Parental Responses to Armed Conflict and Drought: Impacts on Early Childhood Skills*

Sofia Nordenving† Thorsten Rogall‡

March 2025

Abstract

We estimate the impact of conflict and drought on the cognitive and non-cognitive skills of young children, using detailed DHS data from Africa and the Middle East. By focusing on highly localized, short-term variation in proximity to fatalities from armed conflict and growing season drought exposure, we identify an overall negative impact on child development when these hazards occur in utero. However, exposure during early childhood (up to age 4) yields no significant effect on cognitive skills and divergent impacts on non-cognitive skills: conflict exposure increases non-cognitive skills, while drought exposure decreases these skills. Notably, a one standard-deviation increase in conflict exposure increases non-cognitive skills by approximately 0.12 standard deviations (or 11 percent). The underlying mechanisms of this surprising finding suggest that parents invest more in children exposed to conflict and less in those experiencing drought during early childhood. This behavior aligns with life history theory from evolutionary psychology, suggesting that the threat of conflict will make parents promote the necessary complex skills required to navigate man-made hazards and that on the contrary, climate-related droughts shift preferences towards optimizing reproductive success by increasing fertility. Further supporting this theory, we show that mothers with children exposed to conflict tend to have lower fertility rates, whereas for those with children exposed to drought fertility increases. Investments by fathers and siblings seem crucial for the development of non-cognitive skills but require a sufficient level of gender equality. Finally, the positive effects disappear for children whose mothers share an ethnic identity with the fighting group and are thus directly exposed. The results pass several placebo and robustness checks and we rule out alternative explanations.

*We thank Johan Brosche, Giorgio Chiovelli, Ariel Gomez, Guillaume Dezecache, Gustaf Gredebäck, Jonathan Hall, Håvard Hegre, Daniel Meierrieks, Carl Mueller-Crepon, Kirsi Peltonen, Matteo Pinna Pintor, Tommaso Porzio, Karthik Sastry, Mohammad Sepahvand, Felipe Valencia Caicedo, Phaidon Vassiliou, Paola Vesco, Marijke Verpoorten, Nina von Uexkull and seminar audiences at Turku University, French National Research Institute for Development, UNICEF, PSI/PRIO workshop, Ridge December Forum, Fragile Lives (HiCN), Jan Tinbergen European Peace Science Conference, Societies at Risk Workshop, Demscore Conference, and Uppsala University for valuable comments and suggestions. Financial support from Riksbankens Jubileumsfond (grant agreement M21-0002, Societies at Risk) is gratefully acknowledged.

†Department of Peace and Conflict Research, Uppsala University. sofia.nordenving@pcr.uu.se

‡Urban Lab at Department of Economics & Department of Peace and Conflict Research, Uppsala University. thorsten.rogall@pcr.uu.se

1 Introduction

The climate crisis puts close to 1 billion children at extremely high risk of exposure to climate and environmental hazards and stressors. Roughly 470 million children face high or very high drought risk (UNICEF et al., 2023). In 2022, just as many children lived in a conflict zone (Østby et al., 2023). In general, adverse shocks, such as those driven by weather extremes (Maccini and Yang, 2009) and violence (Shemyakina, 2011), have countless ruinous consequences for children (Shonkoff et al., 2012), especially for those under the age of five (Black et al., 2017).

Previous cross-discipline research on conflict (Qouta et al., 2008; Duque, 2017; Punamäki et al., 2017; Diab et al., 2018; Scharpf et al., 2021; Walker et al., 2007) and drought (Zamand and Hyder, 2016; Nguyen and Minh Pham, 2018; Shah and Steinberg, 2017; Nubler et al., 2021) focuses on their destructive effects on children's physical, mental, and educational development, with limited work on children's cognitive (thinking activities such as reading and numeracy (Green, 2011)) and non-cognitive skills (i.e., preferences, personal traits, attitudes, and motivations (Borghans et al., 2008)).[1] This limited research is surprising considering that previous findings within different fields for adults indicate that especially non-cognitive skills can shift as a response and coping strategy for experienced stressors (Bauer et al., 2016; Döring and Hall, 2023; Holden and Quiggin, 2017; Wuepper et al., 2020). These skills are also highly malleable in early childhood and play a central role in later economic success (Heckman et al., 2006, 2013) and thus may lay the crucial foundation for a society to rebuild after hazard exposure. From a psychological perspective, evolutionary theorists have begun to question why humans would only respond adversely to stressors and suggest that especially children develop skills adjusted to cope with the specific harshness they experience (Ellis et al., 2022).

To test if skills develop adaptively, we match recent DHS data on early childhood development and parental investments to geo-coded number of battle-related fatalities data and high-resolution drought data. Our sample covers 10 countries from Africa and the Middle East. Given a set of fixed effects, our empirical strategy exploits the arguably highly local random

[1] We are only aware of one previous paper in economics (Duque, 2017) and a few within psychology (Qouta et al., 2021; Punamäki et al., 2017; Gredebäck et al., 2021) that analyze the effects of conflict on cognitive and non-cognitive skills of non-displaced children, with mixed results.

timing of births within DHS clusters to estimate the effect of conflict and drought exposure on children's developmental skills (both cognitive and non-cognitive). We measure exposure as the incidence of fatalities from armed conflict or drought during the growing season within 50 kilometers of a DHS cluster for a child's time in utero and during early childhood (up to 4 years).

We first document an overall negative impact of exposure to conflict or drought while in utero on child development. This finding is expected and consistent with a large body of literature in both economics (Chang et al., 2022a; De Rooij et al., 2010; Almond and Currie, 2011; Shah and Steinberg, 2017) and psychology (Punamäki et al., 2018). Differently, though, when exposed in early childhood, neither hazard affects cognitive skills, and the effects on non-cognitive skills clearly diverge. Conflict increases non-cognitive skills and drought decreases them. To put this surprising finding into perspective, our positive conflict effect size of 0.408 is comparable to other successful early childhood development interventions (with treatment and control group) that boost skills development for young children regularly over several months or even years (Anderson et al., 2003; Heckman et al., 2006; García et al., 2023).[2]

Our theoretical framework proposes that parents can either mitigate or magnify the impact of drought and conflict on their children depending on shifts in their own preferences, resources, and resilience. Based on evolutionary psychology life history theory (Ellis et al., 2009; Kaplan et al., 2000; Ahlström, 2011; Del Giudice et al., 2015), we propose a trade-off between investing time in the development of children's skills and the number of children and that based on the environment, preferences will shift between these two to optimize reproductive success. In particular, the threat of conflict will shift parental preferences toward an increase in child investments to promote the necessary complex skills required to navigate man-made hazards. On the contrary, drought shifts preferences toward increasing the chances of child survival by increasing fertility. Importantly, we distinguish between the threat of conflict and drought and the actual, direct exposure. Although preferences may change for both, the total strain of actual exposure might make it harder for parents to compensate for the negative impact.

[2]Going from no conflict exposure (control) to full treatment (fatalities above 5,500, 99.9th percentile) gives an effect size of 0.408. The point estimate (and thus the difference in means between the control and treatment group) is 0.502 which we normalize with the standard deviation of the dependent variable in the control group, 1.23 ($0.502/1.23 = 0.408$).

Thus, after establishing our main results, we next test our conceptual framework and zoom in on the mechanisms behind our finding. Using data on investments by parents and other household members, we first show that the effects of our two hazards on investments (spending time with their children in various ways) perfectly mirror our findings from above. In particular, parental investments increase significantly when their children are exposed to conflict in early childhood. Drought exposure, on the other hand, decreases parental investments. As an alternative measure of investment for younger children, where time spent on different activities would be less relevant, we look at the effect on breastfeeding and find the same patterns as above. The results for fertility goes in the opposite direction for each respective hazard: Exposure to drought increases the number of children and conflict decreases it.

We use two proxies for direct exposure to differentiate between the shift in parental preferences generated by the threat and direct effects of hazard exposure. First, we find that the positive effect on non-cognitive skills turns negative when mothers are co-ethnics with a fighting group (and thus directly affected). Similarly, second, the negative effects on non-cognitive skills for drought are driven by agricultural households (and thus directly affected). However, parental investments are the same for both subgroups, suggesting that parental preferences always shift as an adaptive response to a threat but that despite their efforts, these are not successful under direct exposure.[3]

To further our understanding of different and multiple shocks, we also test the implications of floods, a hazard with fast-onset characteristics similar to conflict but without a man-made component. The results suggest a similar response to drought exposure. However, for data reasons, these results have to be taken with a grain of salt.

Next, using information on household composition, we establish a number of additional results. First, the positive conflict effects seem to be driven by either both parents or female siblings investing in the child. Second, mothers always seem to invest in their young children, except when many older sisters are in the household. Third, fathers seem to free-ride if older female children or grandparents are in the household; however, non-cognitive skills increase

[3]In an extension, we also investigate how conflict and drought shocks interact with each other. In particular, multiple shocks often reinforce each other, increasing the pressure on households. In our case, the findings suggest that the positive effects of conflict on non-cognitive skills and parenting are only present when households do not experience drought at the same time, clearly indicating the detrimental effects of multiple crises.

whenever they invest, pointing to fathers' crucial role in shaping their children's non-cognitive skills. Fourth, grandparents do not affect conflict-exposed children's non-cognitive skills, likely because they do not change the time spent with young children depending on exposure.

Taken together, this suggests that the impact of conflict might provide children with additional and different (fathers and older female children) sources of interactions compared to non-exposed children, which has positive effects on their non-cognitive skills.

Our findings above indicate that the relationship between conflict and non-cognitive skills stems from increased investments by fathers and households with older female children, prompting a closer look at gender dynamics. Previous research suggests positive effects on childcare and child well-being when women have greater influence (Del Giudice et al., 2015; Alonzo, 2012; Duflo, 2003), and responses to shocks vary by gender (Almond et al., 2018). Consistently, when splitting the sample by gender equality at the country level, we find that the positive conflict effect disappears and turns insignificant for the least gender equal countries. Again, consistent with parents driving non-cognitive skills, these findings are perfectly mirrored in parents' investments. Interestingly, while mothers' investments are constant, conflict makes fathers and male siblings invest more in the more gender equal countries.

Finally, we rule out alternative channels. More specifically, it is unlikely that (a) the investment effects are merely the result of changed opportunity costs in the wake of more free time for parents due to layoffs after conflict or drought (conflict and drought exposure is uncorrelated with parents time spent at work or doing leisure activities); (b) selective migration explains our results (the findings are the same when only using non-migrants); (c) selective mortality drives our results (both drought and conflict exposure are unrelated to child mortality); (d) foreign food aid or NGO investments can explain our results (both drought and conflict actually have negative effects on children's physical development such as height for age or weight for age which should not be the case if they received, for instance, food aid).

This paper thereby communicates with and advances several different literatures. One is the general literature on the detrimental effects of conflict on socio-economic outcomes, particularly human capital and health. This line of research has primarily focused on more long-term, relatively easily attainable, outcomes such as years of schooling or height and weight (She-

myakina, 2011; Bundervoet et al., 2009).[4] However, while undoubtedly informative about the long-term effects, these studies do not allow us to understand the mechanisms behind the results, an important prerequisite for designing effective policy interventions. To the best of our knowledge, the only study close to ours is Duque (2017) who finds strong negative effects of conflict on cognitive skills and no effects on non-cognitive skills of children in Colombia.

Similarly, we add to the large literature on the effects of exposure to natural hazards on human capital and early childhood development. Seminal papers such as Alderman et al. (2006) or Maccini and Yang (2009) point to the long-lasting effects of bad childhood shocks.[5] The limited literature investigating the impacts of environmental hazards on children's cognitive and non-cognitive skills suggests that drought exposure in utero and early childhood harms children's cognitive skills and reduces education and wealth in adulthood (Hyland and Russ, 2019). Furthermore, the handful of studies that look at the effects on non-cognitive skills focus on skills in adolescence and adulthood and cannot inform our understanding of skill formation in young children (Krutikova and Lilleør, 2015; Chang et al., 2022b; Shoji, 2021; Sanchez, 2017).

We also contribute to a growing literature on drought and conflict effects on fertility. Studies find mixed results: some show a replacement effect after events like the Rwandan Genocide Kraehnert et al. (2019), while others observe minor fertility declines attributed to delayed marriages (Thiede et al., 2020). Recent analyses of drought impacts on fertility in developing countries also reveal diverse outcomes. Although climate shocks are expected to reduce large-family desires (Eissler et al., 2019; Thiede et al., 2020; Norling, 2022), financial pressures may push young women toward early marriage and motherhood (Andriano and Behrman, 2020; Corno et al., 2020). Consistent with recent reviews, findings highlight regional and cultural context-specificity (Somefun et al., 2024; Eissler et al., 2019; Thiede et al., 2020; Andriano and Behrman, 2020; Norling, 2022). Our study adds to this by exploring how parents shift fertility preferences, balancing family size and child investment.

[4]Examples on the detrimental effects of conflict come from the Eritrean-Ethiopian war, the Rwandan Genocide, Burundi (Akresh et al., 2012; Bundervoet et al., 2009; Akresh, 2008), schooling in Tajikistan (Shemyakina, 2011), the Korean War (Lee, 2014) or WWII (Akbulut-Yuksel, 2014).

[5]Others have shown similar effects on health in South Africa (Dinkelman, 2017), Ecuador (Rosales-Rueda, 2018), Ethiopia (Dimitrova, 2021), or Bangladesh (Le and Nguyen, 2022). A recent cross-country study shows how climate change shocks affect children's educational attainment (Randell and Gray, 2019).

Next, we add to the research on how children's health endowments are influenced by parental investments. In particular, parents' preferences and resources affect children's development and resilience (Shah and Steinberg, 2017; Wu et al., 2023; Almond and Mazumder, 2011).[6] For example, rainfall increases can improve girls' school performance as mothers shift time from agriculture to childcare (Wu et al., 2023), while droughts can encourage schooling by reducing agricultural profitability (Shah and Steinberg, 2017). However, exposure to hazards in utero is often linked to poorer cognitive outcomes and reduced school attendance.

Finally, our findings are also loosely related to a large literature in psychology that shows how parents' own mental health plays a crucial role in shielding children exposed to conflict from harm (Punamäki et al., 2017; Diab et al., 2018; Scharpf et al., 2021; Gredebäck et al., 2023; Qouta et al., 2008; Punamäki et al., 2011, 2015; Gredebäck et al., 2021). While these studies mainly find negative cycles from exposure, mental health issues, harsh parenting styles and impaired development, some evidence suggest that families are mainly resilient (Punamäki et al., 2017) and how the negative impacts of conflicts on child development are reduced if mothers manage to process and reconstruct the experienced trauma (Diab et al., 2018) or if they have a strong sense of belonging to a group (Qouta et al., 2008). Importantly, most of this previous research with clear negative findings on child development is done with refugee children whose families are continuously exposed to stressors of displacement and comes from small samples from a highly selective group (Gredebäck et al., 2021, 2023; Scharpf et al., 2021; Peltonen et al., 2023). Our findings thereby similarly point to the significant role that social networks may play in keeping parents in a positive cycle where they can execute positive parenting styles and buffer the effect of more distal threats, something less easily maintained during displacement and in refugee camps. While we do not have information on parents' mental health, our findings do suggest that overall parents manage to preserve healthy skills development of their children when they remain in proximity of their social networks, emphasizing the resilient and adaptive capability of families and communities.

