For instance, we have not examined the role of gender (boy vs. girl recruitment), the influence

of specific risk factors or 'root' causes, such as the role of poverty, or factors motivating armed groups to recruit children.

Our mapping of children at risk of child soldier recruitment has several implications for policy that needs to be further explored. Our mapping shows that there is an urgent need to protect the more than 300 million children that were at risk of being recruited as child soldiers in their home communities in 2020. The policy community need to disincentivize the use of children in different way. Countering some of the identified drivers is difficult because they require large societal and economical changes that can only occur in the long run. However, other drivers can be more easily countered. For instance, to make it harder for children to become recruited, it is essential to strengthen the protective social fabrics around the child. Parents, extended families, neighbourhoods (in urban areas), villages (in rural areas), and teachers not only need to receive information about the occurrence of child recruitment and its consequences but also need to have the tools to discourage enlistment or protect them from conscription. At the same time, it is important to strengthen children's agency. Information needs to be provided that discourage them from joining voluntarily.

Our study also shows that identifying perpetrators of child soldier recruitment is possible. Based on local and international (news) reports, we have identified several perpetrators of child soldier recruitment, which were not recognized by the UN. This knowledge can be used to discourage armed groups to recruit children and by bring them hem to justice. It is essential that governments need to be pushed to get involved, the media should report about the abuses, and local actors should be involved from the start in gathering evidence against these perpetrators.

Our study shows a dark picture: the risk that children currently run to be recruited as soldiers is on an all-time high. In addition to gather more information and knowledge practical steps must be taken to counter this horrendous practice and to safeguard the future of millions of children.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the Dallaire Institute for Children, Peace and Security. Restrictions apply to the availability of these data, which were used under license for this study. Data are available from the author(s) with the permission of the Dallaire Institute for Children, Peace and Security.

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ENDNOTES

[1] Our approach does enable differentiating between risk levels of children in areas of recruitment. However, we revert to a more general discussion of various risk factors below.

[2] Hence, we cannot for sure know that child soldier recruitment happened at a specific location. Hence there is the chance that children were recruited in a different location from the conflict event in question.

[3] Available at: https://sedac.ciesin.columbia.edu/data/collection/gpw-v4

[4] Available at: https://population.un.org/wpp/

[5] Sub-national data on age-distribution is available for a few countries through the United States Census Bureau. We did rerun our calculations using these more fine-grained data for Nigeria in 2020 and the overall estimates of children at risk of recruitment in the country remained roughly unchanged (app 49 million children using the national-level age-distribution data vs. some 47 million children using age data for first level admin units). Authors can provide full results upon request.

[6] Many conflict actors may be active in more than one conflict events in a given year (with various degrees of geographical overlap). Since our recruitment data only tells us what actors recruited children in a given year, we count the children living 50 km or closer to *all* the conflict events where the actor in question was an active part.

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