Our findings carry important policy implications. Conflict and climate change affect children in their most crucial years of skill formation. To the best of our knowledge, we are the

[6] A large literature in psychology also investigates parents' effects on children (Punamäki et al., 2017; Diab et al., 2018; Scharpf et al., 2021; Gredebäck et al., 2022, 2023; Qouta et al., 2008; Punamäki et al., 2011, 2015).

first to explore how these two hazards differently impact children's cognitive and non-cognitive skill potential, highlighting the need for tailored policies that take the type of adversity into account. Notably, we also present novel evidence that conflict can spur parents (and families) to invest more in their children's non-cognitive skills, improving future prospects. Paying attention to cases where we find better outcomes than expected can help identify local practices that mitigate risk and inform culturally harmonious intervention strategies (Oberg et al., 2021).

2 Conceptual framework

2.1 Adverse or adaptive responses to hazards

Psychological models of cumulative stress (Evans et al., 2013) and allocastic load (Lupien et al., 2015) suggest that continuous stressful experiences build up to adverse outcomes. The fetal origin hypothesis coined by David J. Barker (Barker, 1990), suggests that in-utero and early-life conditions can have particularly long-term impacts on adult health through impaired functioning, dysregulated development, and development of destructive behavior (Barker, 1990; Lupien et al., 2015; Evans et al., 2013). For instance, malnutrition during the prenatal period negatively affects the brain structure and neural development (De Rooij et al., 2010) of the child and may explain why adverse food shocks caused by weather extremes during the in-utero period (Chang et al., 2022a) or early childhood hamper the development of cognitive and non-cognitive skills (Chang et al., 2022a). Conflict is not only associated with food insecurity (Justino, 2012) but also with negative effects on fetal development caused by stress induced cortisol overdoses (Punamäki et al., 2018).

However, evolutionary development psychology asks *why*, from an evolutionary perspective, the human response to adversity would be so destructive and proposes a more adaptive response (Ellis et al., 2009). By looking at *how* skills are impacted, this theoretical model suggests that the assumed impairments actually are signs of adaptive plasticity, a fine-tuning of relevant skills for the current and expected future environment of the child (Ellis et al., 2009; Ellis and Del Giudice, 2019; Del Giudice, 2014; Del Giudice et al., 2011; McLaughlin et al., 2014). An integrated framework of how and why environmental experiences shape child devel-

opment through adaptive plasticity during specific periods can help determine which skills are prioritized in development and which are diminished (Ellis et al., 2022). Importantly, taking on this approach means that an understanding of potential diverging impacts of different hazards is essential to ensure that children reach their development potential.

2.2 Deprivation and threat

The integrated framework proposed by Ellis et al. (2022) outlines at least two different forms of stressors with different development implications, *deprivation* and *threat*. During sensitive periods, when the brain expects specific input to develop certain skills, lack of such input can have detrimental consequences – for instance, limited social interaction and cognitive input during the critical period for language development can diminish our ability to learn languages in the long term. Such associations between *deprivation* and cognitive abilities are for instance found for children in institutional care or with low socioeconomic status (Rosen et al., 2018, 2020).

From an evolutionary perspective, other skills are likely more adaptable throughout our lifetime (even if mostly so during our early years), such as the ability to identify *threats* of harm to life (Ellis et al., 2022). For these kind of skills, neural connections that are used more will get strengthened while the under-utilized or inefficient ones are eliminated (McLaughlin et al., 2014; McLaughlin and Sheridan, 2016). Abused children are for instance found to be better at recognizing and rapidly responding to angry faces and emotions, while worse at recognizing positive ones (Pollak et al., 2000; Pollak and Sinha, 2002; Pollak et al., 2009). Importantly, when certain skills are prioritized, it comes at a cost of others skills or well-being (Ellis et al., 2022).

2.3 The mediating family unit

The section above highlights what has been shown in many previous studies, that cognitive stimulation, caregiver sensitivity, and responsiveness, as well as emotional warmth are important aspects for children's cognitive and non-cognitive skills development (Black et al., 2017). It is therefore unsurprising that most studies have focused on how threat and deprivation from

the closest environment (mainly the family) impact child development while we lack evidence on how more distal and proximal cues co-evolve (Ellis et al., 2022). Existing research within economics (Shah and Steinberg, 2017; Wu et al., 2023; Almond and Mazumder, 2011) and psychology (Punamäki et al., 2017; Diab et al., 2018; Scharpf et al., 2021; Qouta et al., 2021; Gredebäck et al., 2021, 2022, 2023) illustrate how parents can either magnify or mitigate the impacts of more distal hazards on their children. However, the results are quite mixed across cases and the limited large scale comparison between different hazards leaves the question of any generic adaptive responses unanswered.

2.4 Parent responses to conflict and drought

Drawing on previous research in economics, evolutionary and social psychology, we hypothesize that the two types of hazards – drought and conflict – will have different effects on children's outcomes mainly through the response of the family unit, which in turn depends on how each hazard impacts parental *preferences, resources, and resilience*.

Evolutionary theories and research suggest that throughout human history, people at a childbearing age have demonstrated a trade-off between *preferences* for quantity and quality of children to maximize fitness based on available energy consumption (Del Giudice et al., 2015; Ellis et al., 2009; Kaplan et al., 2000; Ahlström, 2011). In a harsh environment characterized by unpredictability when it comes to child and juvenile mortality an adaptive response is to increase offspring diversity through higher birth-rates (Del Giudice et al., 2015; Ellis et al., 2009). However, with more children, less time and energy can be invested in the human capital accumulation of each child (Ahlström, 2011; Kaplan et al., 2000). Under different conditions, where the environment is considered manageable through certain skills a rational adaptation is to invest more energy and resources in your children to develop those specific skills (Kaplan et al., 2000). Historical research within anthropology suggests that when humans started to consume more complex energy from hunting, it was accompanied by longer periods of childcare for children to develop the required skills (Kaplan et al., 2000). Contrary, during periods of climate extremes, such as the little ice age in Sweden, people responded with an increase in birth rates at the cost of child stature (Ahlström, 2011).

Here lies our first and main argument for diverging effects of drought and conflict on children's skills development. Armed conflicts are man-made and can assumably be both won and ended with human effort, a world characterized by conflict threat is therefore perceived to require complex skills. Contrary, climate induced stressors like drought, lack a clear visible and manageable enemy and are perceived to likely reoccur regardless of human efforts. We therefore hypothesis armed conflict to generate a higher value placed on children's skills while drought shifts preferences to more children.

In practice, the shift to hunting and the increased prioritization of human capital, are both built on more within-group cooperation and social exchanges (Kaplan et al., 2000). Similarly, conflict has repeatedly been shown to increase within group cooperation and altruism (Bauer et al., 2016) as well evoking community support (Zamani et al., 2006), outside aid, and household use of social safety nets (Brück et al., 2019). Theories of genetic evolution (Bowles, 2006) and those that suggest an interaction with cultural evolution (Henrich and Boyd, 2001) argue that the threat of intergroup competition and conflict fosters induces these shifts in preferences to increases the likely success of the group. Consistently, we expect that exposure to conflict (but not to drought) may increase collaboration within households and communities to preserve available *resources*.

Drought on the other hand, is a slow-onset hazard that evolves slowly and with uncertainty, impacting different population subgroups at different times, starting with farmers and the agricultural sector before striking other parts of the workforce or generating food insecurity (Zamani et al., 2006). It is less associated with increased cooperation (Döring and Hall, 2023). When more time needs to be allocated to for instance agricultural work or to find alternative income sources, this reduces time investments in young children (Wu et al., 2023).

The ability of parents to protect their children may further be undermined or promoted by their own *resilience* and well-being (Oberg et al., 2021). While the immediate impact of drought threatens people's economic situation, it may be followed by a gradual effect on living conditions that eventually leads to anxiety, depression, or loss of control and agency (Vins et al., 2015) and with fewer economic and emotional resources, engaging parenting tends to diminish (Kiernan and Huerta, 2008). The impacts of conflict likewise have deteriorating effects on

physical and mental health, leading for instance to posttraumatic stress with negative effects on parental investments and increases in harsh parenting practices, with downstream implications for child development (Punamäki et al., 2017; Gredebäck et al., 2021, 2022, 2023; Scharpf et al., 2021). However, the negative cycle of war exposure observed in previous research comes from refugee populations where multiple stressors of both threat and deprivation are present and with likely loss of central parts of ones social security networks. The few studies that measure children's skills development in war exposed populations without the additional strain of being a refugee demonstrate the importance of belonging to a group (Qouta et al., 2008) and even find positive association between war exposure and children's skills (Qouta et al., 2021).

Taken together our interpretation of existing evidence and theories are that the threat of conflict generate positive responses for children's skills development but that these only materialize as long as the overall strain on resources and resilience of the family unit doesn't become too large, in which case, the family in itself becomes a source of threat and deprivation. Contrary, exposure to drought generates a shift in preferences towards quantity instead of quality of children. In addition, the most exposed experience losses in material and psychological resources with potential negative impacts on both time and quality of child investments.

2.5 Model

We follow the literature (Almond et al., 2018) and assume that parents' investment in their children during early childhood I increases their human capital and that exposure to drought and conflict, D and Q, respectively, decreases it. We take investments and shocks while in utero as given and subsume them by Θ. With this formalization parent's investments are perfect substitutes and can compensate for previous negative hazard shocks. While this is a simplification, it is grounded in previous empirical research on related hazards (Diab et al., 2018; Qouta et al., 2008; Austin et al., 2017). Note that A and κ are productivity parameters.

$$h = A\left[\Theta + \kappa I - Q - D\right] \tag{1}$$

Parents care about private consumption c, the number of children n, and their human capital,

respectively. Importantly, the weight they put on the utility of human capital can depend on the two hazards. We assume that $\beta'_Q > 0$ and $\beta'_D < 0$.

$$U = \alpha \log(c) + \gamma[log(n) + \beta(Q,D)\log(h)] \tag{2}$$

The value placed on β reduces in environments characterized by uncertainty that favors diversity of children and increases in environments where skills are perceived to improve chances of survival. We hypothesize that human-induced conflict, similar to a society dependent on hunting (Kaplan et al., 2000), is an environment of high social complexity where human capital and within group cooperation are prioritized (β'_Q is larger than 0). Contrary, natural hazards such as drought generate an adaption strategy of diversification and place less relative value on human capital (β'_D is smaller than 0).

Parents maximize their utility given a budget constraint. They are endowed with one unit of time that they can spend on labor market activities and child care. There are two costs associated with raising children. First, general time spent with the child (τ) and investments in a child's human capital (I) at a unit cost of p^h. We assume that drought increases this price as it raises opportunity costs to spend time with the child. We do not expect this to happen for conflict since the community-binding effect of a conflict threat likely compensates for the increased costs through increased (social network) cooperation.

If parents dedicate all their time to working they earn an income y. Thus, child care is associated with opportunity costs y. The budget constraint becomes

$$y = c + yn(\tau + p^h(D)I) \tag{3}$$

Thus, under this scenario, after plugging in for C^* and h and solving for I^* and n^* we get

$$n^* = \frac{\gamma[1 - \kappa\beta(Q,D)]}{(\alpha+\gamma)[\tau - p^h(D)\Omega]} \tag{4}$$

and the optimal investment

$$I^* = \frac{\kappa\beta(Q,D)}{1-\kappa\beta(Q,D)}\frac{\tau}{p^h(D)} - \frac{\Omega}{1-\kappa\beta(Q,D)} \tag{5}$$

where $\Omega = \Theta - C - D$. Given these closed-form solutions for the optimal level of investment and children, we can analyze comparative statics. In particular, how I^* and n^* respond to changes in the two hazards with detailed derivations shown in the appendix.

The effects of drought and conflict on optimal investment and fertility can be separated into three sub-effects.

First, the adaptation effect comes from the weight parents place on their children's human capital. We argue that the social complexity and rapid onset of conflict increases parental preferences for skills development while the uncertainty and slow-onset of drought decreases the importance of skills compared to diversity (number of children). Thus, depending on the type of hazard, this effect can be either positive or negative.

Second, a general substitution effect is always positive for investment and negative for the number of children. In particular, parents realize that their investment can perfectly compensate for negative hazards thus increasing their utility from h.

Finally, for drought there is a price effect and in particular that investing in one's children becomes more costly during a drought, thus decreasing I and instead substituting for more children.

Summary Overall, we expect the two different hazards to have diverging effects on child development mainly through varying resilience of and adaptation strategies implemented by the parents. We hypothesize that proximity to conflict increases parental preferences for investments (through a prioritization of complex skills), which protects the child from the direct negative effects on development while drought decreases parental investments due to an increase in the desired number of children (diversification). In addition to the shift in parenting preferences, drought is expected to increase the price of parental investment, especially for households dependent on agriculture, when more resources need to be allocated to food production while conflict preserves resources through an increase in cooperation. The distal threat

of conflict is thereby predicted to generate a proximal environment that is more sensitive to outside induced harm and that cooperates to create safety for their children with positive effects on cognitive interactions and grounds for skills development. Differently, the consequences of drought increases the uncertainty around child survival and increase the costs of investments. Additionally, the strain on economic and emotional resources generates grounds for deprivation during central windows of development for young children.

3 Data and empirical strategy

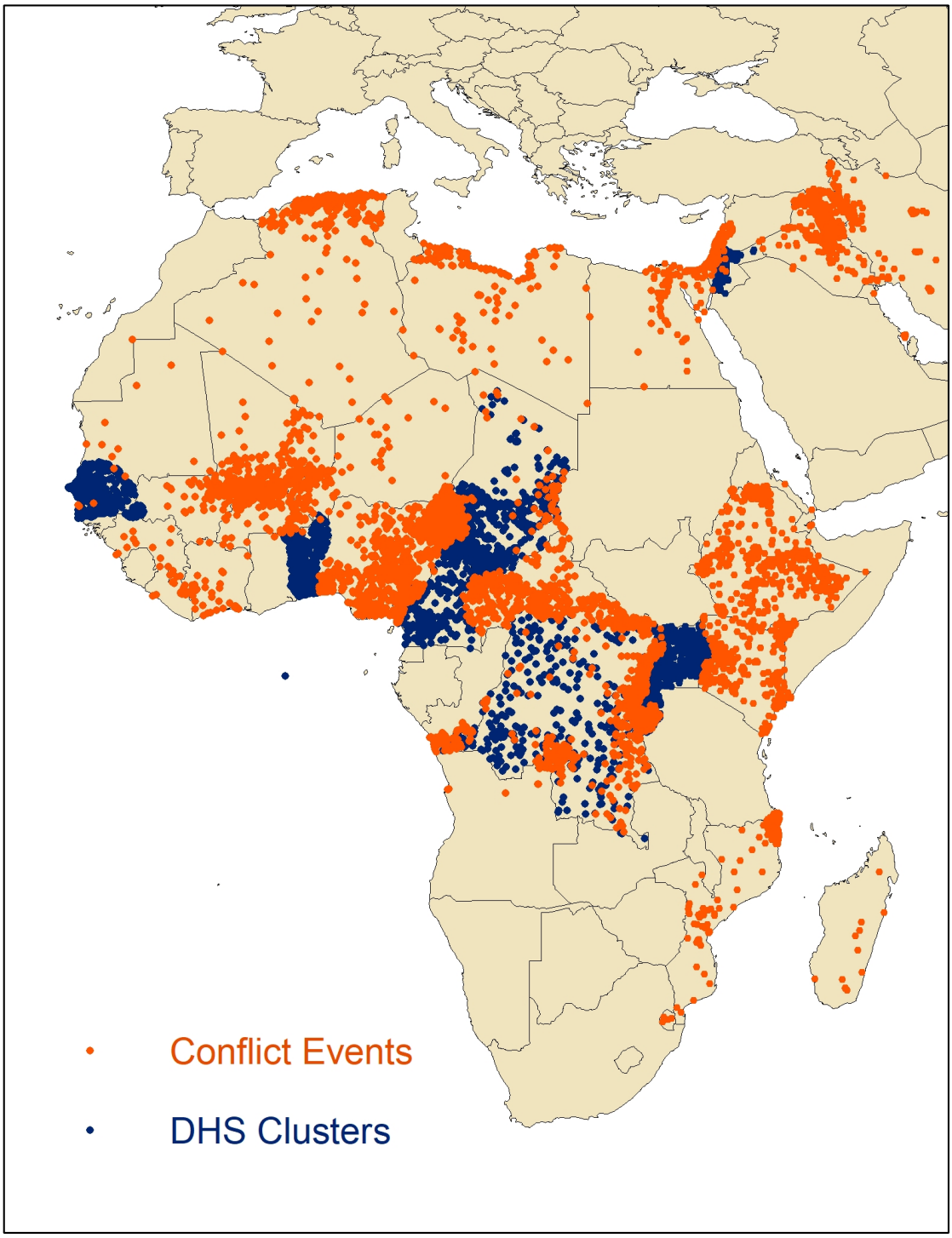
3.1 Data

Data description Our dataset uses UCDP GED conflict fatalities data and SPEI drought data, together with DHS survey data for children from 10 countries for the years from 2006 to 2020, for a total of around 50,000 observations. Summary statistics for each dependent and independent variable are presented in Table 1. The DHS clusters in our sample and the local conflict events are shown in Figure 1.

Dependent variables As our main outcome variables, we employ DHS data from all recent rounds that include a child development module. We restrict the sample to Africa and the Middle East. The DHS child development module contains detailed questions on the cognitive and non-cognitive skills of young children under 5. In particular, mothers are asked whether their child can read simple words, knows the numbers from 1 to 10, and can identify letters and whether it can follow simple instructions, concentrate on a task, get along with other children, or is likely to act aggressively. We group the former three into cognitive skills (and sum them up) and the remaining ones into non-cognitive skills.

We complement these variables with information on whether and how parents (or other household members) invested in the child. Investment hereby refers to reading to the child, singing with them, telling them stories, taking them outside, playing with them, or counting and drawing with them. We can separate between investments by the mother, father, and others. Again, total investment is obtained by summing up the individual answers. We also obtain an

Figure 1: Data



Notes: The map shows the location of the DHS clusters in our sample and UCDP GED conflict events for the time period from 2005-2020.

additional, more objective measure of maternal investment (Murthi and Shekar, 2021), namely whether a mother is breastfeeding her child (if below 3 years).

The reliability of this self-reported survey data is a key issue for the analysis. In particular,

one may wonder whether the answers by mothers suffer from social desirability bias or whether mother sufficiently distinguish between different investment levels or simply give the same answer for fathers, others, and their own investment in the child. To alleviate these concerns, first note that father's investment levels are consistently lower than mothers' or others (Table 1). Furthermore, when we split the sample by household subgroups, we see substantial variation in investment levels. For example, mothers' and fathers' investment are considerably lower when there are grandparents and older siblings in the household. On the other hand, they are significantly larger in households without siblings or grandparents (results in Table A.2). This is a first sanity check that supports the accuracy of the data.

Next, social desirability bias would be especially worrisome if it were correlated with drought or conflict exposure. Mothers exposed to conflict may feel pressured to report adequate care for their children, potentially biasing the answers. However, the absence of similar positive effects for in-utero conflict exposure suggests that this bias is minimal. To further validate our results, we included conflict exposure in the three months preceding the survey as a control variable (conflict during these months should be particularly salient and potentially bias mothers), finding that our results remained robust and the additional regressor is insignificant.

Independent variables Our main independent variable is the incidence of armed conflict within 50 kilometers of a DHS cluster for a child's time in utero (9 months before birth) and its time during early childhood (from birth to the day of DHS interview). A child experienced on average 25.77 fatalities in a 50 kilometer vicinity while in utero and 83.40 during early childhood. Armed conflict data are drawn from the geo-referenced version of the UCDP GED dataset. We include all types of violence coded by UCDP: state-based conflict, involving at least one governmental actor, non-state conflict where two or more organized groups, such as rebel groups, fight each other, and one-sided violence, or the indiscriminate use of armed force by the government against civilians. The UCDP GED includes detailed information about the time, location, type, and fatalities of conflict events from 1989 to 2022. We chose UCDP data for two main reasons. First, the application of an immutable and rigorous definition of conflict, and the strict reliance on a set of transparent coding rules make UCDP data comparable across countries and over time. Second, the UCDP data collection is highly standardized and relies

Table 1: Summary Statistics

	Mean	Min	Max	Std. Dev.	Obs.
A. Dependent Variables					
Cognitive skills, index	0.47	0.00	3.00	0.87	53563
Non-cognitive skills, index	1.32	−2.00	3.00	1.25	52482
Total investment	3.11	0.00	6.00	2.02	54038
Mother's investment	1.76	0.00	6.00	1.83	54038
Father's investment	0.66	0.00	6.00	1.25	54038
Other's investment	1.69	0.00	6.00	1.85	54038
Breast feeding	0.05	0.00	1.00	0.21	32085
Fertility	2.00	1.00	6.00	0.66	55924
Net fertility	1.89	−2.00	5.00	0.65	55924
B. Independent Variables					
Conflict exposure in utero, 50km	25.77	0.00	4033.00	181.13	55924
Conflict exposure in early childhood, 50km	83.40	0.00	14781.00	579.58	55924
Drought exposure in utero	0.60	0.00	6.00	1.00	53080
Drought exposure in early childhood	2.43	0.00	17.00	3.05	53080
Child's month of birth	6.51	1.00	12.00	3.42	55924
Mother's year of schooling	3.86	0.00	20.00	4.33	55912
Mother's age	30.44	15.00	49.00	6.34	55924
Household wealth index	2.71	1.00	5.00	1.39	55924
Household head's sex	1.16	1.00	2.00	0.37	55924
Household head's age	39.65	17.00	98.00	12.03	55922
Household size	2.41	0.00	24.00	1.26	55924

Notes: The unit of observation is a child.

on information from news sources, non-governmental organization reports, case studies, truth commission reports, historical archives, and other sources of information, thus reducing the risk of media bias.

Our second set of independent variables uses drought data during the growing season. We calculate the number of months a child was exposed to severe drought lagged by one month while in utero or during early childhood. On average a child experienced 0.60 months of drought while in utero and 2.43 months in early childhood.

To measure drought we use the Standardized Precipitation Evapotranspiration Index (SPEI) index (Vicente-Serrano et al., 2010). The SPEI is an extension of the Standardized Precipitation Index, which takes into account precipitation, temperature, and potential evapotranspiration to determine drought. Given the scarce use of irrigation in most of Sub-Saharan Africa the rain patterns during planting and growing seasons are the most critical to determine farmers' livelihoods. The SPEI data is available at 0.5 degree level and we spatially match it to the DHS clusters. We define severe drought as a SPEI value below -2. To determine the growing season

we use two data sets. First, MAPSPAM data from 2005, 2017, and 2020 provides us with the three largest crop types grown within 0.5 degree grid cells. Since we only observe this data at three points in time, we interpolate linearly. We then match this to MIRCA2000 data which provides the start and end of the growing season for all crops. Finally, together with the SPEI data we can determine whether a grid cell suffered from severe drought during the growing season.

Control variables The DHS data provides numerous control variables. The children in our sample live in households with mostly male heads (84%) and on average 2.41 members. Their mothers are on average 30.44 years old and accumulated on average 3.86 years of schooling.

3.2 Estimation framework

Our empirical strategy exploits the arguably random timing of births and highly local within-DHS cluster variation to estimate the effects of conflict exposure on child development outcomes In the spirit of a classic balance test, Table A.1 in the appendix shows that our pre-determined control variables do not significantly differ in high violence vs low violence households. Our second main independent variable of interest, drought hazards, is arguably random by construction (i.e., focusing on weather hazards). We employ standard OLS fixed effects regressions:

$$Y_{ilcmt} = \sum_{j=C,D} \beta_1^j U_{ilcmt}^j + \sum_{j=C,D} \beta_2^j EC_{ilcmt}^j + \mathbf{X}_{ilmct}\pi + \gamma_{lc} + \eta_{cm} + \tau_t + \varepsilon_{ilmct}, \tag{6}$$

where Y_{ilcmt} is the development outcome of child i in location cluster l in country c, born in month m and year t. The four main independent variables are U_{ilcmt}^C and EC_{ilcmt}^C – the number of fatalities within 50 kilometers of a DHS cluster while the child was in utero or during early childhood, respectively – and U_{ilcmt}^D and EC_{ilcmt}^D – the number of months with drought during the growing season while in utero and during early childhood, respectively. We take the natural logarithm of our two conflict measures.

To ensure that we only exploit the highly granular variation mentioned above, we need to control for several fixed effects. To account for general local conditions we include location-

country fixed effects (γ_{lc}). This guarantees that general geographic conditions such as altitude, distance from the equator, distance to the main road or capital city as well as mountainous terrain, all of which could affect both a child's development conditions and armed conflict risk, are controlled for. Other time-invariant characteristics, such as a location's political conditions are also controlled for by these fixed effects. We further include country-month η_{cm} and age τ_t fixed effects. For example, children born right after the growing season might have different developmental outcomes than those born during hunger. Naturally, this agricultural season differs from country to country. Next, age-fixed effects ensure that we only compare children of the same age.

In $\mathbf{X}_{ilmct}$ we collect mother and household-level controls. These include age and sex of the household head, household size, and the household wealth score as well as the sex of the child. Some of these variables such as wealth may be bad controls but our results do not depend on them. At the mother level, we include the years of education and age-fixed effects.

Given the inherent spatial structure of our data, we allow standard errors to be correlated within 50km of a DHS cluster. The 50km cutoff coincides with our fatality threshold. However, our results are robust to clustering standard errors at the country-location level and alternative cutoff distances.

4 Child outcomes and parental investments

Cognitive and non-cognitive skills Our main results for the effects of hazards on cognitive and non-cognitive skills in young children are reported in Table 2. Both conflict and drought exposure while in utero have significant negative effects on cognitive development with point estimates of -0.022 (std error 0.009) and -0.009 (std error 0.004) in our preferred specification (regression 3) with our full set of controls and fixed effects.

We find no effect for either of the two during early childhood, point estimates are close to zero and insignificant (again regression 3).

For non-cognitive skills, we find significant negative effects for conflict exposure while in utero and significantly positive effects for conflict exposure during early childhood. In terms of

Table 2: Effects of Hazards on Children's Skills

Dependent variable:	Cognitive Skills			Non-Cognitive Skills		
	(1)	(2)	(3)	(4)	(5)	(6)
Conflict in utero, 50km	−0.022	−0.022	−0.022	−0.018	−0.018	−0.019
	(0.008)***	(0.008)***	(0.009)**	(0.009)**	(0.008)**	(0.008)**
Conflict in early childhood, 50km	−0.006	−0.005	−0.003	0.022	0.023	0.025
	(0.007)	(0.007)	(0.006)	(0.009)**	(0.008)***	(0.009)***
Drought in utero	−0.009	−0.010	−0.009	−0.007	−0.008	−0.008
	(0.004)**	(0.004)**	(0.004)**	(0.005)	(0.005)	(0.005)
Drought in early childhood	0.002	0.000	0.000	−0.007	−0.008	−0.008
	(0.004)	(0.004)	(0.004)	(0.003)**	(0.003)**	(0.003)***
Country-Cluster Effects	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes
Country-Birth Month Effects	no	yes	yes	no	yes	yes
Mother Controls	no	no	yes	no	no	yes
Household Controls	no	no	yes	no	no	yes
R^2	0.01	0.01	0.04	0.00	0.00	0.01
N	49431	49431	49421	48451	48451	48441

Notes: Mother Controls include age-fixed effects and years of schooling. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

magnitudes, our positive point estimate for non-cognitive skills (0.025, std error 0.009) suggests that a one-standard deviation increase in violence experienced during early childhood increases non-cognitive skills by about 11 percent (regression 6).

On the other hand, drought exposure in early childhood strongly decreases non-cognitive skills (-0.008, std error 0.003) while drought experienced in utero has no significant effects on non-cognitive skills although the point estimates are negative and in the same order of magnitude as the ones for exposure during early childhood (-0.008).

In general, all the results are highly robust across three different specifications with varying fixed effects and controls.

Parental investment and adaptive strategies The next set of results is shown in Table 3. In general, the findings for parental investments perfectly mirror the ones for non-cognitive skills. Our data allows us to distinguish between investments by all adult household members, mothers, and fathers.

First, parents and others are significantly more likely to invest in their child when it is exposed to conflict during early childhood (regressions 1). The point estimate of 0.068 (std error 0.021) is substantial, a one standard-deviation increase in the number of fatalities increases

Table 3: Effects of Hazards on Household Members' Investment and Fertility Decisions

Dependent variable:	Investment by						
	All HH Members	Mother	Father	Others	Breastfeeding	Fertility	Net Fertility
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Conflict in utero, 50km	0.000	0.003	−0.011	−0.005	−0.012	−0.031	−0.032
	(0.011)	(0.010)	(0.007)	(0.010)	(0.005)**	(0.004)***	(0.004)***
Conflict in early childhood, 50km	0.068	0.046	0.024	0.025	0.021	−0.016	−0.015
	(0.013)***	(0.012)***	(0.009)**	(0.013)**	(0.006)***	(0.005)***	(0.005)***
Drought in utero	−0.027	−0.002	−0.004	−0.018	−0.012	0.002	0.001
	(0.010)***	(0.008)	(0.006)	(0.009)*	(0.005)**	(0.003)	(0.003)
Drought in early childhood	−0.018	−0.005	−0.004	−0.008	−0.018	0.008	0.009
	(0.005)***	(0.005)	(0.003)	(0.005)*	(0.004)***	(0.002)***	(0.002)***
Country-Cluster Effects	yes	yes	yes	yes	yes	yes	yes
Age Year Effects	yes	yes	yes	yes	no	yes	yes
Age Month Effects	no	no	no	no	yes	no	no
Country Birth Month Effects	yes	yes	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes	yes	yes
R^2	0.45	0.52	0.48	0.42	0.61	0.47	0.47
N	49865	49865	49865	49865	22480	51597	51597

Notes: Control variables are defined in Table 2. **Standard errors** allow for arbitrary correlation within 50km.

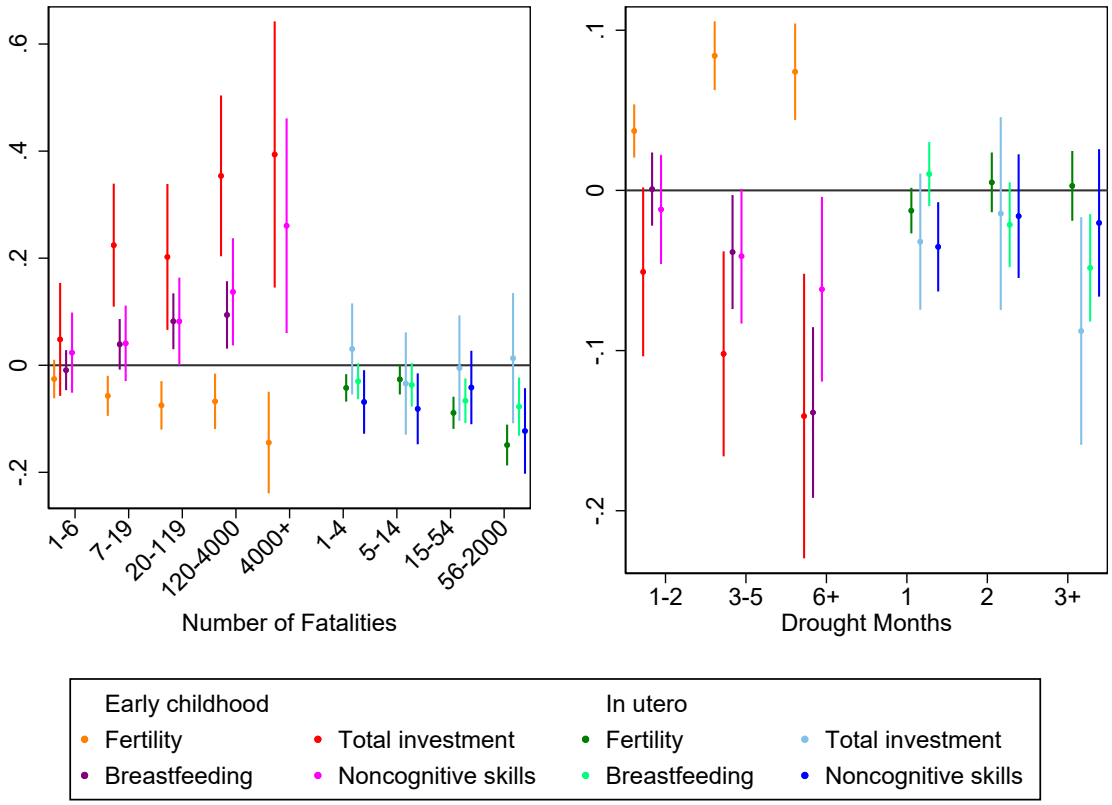
the parenting index by about 1.5 percent. Drought while in utero and during early childhood significantly decreases parental investment in the child.

When we unpack the total investment index into investments by mothers, fathers, and other household members, the results in regressions 2 to 4 suggest that both parents increase their investments in the child when it is exposed to conflict. On the other hand, the drop in investments for drought is exclusively driven by a drop in investments by other household members. This is in line with our argument that conflict induces more household and community collaboration, while drought has the opposite effect. Both mothers and fathers do not significantly change their parenting behavior (regressions 2 to 3).

In regression 5, we show that our previous results are similar when using an alternative measure of parental investment, breastfeeding. Conflict exposure in early childhood significantly increases breastfeeding while any drought exposure decreases it. Interestingly, and different from the findings in regressions 1 to 4, conflict exposure in utero significantly reduces breastfeeding. This is consistent with stress during pregnancy potentially harming the initial connection with the child, especially during the postpartum time period

Next the effects on fertility also clearly diverge. While conflict exposure (both in utero and early childhood) significantly decreases the number of children born to a mother in the last 5 years, drought in early childhood increases it. The point estimate on drought in utero is positive

Figure 2: Non-Linear Effects



Notes: In this figure, we plot the point estimates for various dummies of conflict exposure (threshold defined on the x-axis) for the outcomes of non-cognitive skills and total investments together with 95 percent confidence intervals.

albeit insignificant.

Non-linear effects To provide more evidence for the strong parallelity between a child's non-cognitive skills and parental preferences for investments and to show that communities respond to different threat levels, we dummy out our two conflict and drought exposure measures.

Concrete, we split our two conflict exposure measures into quartile dummies (and an additional dummy to capture extremely large conflicts, above 4000 fatalities) and re-run our main specification. The top part of Figure 2 shows the results. We can clearly see the convex effects of conflict in early childhood on non-cognitive skills. For low levels of conflict, the effects are close to zero and insignificant. However, as the number of fatalities increases, so does their effect on non-cognitive skills. Interestingly, this non-linear pattern is again perfectly mirrored in parental investment behavior, suggesting once more that parent compensation is driving the results. The effects of conflict in utero on the other hand (depicted to the right in the top picture)

are negative and do not depend on the number of fatalities (and neither do investments).

This specification allows us to directly compare our results to traditional child development interventions (with treatment and control group). Going from no conflict exposure (control) to full treatment (fatalities above 5,500, 99.9th percentile) gives an effect size of 0.408.[7]

It may seem surprising that non-cognitive skills are ever increasing since at some point the conflict should become so serious that parents cannot compensate for it. In Figure A.3 in the appendix, we use 8000 fatalities as a threshold for a large conflict. In this case, the effects of parental investment and non-cognitive skills clearly diverge. Even though parents' investment shoots up, non-cognitive skills significantly drop. Taken together, while parents desperately try to compensate for large conflict, non-cognitive skills still drop. We find equally non-linear effects for drought exposure (shown at the bottom of Figure 2).

Summary The impact of the two hazards on children's skills development diverges in line with our expectations. Proximity to conflict increases parental investments and children's non-cognitive skills while drought exposure has the opposite effect on the two outcomes while increasing fertility. However, there is no compensation effect through parental investments by the time of the interview for earlier exposure in utero. The overall effect for both hazards in utero is negative. While parental investments in early childhood seem to compensate for negative effects on non-cognitive skills there is no respective effect on cognitive skills. The change in parental preferences occurs regardless of threat level. However, the compensating effect from conflict is not sufficient to make up for the direct negative effects of being co-ethnic to the fighting group or at high levels of exposure.

5 The parents' budget constraint

Direct effects Our empirical strategy exploits proximity to fatal events and not necessarily direct individual exposure. To proxy for direct exposure we conjecture that those who share an ethnic identity with a fighting dyad are most likely directly impacted. In Table 4 we interact

[7]The point estimate (and thus the difference in means between the control and treatment group) is 0.502 which we normalize with the standard deviation of the control group 1.23 (0.502/1.23=0.408).

Table 4: Threat and direct exposure

Dependent variable:	Non-Cognitive Skills		Investments	
	(1)	(2)	(3)	(4)
Conflict in utero, 50km	−0.019	−0.019	0.001	0.001
	(0.008)**	(0.008)**	(0.012)	(0.011)
... x Co-Ethnic Conflict	−0.029	−0.026	−0.042	−0.034
	(0.034)	(0.034)	(0.072)	(0.069)
Conflict in early childhood, 50km	0.028	0.029	0.067	0.070
	(0.009)***	(0.009)***	(0.014)***	(0.014)***
... x Co-Ethnic Conflict	−0.046	−0.047	−0.034	−0.033
	(0.028)*	(0.028)*	(0.063)	(0.061)
Drought in utero	0.001	−0.000	−0.020	−0.023
	(0.008)	(0.008)	(0.012)	(0.012)*
... x Works in Agriculture	−0.014	−0.012	−0.015	−0.005
	(0.012)	(0.012)	(0.019)	(0.019)
Drought in early childhood	0.001	0.000	−0.013	−0.016
	(0.004)	(0.004)	(0.007)*	(0.007)**
... x Works in Agriculture	−0.020	−0.019	−0.010	−0.005
	(0.006)***	(0.006)***	(0.010)	(0.010)
Country-Cluster Effects	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes
Mother Controls	no	yes	no	yes
Household Controls	no	yes	no	yes
R^2	0.40	0.40	0.44	0.45
N	48451	48441	49874	49865

Notes: Co-Ethnic Conflict is a dummy that takes on the value of one if a household shares the same ethnicity with one of the fighting groups within 50km. Works in Agriculture is likewise a dummy that takes on the value of 1 if the occupation of the mother is self employed within the agricultural sector. Mother Controls include age-fixed effects and years of schooling. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

conflict exposure during early childhood with whether a household's co-ethnics are engaged in fighting. Regressions 1 and 2 suggest that the positive effect of conflict exposure during early childhood on non-cognitive skills in fact disappears for co-ethnic conflict. The point estimate is significant and doubles in absolute magnitude (-0.047, std error 0.028).

Similarly, for drought, the negative effects of drought on non-cognitive skills from above are exclusively driven by mothers who work in agriculture. The point estimates on the interaction effects are negative while the main effects turn zero, indicating similarly to the conflict above, that the direct effects of exposure are negative.

Interestingly, parental investments are independent of both co-ethnic conflict as well as agriculture dependence, parents preferences seem to shift as a response to merely threat and invest more in response to conflict and less in response to drought regardless. The interaction effects are all insignificant in regressions 3 and 4.

To strengthen the argument that this can partly be explained by an increase in the price of a unit of parental investment during drought (but not conflict), Table A.3 in the appendix shows that while both hazards naturally decrease household wealth, drought has a much stronger effect. Thus, arguably increasing the opportunity costs of investing in a child's human capital. Additionally, arguing that the more collaborate response to conflict, compared to drought, preserves resources and mental health that mediates the negative impact on children (shifting the productivity of time invested in the child), we use data on whether husbands are often drunk and whether mothers smoke as proxies for mental health and stress in Table A.4. Overall the results provide suggestive evidence that while drought significantly increases the prevalence of stress, conflict does not.

6 Extensions

An alternative natural hazard To better understand the different findings between drought and conflict from above, we also investigate floods. Floods share the fast-onset characteristics with conflict but lack the man-made component. Thus, they are perfectly suited to tease out which of these two factors seems more important in explaining the differences between drought

and conflict. Unfortunately, the flood data is somewhat less precise than the drought and conflict data and only reaches until 2018. The results should thus be taken with a grain of salt and are only reported in the appendix (Table A.6). Overall, these results show that floods are more similar to droughts, highlighting the importance of the man-made component for parental preferences and behavior to shift in a positive direction for the child's skills development.

Interaction effects Next, we look at possible interaction effects between drought and conflict exposure. Households exposed to multiple crises may exhibit very different behavior from those only affected by one. In Figure A.4 in the appendix, we split the sample into children who experienced drought in early childhood and those who did not. The results indicate that the positive effects of conflict on non-cognitive skills are driven by places that did not experience drought at the same time. Again, the findings are perfectly mirrored for parental investments. Thus, the strongly negative effects of drought likely impact parents' ability to investment in their children in the face of conflict (even if they maybe wanted to).

Household composition To gain a better understanding of who in the households drives non-cognitive skills and further disentangle investment by others, we next split our sample into various subgroups. In particular, we conjecture that especially grandparents and older siblings may take care of the young children. We thus divide the sample into 4 groups: households with the number of older siblings (5-17) above the 75th percentile, households with "grandparents" (hh members above 60) as well as households with neither of those or both. Since the effects might depend on the gender of the siblings and grandparents we further split the groups with only siblings and with only grandparents into whether the majority of siblings and grandparents is male or female. Thus, we are left with 6 mutually exclusive groups. We then interact our conflict exposure in early childhood variable with dummies for these 6 subgroups and regress them on our three investment measures (mothers, fathers, and others) and non-cognitive skills.

The findings are reported in Figure A.1. We establish a number of results. First, the positive effects of conflict on non-cognitive skills seem to be driven by households with many older siblings or "only" parents. In households with only grandparents and no siblings or in both we find no significant effects of conflict on non-cognitive skills. Second, this seems to be driven

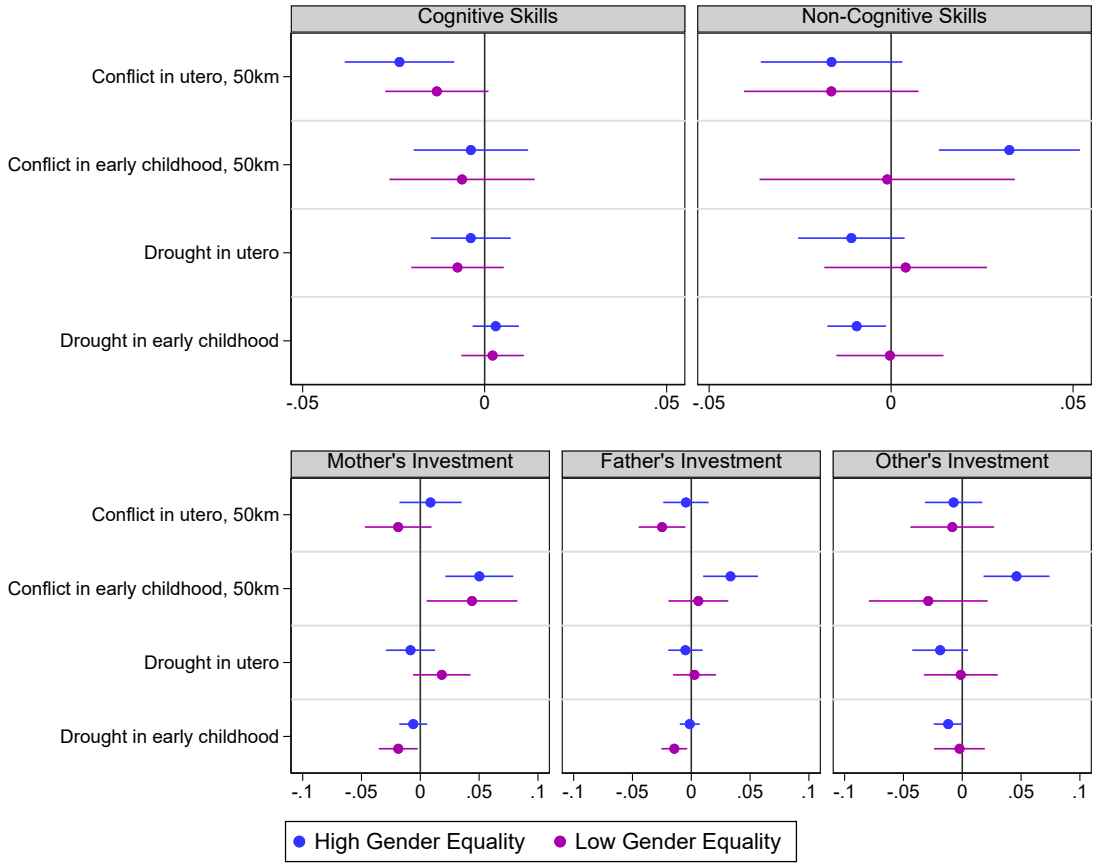
by either both parents or female siblings investing into the child. Third, mothers always seem to invest into their young children, except when there are many older sisters in the household. Fathers seem to free-ride more, however whenever they don't, non-cognitive skills increase. This points to the crucial role fathers may play in shaping their children's non-cognitive skills. Fourth, grandparents do not seem to have effects on children's non-cognitive skills during conflict, likely because they do not change the amount of time they spend with the young children. The effect of conflict on other's investment in both subgroups with only seniors is insignificant. However, this does not mean that grandparents do not invest in their grandchildren, rather it suggests that they do so irrespective of conflict. In Figure A.2 we plot the averages of our three investment and non-cognitive skills variables by subgroup. Importantly, children in the two groups with only grandparents seem to have the highest non-cognitive skills.

Gender dynamics Considering the findings that the relationship between conflict and non-cognitive skills is driven by additional investments by fathers and households with older female children, we next consider gender dynamics. Previous research suggests that there are positive effects on childcare and well-being of children when women have a more substantial influence (Del Giudice et al., 2015; Alonzo, 2012; Duflo, 2003) and that the response to shocks varies depending on factors such as gender (Almond et al., 2018). In Figure 3 we split the sample into more and less gender-equal countries (according to the women's political empowerment index provided by VDem) and re-run our main specifications. The point estimates of conflict during early childhood on non-cognitive skills clearly differ for the two sub-samples. The positive overall effect is exclusively driven by the more gender-equal countries. For the less gender-equal countries, the point estimate is precisely zero. When we repeat the exercise for parental investment, split into our three categories mothers, fathers, and others, we see the largest difference in investments for fathers and others. This is theoretically in line with theories suggesting that when childcare by both parents is valued higher and women have a stronger say in the choice of partner, men are more likely to invest more in their children (Edward and Chapman, 2011). Therefore these are precisely the two categories where we expect an increase in more gender-equal countries. Consistently, mothers' investments are independent of the gender ranking, the two-point estimates are indistinguishable.

To rule out that our measure of gender equality is merely picking up political and economic freedom and not gender equality per se (although the point estimates for fathers highly suggest otherwise), we repeat this exercise in Figure A.5 in the appendix but split the sample along the economic freedom house index. Importantly, we do not see the same pattern as with gender equality. To further substantiate these findings we next conjecture that educated women likely have more bargaining power in the household and are thus more likely to drive our results. In Table A.7 in the appendix we split our sample at the median years of schooling and rerun our main specifications. The results clearly confirm our conjecture. Interestingly, this is true for both the decision to invest more in fewer children when exposed to conflict and for increased fertility under drought exposure.

Our results based on household composition from above suggest that the additional positive influence of fathers and older female children drives the positive effects on non-cognitive skills for conflict-exposed children but also that fathers tend to free-ride whenever there are older children or grandparents within the household. This suggests that gender norms might play a role in when children benefit from additional interaction with their fathers. We therefore re-run our household sub-sample analysis for the two gender equality sub-samples above. Consistently, the positive effects on non-cognitive skills are only visible for the more gender-equal countries. The main difference when comparing Figure A.1 and the top figure of Figure A.6 is that investment by others is now strongly significant in households with many older male siblings as well as households with neither siblings nor grandparents. One probable explanation for this stark difference is that in more gender equal countries not only female children but also male children interact with younger children. In addition, attention and investments that in less gender equal countries are prioritized mainly for older male children may be more equally divided in more gender equal countries. We also see a clear increase of father's investments in more gender equal countries.

Figure 3: Effects by Gender Equality Status



Notes: The sample is split at the 25th percentile of the VDem Women's political empowerment Index. All points of the same color within a column represent a separate regression. We report 95 percent confidence intervals.

7 Robustness and placebo checks

We provide several robustness and placebo checks in the appendix. First, to test for outliers, we drop one country at a time and re-run our main specifications. Figure A.7 in the appendix suggests that the results are not driven by a particular country.

Next, we show that our results do not depend on the exact threshold to measure fatalities. Our baseline specification counts conflict events within 50km of a DHS cluster. In Figure A.8 we report results also for 10km, 25km, and 75 km thresholds. Overall the results are highly robust.

Our baseline specification counts conflict within 50km of a DHS cluster. If clusters are close to a border this may include conflict events in neighboring countries. For robustness' sake, we re-run our main specification but exclude conflict in neighboring countries. Table A.8 suggests that the results are robust.

Our hazard exposure measures in utero and during early childhood may be highly correlated. To rule out that multicollinearity is affecting our findings we re-run our main specifications but add each hazard exposure variable one by one. Importantly, the results are robust.

Our SPEI measure is based on both temperature and precipitation data to estimate agricultural drought conditions. To show that our findings are not exclusively driven by either of those but rather the results of a specific combination of climatological factors, we also separately control for temperature and rainfall during a child's time in utero and during early childhood. The results in Table A.9 suggest that our findings are robust.

In Table A.10 we provide a final set of robustness checks. First, we drop the top 1% of the conflict distribution to show that our results are not driven by extreme outliers. Next, our baseline specification takes the natural logarithm of fatalities, however, our results to not depend on it. The results are robust to a simple linear specification. Finally, the results are robust to adding age by sex and mother occupation fixed effects.

We also run a number of placebo checks. First we randomly reshuffle our four main variables of interest (within each country) and re-run our main regression 100 times. The results are reported in Figures A.9 and A.10. Importantly, our regressors using the true drought and conflict distribution is an outlier in each of the sub-figures (excluding those cases where it is

not significant in the first place). Besides spatially re-assigning data we also use placebo time periods from before a child's conception to re-calculate our conflict and drought measures. Again, our point estimates (whenever significant in the baseline regression) are an outlier at conventional significance levels (Figures A.12 and A.11).

8 Alternative explanations

We argue that parents' strategic investments and their substitution of child quantity for quality are driving the positive effects on non-cognitive skills. In this section, we rule out several alternative mechanisms.

Parents' time First, conflict may cause serious local economic disruptions which may force parents into unemployment thus freeing up time to spend with their kids. While this may not necessarily bias our results it would change the interpretation. In Table A.11 in the appendix we show that neither hazard affects unemployment. Furthermore, conflict and drought do not make mothers more or less likely to browse the Internet, watch TV, or listen to the radio.

Geographic sorting Selective migration might explain our findings. We present two pieces of evidence to suggest that this is unlikely. First, more prosperous and more affluent households usually migrate because they can afford to – this would go against our findings. Second, the DHS data contains a question on how long a household has lived in their surveyed location. Importantly, the effects do not differ for the total sample (including migrants who moved in after their child was born) and households that experienced violence in their surveyed location.

Selective survival Another concern may be selective killings or selective mortality. Maybe violence targeted the most vulnerable households, which could explain the positive effects of conflict exposure in early childhood on non-cognitive skills. However, it could not explain the adverse effects of conflict exposure in utero. Furthermore, in Table A.5 in the appendix we show that our two hazards are unrelated to child mortality.

Post-conflict reconstruction and foreign food aid One may worry that especially the positive effects for conflict are driven by post-conflict reconstruction efforts such as international food aid or NGO investments. However, in Table A.2 we show that both hazards are negatively related to children's physical health (i.e., height for age and weight for age). This should not be the case if conflict affected households systematically get more help.

9 Discussion and conclusion

Our findings underscore the profound impact of exposure to armed conflict and drought during the fetal stage on children's development of cognitive and non-cognitive skills. In alignment with our theoretical framework, we observe that early childhood development is more adversely affected by drought exposure than by conflict. Surprisingly, we find a significant positive effect of conflict exposure in early childhood on non-cognitive skills. This pattern appears to be driven by increased parental investment in response to the threat, which enhances children's non-cognitive development. However, this adaptive strategy is less effective in the most intense conflicts or when the mother shares an ethnic identity with a combatant group, leading to declines in non-cognitive skills despite parental efforts. Furthermore, the total effect of conflict (both in utero and early childhood) is non-positive, the joint point estimate is negative but insignificant.

Conversely, drought and flood exposure in early childhood tends to reduce parental investment and subsequently diminishes children's non-cognitive skills. Parents appear to adopt a diversification strategy, increasing the number of children in response to climate-related threats. This shift in parental preferences during droughts is particularly evident in households heavily reliant on agriculture, where the negative impact on skills is most pronounced. Interestingly, the primary outcomes for both conflict and drought exposures are driven by more educated women and occur in countries above the bottom 25th percentile of the global gender equality distribution. This suggests that these parental strategies reflect conscious fertility decisions and investment behaviors. Notably, the increase in investments during conflicts is primarily driven by fathers and older children. The benefits on non-cognitive skills from fathers and older male

children are contingent on a certain level of gender equality.

Our results align with the fetal origin hypothesis, which posits that the prenatal period is critically sensitive to external adversities. This highlights the necessity of protecting pregnant women from conflict and environmental hazards to safeguard early childhood development. Additionally, our findings contribute to the limited literature on the impacts of such hazards on children's non-cognitive skills. Similar to studies on adults, our results indicate potential positive effects of conflict exposure on young children's non-cognitive skills, driven by enhanced human capital valuation and increased within-group prosocial behavior during conflicts. In contrast, drought-induced parental strategies involve higher fertility rates but reduce individual investment in each child's skill development. This highlights the importance of testing adaptive theoretical models and the potential interacting effects of distal and proximal cues of threat and deprivation.

While increased parental investment correlates with higher threat levels, direct exposure to either hazard negatively affects children's skills. These findings highlight the resilience of parents and children but also point to several important caveats. First, parents only adapt their strategies when threats are overt and their children are visibly affected and they cannot fully compensate for the negative impacts of direct exposures, such as ethnic ties to conflicting parties. Second, different hazards provoke divergent parental strategies, resulting in varying impacts on child development. This calls for further research into how specific hazards influence family dynamics. Third, women's decision-making power is crucial in shaping family responses, but the involvement of fathers and other family members is equally vital for positive child outcomes.

These insights underscore the need to support family cohesion and target interventions to help families stay intact, especially when their resources are severely strained. Ensuring family stability and providing direct support to families in crisis are essential for mitigating the negative impacts of environmental and conflict-related hazards on children's development.

References

Ahlström, T. (2011). Life-history theory, past human populations and climatic perturbations. *International Journal of Osteoarchaeology 21*(4), 407–419.

Akbulut-Yuksel, M. (2014). Children of war: The long-run effects of large-scale physical destruction and warfare on children. *Journal of Human resources 49*(3), 634–662.

Akresh, R. (2008). *Armed conflict and schooling: Evidence from the 1994 Rwandan genocide*, Volume 3516. World Bank Publications.

Akresh, R., L. Lucchetti, and H. Thirumurthy (2012). Wars and child health: Evidence from the eritrean–ethiopian conflict. *Journal of development economics 99*(2), 330–340.

Alderman, H., J. Hoddinott, and B. Kinsey (2006). Long term consequences of early childhood malnutrition. *Oxford economic papers 58*(3), 450–474.

Almond, D. and J. Currie (2011). Killing me softly: The fetal origins hypothesis. *Journal of economic perspectives 25*(3), 153–172.

Almond, D., J. Currie, and V. Duque (2018). Childhood circumstances and adult outcomes: Act ii. *Journal of Economic Literature 56*(4), 1360–1446.

Almond, D. and B. Mazumder (2011). Health capital and the prenatal environment: the effect of ramadan observance during pregnancy. *American Economic Journal: Applied Economics 3*(4), 56–85.

Alonzo, S. H. (2012). Sexual selection favours male parental care, when females can choose. *Proceedings of the Royal Society B: Biological Sciences 279*(1734), 1784–1790.

Anderson, L. M., C. Shinn, M. T. Fullilove, S. C. Scrimshaw, J. E. Fielding, J. Normand, V. G. Carande-Kulis, T. F. on Community Preventive Services, et al. (2003). The effectiveness of early childhood development programs: A systematic review. *American journal of preventive medicine 24*(3), 32–46.

Andriano, L. and J. Behrman (2020). The effects of growing-season drought on young womenâs life course transitions in a sub-saharan context. *Population Studies 74*(3), 331–350.

Austin, M.-P., B. Christl, C. McMahon, S. Kildea, N. Reilly, C. Yin, G. Simcock, G. Elgbeili, D. P. Laplante, and S. King (2017). Moderating effects of maternal emotional availability on language and cognitive development in toddlers of mothers exposed to a natural disaster in pregnancy: The qf2011 queensland flood study. *Infant behavior and development 49*, 296–309.

Barker, D. J. (1990). The fetal and infant origins of adult disease. *BMJ: British Medical Journal 301*(6761), 1111.

Bauer, M., C. Blattman, J. Chytilová, J. Henrich, E. Miguel, and T. Mitts (2016). Can war foster cooperation? *Journal of Economic Perspectives 30*(3), 249–274.

Black, M. M., S. P. Walker, L. C. Fernald, C. T. Andersen, A. M. DiGirolamo, C. Lu, D. C. McCoy, G. Fink, Y. R. Shawar, J. Shiffman, et al. (2017). Early childhood development coming of age: science through the life course. *The Lancet 389*(10064), 77–90.

Borghans, L., A. L. Duckworth, J. J. Heckman, and B. Ter Weel (2008). The economics and psychology of personality traits. *Journal of human Resources 43*(4), 972–1059.

Bowles, S. (2006). Group competition, reproductive leveling, and the evolution of human altruism. *science 314*(5805), 1569–1572.

Brück, T., M. dâErrico, and R. Pietrelli (2019). The effects of violent conflict on household resilience and food security: Evidence from the 2014 gaza conflict. *World Development 119*, 203–223.

Bundervoet, T., P. Verwimp, and R. Akresh (2009). Health and civil war in rural burundi. *Journal of human Resources 44*(2), 536–563.

Chang, G., M. Favara, and R. Novella (2022a). The origins of cognitive skills and non-cognitive

skills: The long-term effect of in-utero rainfall shocks in india. *Economics & Human Biology 44*, 101089.

Chang, G., M. Favara, and R. Novella (2022b, January). The origins of cognitive skills and non-cognitive skills: The long-term effect of in-utero rainfall shocks in India. *Economics & Human Biology 44*, 101089.

Corno, L., N. Hildebrandt, and A. Voena (2020). Age of marriage, weather shocks, and the direction of marriage payments. *Econometrica 88*(3), 879–915.

De Rooij, S. R., H. Wouters, J. E. Yonker, R. C. Painter, and T. J. Roseboom (2010). Prenatal undernutrition and cognitive function in late adulthood. *Proceedings of the National Academy of Sciences 107*(39), 16881–16886.

Del Giudice, M. (2014). Early stress and human behavioral development: emerging evolutionary perspectives. *Journal of Developmental Origins of Health and Disease 5*(4), 270–280.

Del Giudice, M., B. J. Ellis, and E. A. Shirtcliff (2011). The adaptive calibration model of stress responsivity. *Neuroscience & biobehavioral reviews 35*(7), 1562–1592.

Del Giudice, M., S. W. Gangestad, H. S. Kaplan, et al. (2015). Life history theory and evolutionary psychology. *The handbook of evolutionary psychology 1*, 88–114.

Diab, S. Y., S. Isosävi, S. R. Qouta, S. Kuittinen, and R.-L. Punamäki (2018). The protective role of maternal posttraumatic growth and cognitive trauma processing among palestinian mothers and infants. *Infant Behavior and Development 50*, 284–299.

Dimitrova, A. (2021). Seasonal droughts and the risk of childhood undernutrition in ethiopia. *World Development 141*, 105417.

Dinkelman, T. (2017). Long-run health repercussions of drought shocks: evidence from south african homelands. *The Economic Journal 127*(604), 1906–1939.

Döring, S. and J. Hall (2023). Drought exposure decreases altruism with salient group identities as key moderator. *Nature Climate Change 13*(8), 856–861.

Duflo, E. (2003). Grandmothers and granddaughters: old-age pensions and intrahousehold allocation in south africa. *The World Bank Economic Review 17*(1), 1–25.

Duque, V. (2017, December). Early-life conditions and child development: Evidence from a violent conflict. *SSM - Population Health 3*, 121–131.

Edward, D. A. and T. Chapman (2011). The evolution and significance of male mate choice. *Trends in ecology & evolution 26*(12), 647–654.

Eissler, S., B. C. Thiede, and J. Strube (2019). Climatic variability and changing reproductive goals in sub-saharan africa. *Global Environmental Change 57*, 101912.

Ellis, B. J. and M. Del Giudice (2019). Developmental adaptation to stress: An evolutionary perspective. *Annual review of psychology 70*(1), 111–139.

Ellis, B. J., A. J. Figueredo, B. H. Brumbach, and G. L. Schlomer (2009). Fundamental dimensions of environmental risk: The impact of harsh versus unpredictable environments on the evolution and development of life history strategies. *Human nature 20*, 204–268.

Ellis, B. J., M. A. Sheridan, J. Belsky, and K. A. McLaughlin (2022). Why and how does early adversity influence development? toward an integrated model of dimensions of environmental experience. *Development and Psychopathology 34*(2), 447–471.

Evans, G. W., D. Li, and S. S. Whipple (2013). Cumulative risk and child development. *Psychological bulletin 139*(6), 1342.

García, J. L., J. J. Heckman, and V. Ronda (2023). The lasting effects of early-childhood education on promoting the skills and social mobility of disadvantaged african americans and their children. *Journal of Political Economy 131*(6), 1477–1506.

Gredebäck, G., S. Haas, J. Hall, S. Pollak, D. C. Karakus, and M. Lindskog (2021). Social cognition in refugee children: an experimental cross-sectional study of emotional processing with syrian families in turkish communities. *Royal Society Open Science 8*(8), 210362.

Gredebäck, G., J. Hall, and M. Lindskog (2022). Fluid intelligence in refugee children. a cross-sectional study of potential risk and resilience factors among syrian refugee children and their parents. *Intelligence 94*, 101684.

Gredebäck, G., M. Lindskog, and J. Hall (2023). Poor maternal mental health is associated with a low degree of proactive control in refugee children. *Quarterly Journal of Experimental Psychology*, 17470218231211573.

Green, F. (2011). *What is Skill?: An Inter-Disciplinary Synthesis*. Centre for Learning and Life Chances in Knowledge Economies and Societies London.

Heckman, J., R. Pinto, and P. Savelyev (2013). Understanding the mechanisms through which an influential early childhood program boosted adult outcomes. *American Economic Review 103*(6), 2052–2086.

Heckman, J. J., J. Stixrud, and S. Urzua (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor economics 24*(3), 411–482.

Henrich, J. and R. Boyd (2001). Why people punish defectors: Weak conformist transmission can stabilize costly enforcement of norms in cooperative dilemmas. *Journal of theoretical biology 208*(1), 79–89.

Holden, S. T. and J. Quiggin (2017). Climate risk and state-contingent technology adoption: shocks, drought tolerance and preferences. *European Review of Agricultural Economics 44*(2), 285–308.

Hyland, M. and J. Russ (2019, March). Water as destiny – The long-term impacts of drought in sub-Saharan Africa. *World Development 115*, 30–45.

Justino, P. (2012). War and poverty. *IDS Working Papers 2012*(391), 1–29.

Kaplan, H., K. Hill, J. Lancaster, and A. M. Hurtado (2000). A theory of human life history evolution: Diet, intelligence, and longevity. *Evolutionary Anthropology: Issues, News, and Reviews: Issues, News, and Reviews 9*(4), 156–185.

Kiernan, K. E. and M. C. Huerta (2008). Economic deprivation, maternal depression, parenting and children's cognitive and emotional development in early childhood 1. *The British journal of sociology 59*(4), 783–806.

Kraehnert, K., T. Brück, M. Di Maio, and R. Nisticò (2019). The effects of conflict on fertility: Evidence from the genocide in rwanda. *Demography 56*(3), 935–968.

Krutikova, S. and H. Lilleør (2015). Fetal origins of personality: Effects of early life circumstances on adult personality traits.

Le, K. and M. Nguyen (2022, March). Droughts and child health in Bangladesh. *PLOS ONE 17*(3), e0265617.

Lee, C. (2014). In utero exposure to the korean war and its long-term effects on socioeconomic and health outcomes. *Journal of health economics 33*, 76–93.

Lupien, S. J., I. Ouellet-Morin, A. Hupbach, M. T. Tu, C. Buss, D. Walker, J. Pruessner, and B. S. Mcewen (2015). Beyond the stress concept: Allostatic loadâa developmental biological and cognitive perspective. *Developmental psychopathology: Volume two: Developmental neuroscience*, 578–628.

Maccini, S. and D. Yang (2009). Under the weather: Health, schooling, and economic consequences of early-life rainfall. *American Economic Review 99*(3), 1006–1026.

McLaughlin, K. A. and M. A. Sheridan (2016). Beyond cumulative risk: A dimensional approach to childhood adversity. *Current directions in psychological science 25*(4), 239–245.

McLaughlin, K. A., M. A. Sheridan, and H. K. Lambert (2014). Childhood adversity and neural development: Deprivation and threat as distinct dimensions of early experience. *Neuroscience & Biobehavioral Reviews 47*, 578–591.

Murthi, M. and M. Shekar (2021). Breastfeeding: A key investment in human capital. *Pediatrics 147*(3).

Nguyen, C. V. and N. Minh Pham (2018). The impact of natural disasters on children's education: Comparative evidence from ethiopia, india, peru, and vietnam. *Review of development Economics 22*(4), 1561–1589.

Norling, J. (2022). Fertility following natural disasters and epidemics in africa. *The World Bank Economic Review 36*(4), 955–971.

Nubler, L., K. Austrian, J. A. Maluccio, and J. Pinchoff (2021, October). Rainfall shocks, cognitive development and educational attainment among adolescents in a drought-prone region in Kenya. *Environment and Development Economics 26*(5-6), 466–487.

Oberg, C., H. Hodges, and A. S. Masten (2021). Risk and resilience of somali children in the context of climate change, famine, and conflict. *Journal of Applied Research on Children: Informing Policy for Children at Risk 12*(1), 10.

Østby, G., S. A. Rustad, R. Haer, and A. Arasmith (2023). Children at risk of being recruited for armed conflict, 1990–2020. *Children & Society 37*(2), 524–543.

Peltonen, K., G. Gredebäck, S. D. Pollak, M. Lindskog, and J. Hall (2023). The role of maternal trauma and discipline types in emotional processing among syrian refugee children. *European Child & Adolescent Psychiatry 32*(8), 1487–1495.

Pollak, S. D., D. Cicchetti, K. Hornung, and A. Reed (2000). Recognizing emotion in faces: developmental effects of child abuse and neglect. *Developmental psychology 36*(5), 679.

Pollak, S. D., M. Messner, D. J. Kistler, and J. F. Cohn (2009). Development of perceptual expertise in emotion recognition. *Cognition 110*(2), 242–247.

Pollak, S. D. and P. Sinha (2002). Effects of early experience on children's recognition of facial displays of emotion. *Developmental psychology 38*(5), 784.

Punamäki, R.-L., S. Y. Diab, S. Isosävi, S. Kuittinen, and S. R. Qouta (2018). Maternal pre- and postnatal mental health and infant development in war conditions: The gaza infant study. *Psychological Trauma: Theory, Research, Practice, and Policy 10*(2), 144.

Punamäki, R.-L., S. Isosävi, S. R. Qouta, S. Kuittinen, and S. Y. Diab (2017). War trauma and maternal–fetal attachment predicting maternal mental health, infant development, and dyadic interaction in palestinian families. *Attachment & human development 19*(5), 463–486.

Punamäki, R.-L., E. Palosaari, M. Diab, K. Peltonen, and S. R. Qouta (2015). Trajectories of posttraumatic stress symptoms (ptss) after major war among palestinian children: Trauma, family-and child-related predictors. *Journal of affective disorders 172*, 133–140.

Punamäki, R.-L., S. Qouta, T. Miller, and E. El-Sarraj (2011). Who are the resilient children in conditions of military violence? family-and child-related factors in a palestinian community sample. *Peace and Conflict: Journal of Peace Psychology 17*(4), 389–416.

Punamäki, R.-L., S. R. Qouta, and K. Peltonen (2017). Family systems approach to attachment relations, war trauma, and mental health among palestinian children and parents. *European Journal of Psychotraumatology 8*(sup7), 1439649.

Qouta, S., R.-L. Punamäki, and E. El Sarraj (2008). Child development and family mental health in war and military violence: The palestinian experience. *International Journal of Behavioral Development 32*(4), 310–321.

Qouta, S. R., M. Vänskä, S. Y. Diab, and R.-L. Punamäki (2021). War trauma and infant motor, cognitive, and socioemotional development: Maternal mental health and dyadic interaction as explanatory processes. *Infant behavior and development 63*, 101532.

Randell, H. and C. Gray (2019). Climate change and educational attainment in the global tropics. *Proceedings of the National Academy of Sciences 116*(18), 8840–8845.

Rosales-Rueda, M. (2018). The impact of early life shocks on human capital formation: Evidence from el niño floods in ecuador. *Journal of health economics 62*, 13–44.

Rosen, M. L., M. P. Hagen, L. A. Lurie, Z. E. Miles, M. A. Sheridan, A. N. Meltzoff, and K. A. McLaughlin (2020). Cognitive stimulation as a mechanism linking socioeconomic status with executive function: A longitudinal investigation. *Child development 91*(4), e762–e779.

Rosen, M. L., M. A. Sheridan, K. A. Sambrook, A. N. Meltzoff, and K. A. McLaughlin (2018). Socioeconomic disparities in academic achievement: A multi-modal investigation of neural mechanisms in children and adolescents. *NeuroImage 173*, 298–310.

Sanchez, A. (2017, November). The structural relationship between early nutrition, cognitive skills and non-cognitive skills in four developing countries. *Economics & Human Biology 27*, 33–54.

Scharpf, F., G. Mkinga, F. Neuner, M. Machumu, and T. Hecker (2021). Fuel to the fire: The escalating interplay of attachment and maltreatment in the transgenerational transmission of psychopathology in families living in refugee camps. *Development and psychopathology 33*(4), 1308–1321.

Shah, M. and B. M. Steinberg (2017). Drought of opportunities: Contemporaneous and long-term impacts of rainfall shocks on human capital. *Journal of Political Economy 125*(2), 527–561.

Shemyakina, O. (2011). The effect of armed conflict on accumulation of schooling: Results from tajikistan. *Journal of Development Economics 95*(2), 186–200.

Shoji, M. (2021). Early-life circumstances and gender differences in adult noncognitive skills: Evidence from 46 countries. Technical report, CSRDA Discussion Paper Series 9.

Shonkoff, J. P., A. S. Garner, C. on Psychosocial Aspects of Child, A. Family Health, Committee on Early Childhood, D. Care, S. on Developmental, B. Pediatrics, B. S. Siegel, M. I. Dobbins, M. F. Earls, A. S. Garner, L. McGuinn, J. Pascoe, and D. L. Wood (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics 129*(1), e232–e246.

Somefun, O., B. H. Banougnin, and E. Smith-Greenaway (2024). The relationships between drought exposure, fertility preferences, and contraceptive behaviors: A multicountry study. *Studies in Family Planning*.

Thiede, B. C., M. Hancock, A. Kodouda, and J. Piazza (2020). Exposure to armed conflict and fertility in sub-saharan africa. *Demography 57*(6), 2113–2141.

UNICEF et al. (2023). The climate-changed child.

Vicente-Serrano, S. M., S. Beguería, and J. I. López-Moreno (2010). A multiscalar drought index sensitive to global warming: the standardized precipitation evapotranspiration index. *Journal of climate 23*(7), 1696–1718.

Vins, H., J. Bell, S. Saha, and J. J. Hess (2015). The mental health outcomes of drought: a systematic review and causal process diagram. *International journal of environmental research and public health 12*(10), 13251–13275.

Walker, S. P., T. D. Wachs, J. M. Gardner, B. Lozoff, G. A. Wasserman, E. Pollitt, and J. A. Carter (2007). Child development: risk factors for adverse outcomes in developing countries. *The lancet 369*(9556), 145–157.

Wu, J., J. Lin, and X. Han (2023). Compensation for girls in early childhood and its long-run impact: family investment strategies under rainfall shocks. *Journal of Population Economics 36*(3), 1225–1268.

Wuepper, D., D. Zilberman, and J. Sauer (2020). Non-cognitive skills and climate change adaptation: empirical evidence from ghanaâs pineapple farmers. *Climate and Development 12*(2), 151–162.

Zamand, M. and A. Hyder (2016). Impact of climatic shocks on child human capital: evidence from young lives data. *Environmental hazards 15*(3), 246–268.

Zamani, G. H., M. J. Gorgievski-Duijvesteijn, and K. Zarafshani (2006). Coping with drought: Towards a multilevel understanding based on conservation of resources theory. *Human Ecology 34*, 677–692.

Online Appendix

A.1 Model Derivations

Using the product and chain rule, simple differentiation of (4) and (5) with respect to D and Q yields

$$\frac{\delta n^*}{\delta Q} = \frac{-\kappa\beta'_Q}{(\alpha+\gamma)(\tau-p\Omega)} - \frac{\gamma(1-\kappa\beta)p}{(\alpha+\gamma)[\tau-p\Omega]^2} \qquad < 0$$

$$\frac{\delta n^*}{\delta D} = \underbrace{\frac{-\gamma\kappa\beta'_D}{(\alpha+\gamma)(\tau-p\Omega)}}_{\textit{Adaptation Effect}} - \underbrace{\frac{\gamma(1-\kappa\beta)p}{(\alpha+\gamma)[\tau-p\Omega]^2}}_{\textit{Substitution Effect}} + \underbrace{\frac{\gamma(1-\kappa\beta)\Omega}{(\alpha+\gamma)(\tau-p\Omega)}p'_D}_{\textit{Price Effect}} \qquad > 0$$

$$\frac{\delta I^*}{\delta Q} = \underbrace{\frac{[\tau-p\Omega]\kappa\beta'_Q}{p(1-\kappa\beta)^2}}_{\textit{Adaptation Effect}} + \underbrace{\frac{1}{1-\kappa\beta}}_{\substack{\text{Substitution}\\ \textit{Effect}}} \qquad > 0$$

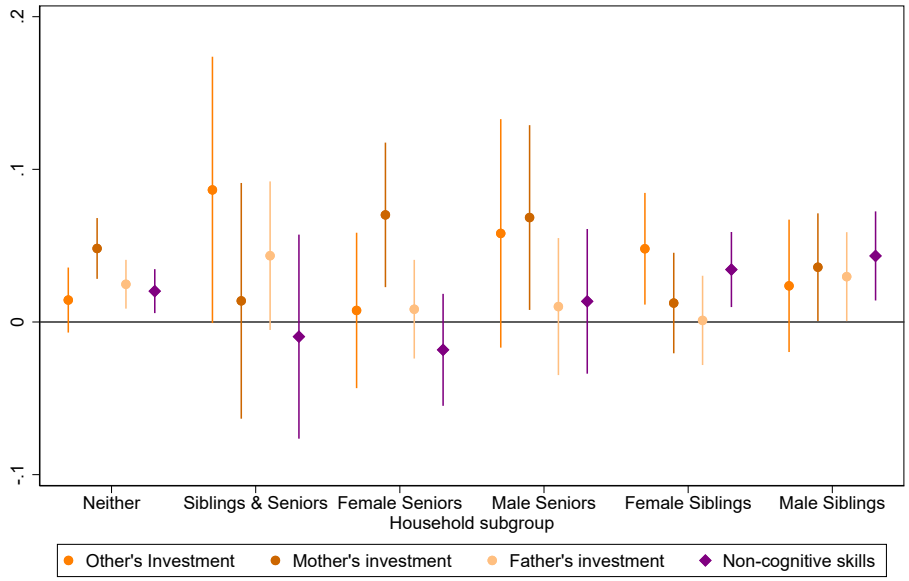
$$\frac{\delta I^*}{\delta D} = \underbrace{\frac{[\tau(\kappa\beta+p+1)-p\Omega]\kappa\beta'_D}{p(1-\kappa\beta)^2}}_{\textit{Adaptation Effect}} + \underbrace{\frac{1}{1-\kappa\beta}}_{\substack{\text{Substitution}\\ \textit{Effect}}} + \underbrace{\frac{-\tau\kappa\beta p'_D}{p^2(1-\kappa\beta)}}_{\textit{Price Effect}} \qquad < 0$$

A.2 Additional data

Flood fatalities Data on the number of fatalities caused by floods is taken from the EM-DAT International disaster database. EM-DAT contains data on over 26,000 mass disasters worldwide from 1900 to the present day. The database is carefully compiled from numerous sources, including UN agencies, non-governmental organizations, reinsurance companies, research institutes, and press agencies. Importantly for us, it includes the exact start and end date of the flood and the number of fatalities. To spatially match this dataset to our DHS clusters we complement it with GIS information from the Geocoded Disasters (GDIS) Dataset which provides more detailed spatial information on a subset of natural disasters from the EM-DAT data. This data set covers the years 1960 to 2018. All floods, storms (typhoons, monsoons etc.), earthquakes, landslides, droughts, volcanic activity and extreme temperatures that were recorded in EM-DAT during these 58 years and could be geocoded are included in the data set. We match the location of these floods to the 50km buffers around each DHS cluster and then calculate the number of fatalities each child was exposed to while in utero and during early childhood.

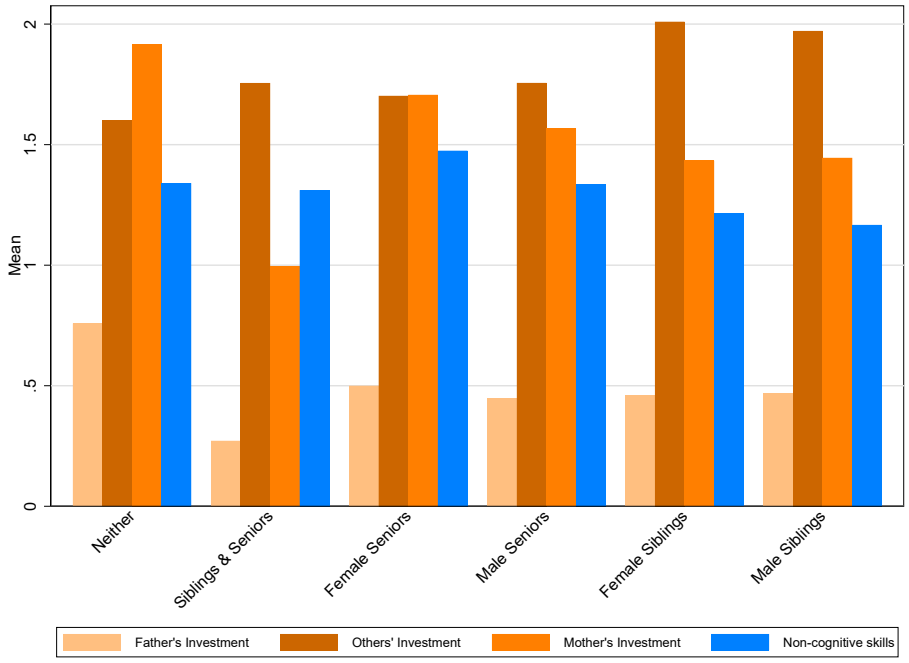
A.3 Additional tables and figures

Figure A.1: Household Subgroups



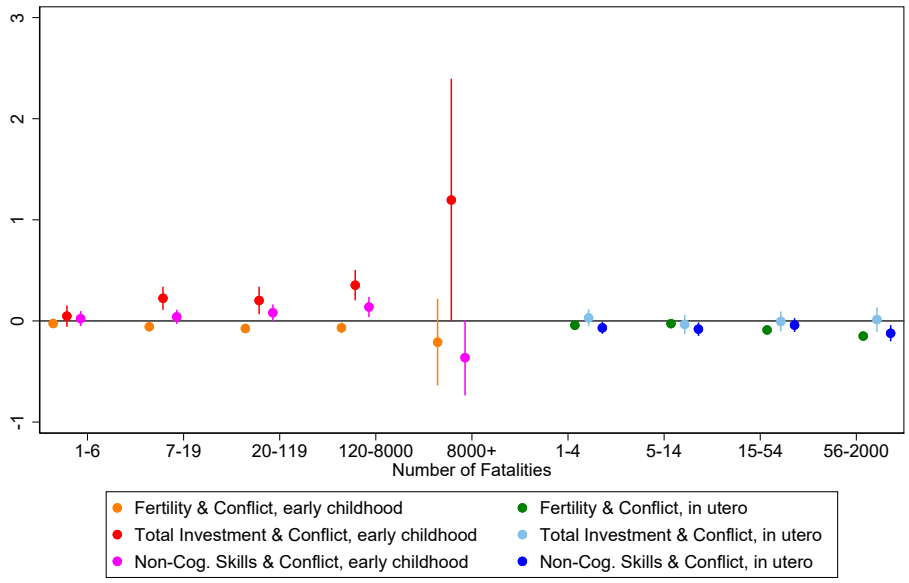
Notes: In this figure we plot the point estimates on exposure to conflict in early childhood for various (mutually exclusive) household subgroups. The four dependent variables are given in the legend. To give an exampe, all the point estimates in purple stem from one regression and so on. We also report 90 percent confidence intervals.

Figure A.2: Household Subgroups – Means



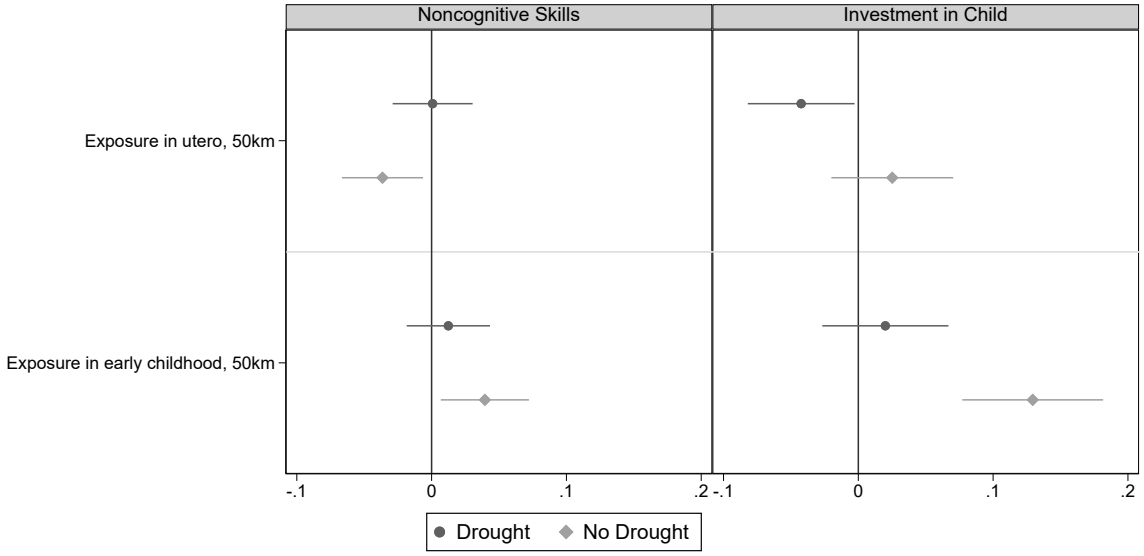
Notes: In this figure we plot the averages for our investment and non-cognitive skills variables for various (mutually exclusive) household subgroups.

Figure A.3: Non-Linear Effects



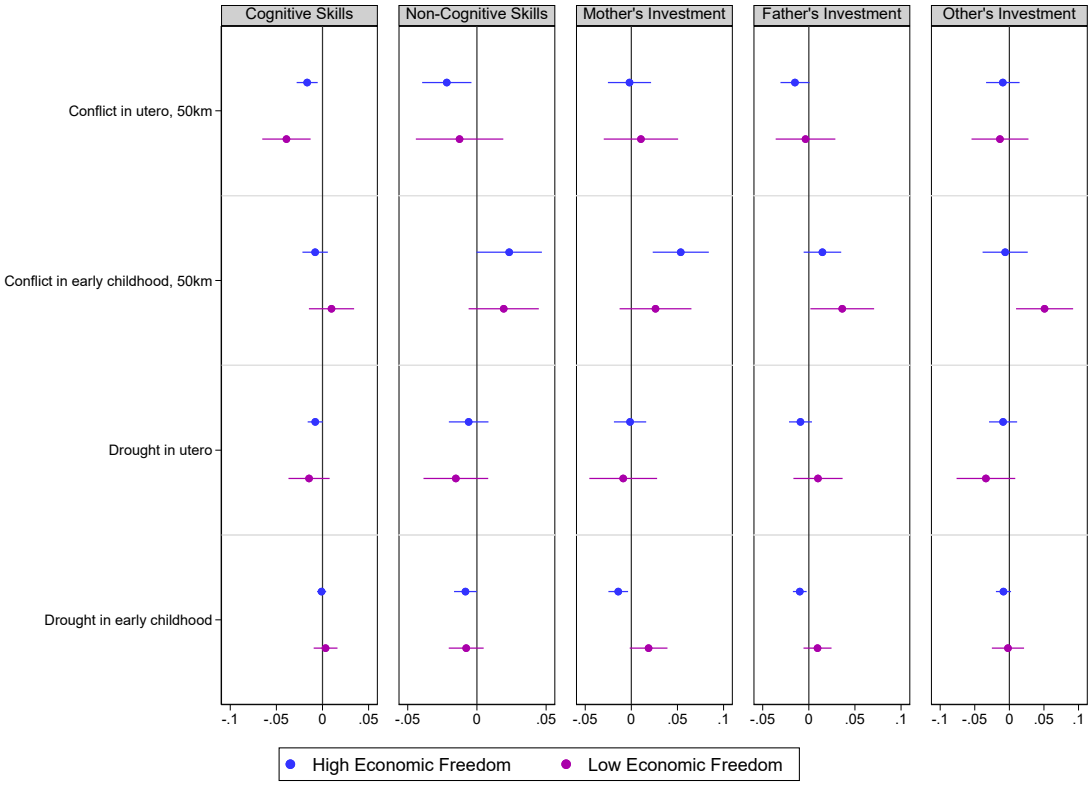
Notes: In this figure we plot the point estimates for various dummies of conflict exposure (threshold defined on the x-axis) for the outcomes non-cognitive skills and total investments together with 95 percent confidence intervals.

Figure A.4: Interaction Effects between drought and conflict



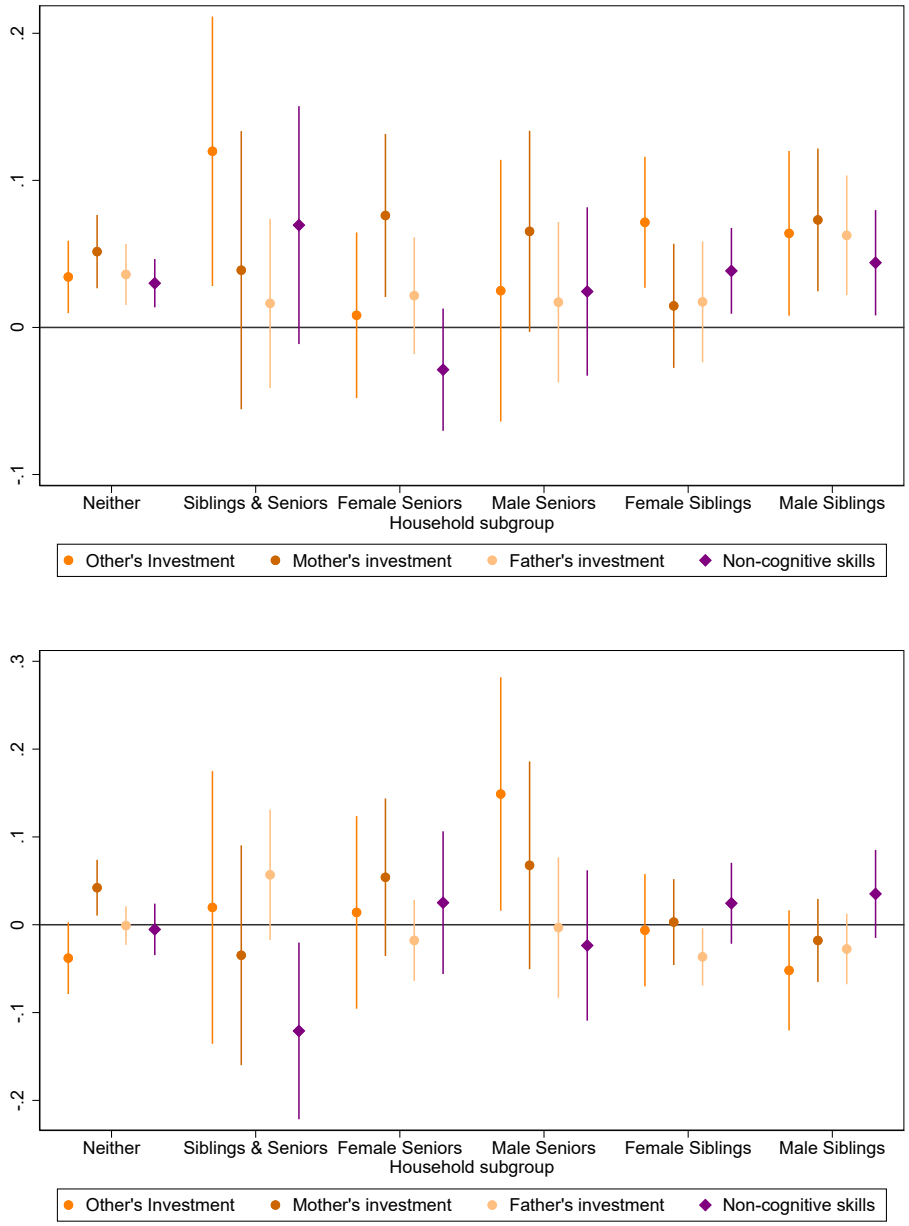
Notes: The sample is split in children that experienced drought in early childhood and those that did not. We report 95 percent confidence intervals.

Figure A.5: Effects by Economic Freedom



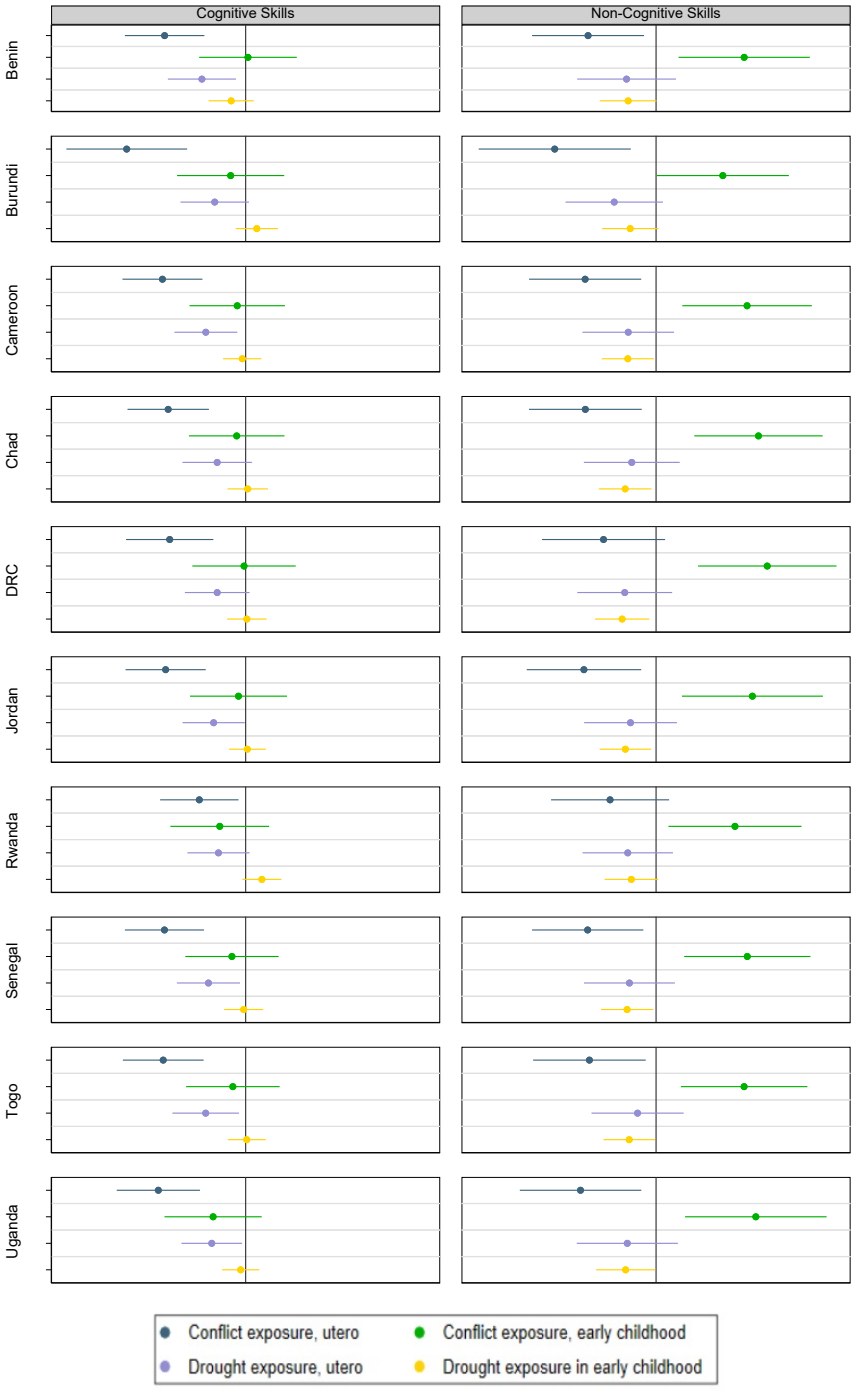
Notes: The sample is split at the 25th percentile of the Economic Freedom Index. All points of the same color within a column represent a separate regression. We report 95 percent confidence intervals.

Figure A.6: Household Subgroups by Gender Equality



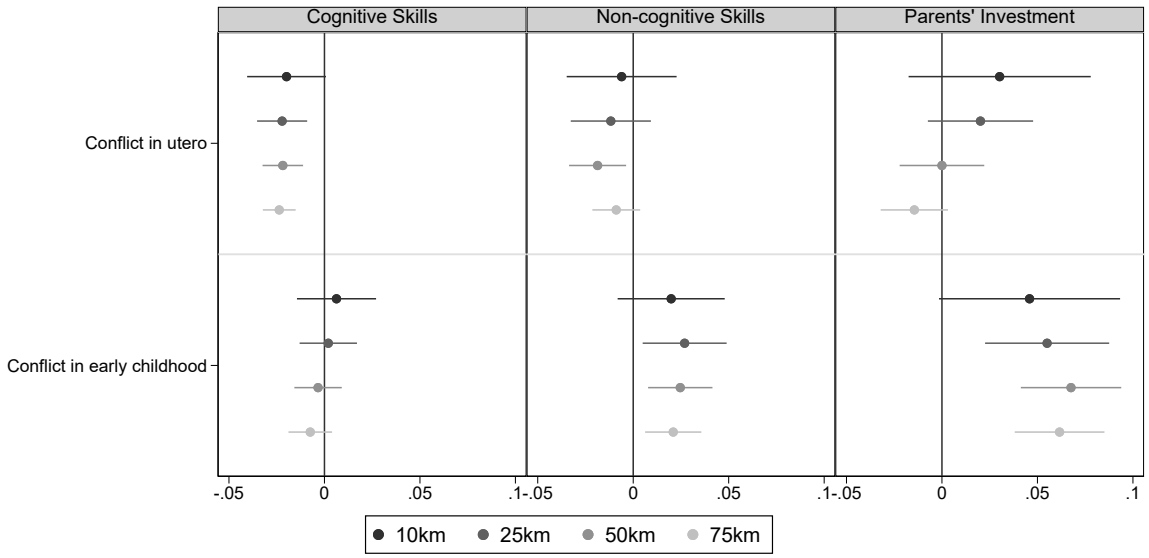
Notes: The sample is split by gender equality, the top figure use high gender equality countries, the bottom figure uses the low gender equality sample. We plot the point estimates on exposure to conflict in early childhood for various (mutually exclusive) household subgroups. The four dependent variables are given in the legend. To give an exampe, all the point estimates in purple stem from one regression and so on. We also report 90 percent confidence intervals.

Figure A.7: Dropping One Country at a Time



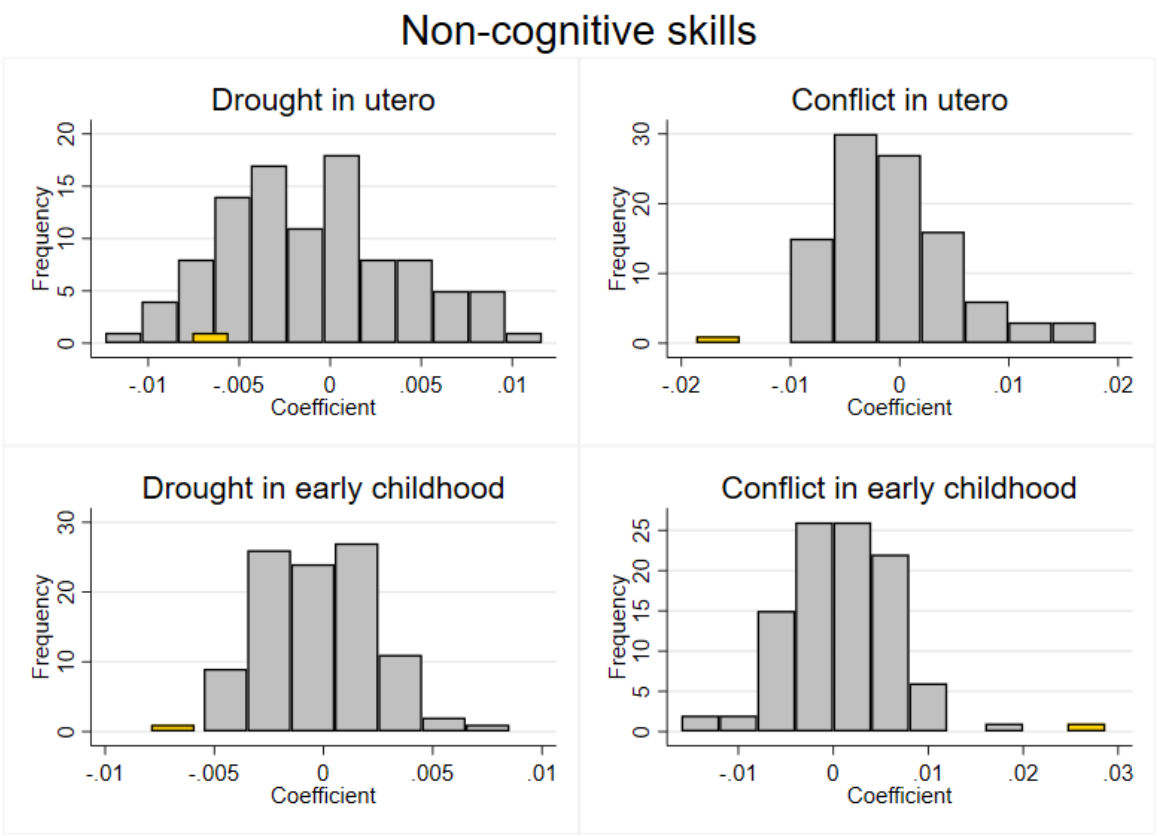
Notes: The figure shows the point estimates on our main specification when dropping one country at a time, denoted vertically on the y-axis. We also report 95 percent confidence intervals.

Figure A.8: Effects by Exposure Distance



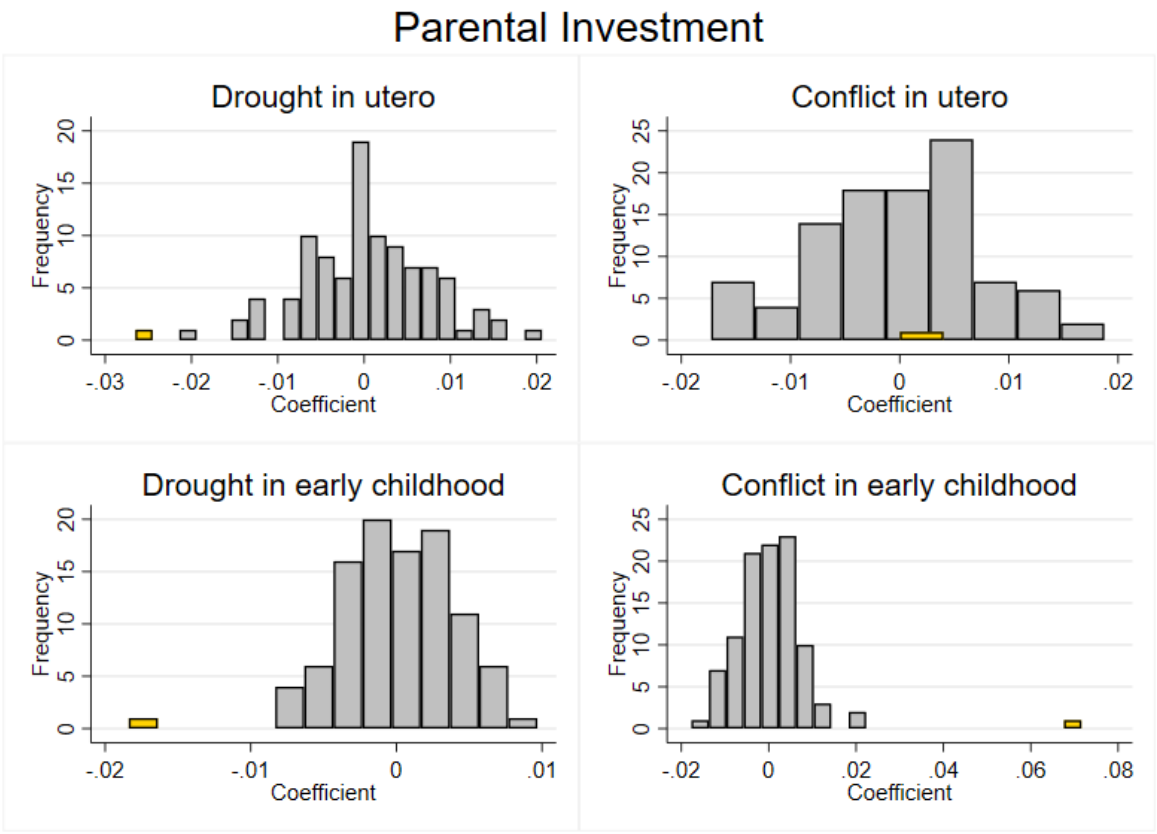
Notes: We vary the exposure distance to measure fatalities from 10 km to 75km and re-run our main specification. All points of the same color within a column represent a separate regression. We report 95 percent confidence intervals.

Figure A.9: Placebo Effects – Spatial Redistribution



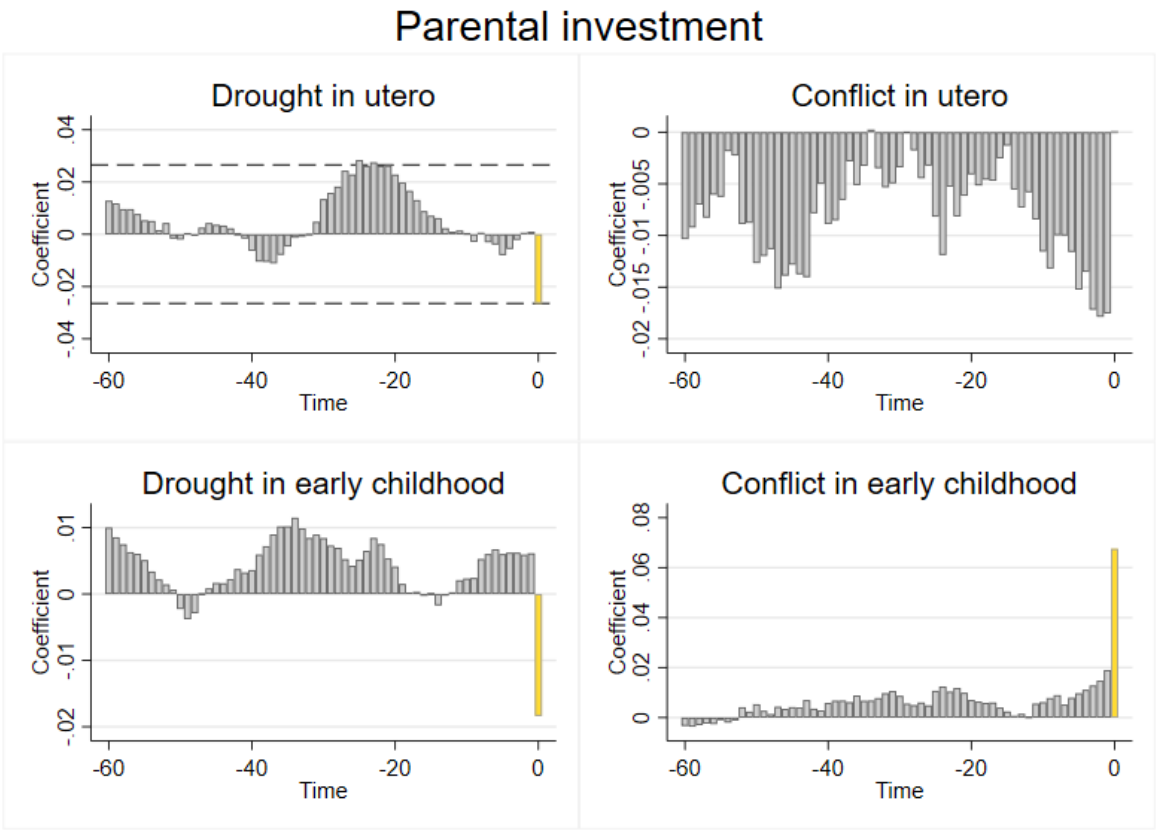
Notes: We randomly reshuffle the drought and conflict variables within each country and re-run or main regression.

Figure A.10: Placebo Effects – Spatial Redistribution



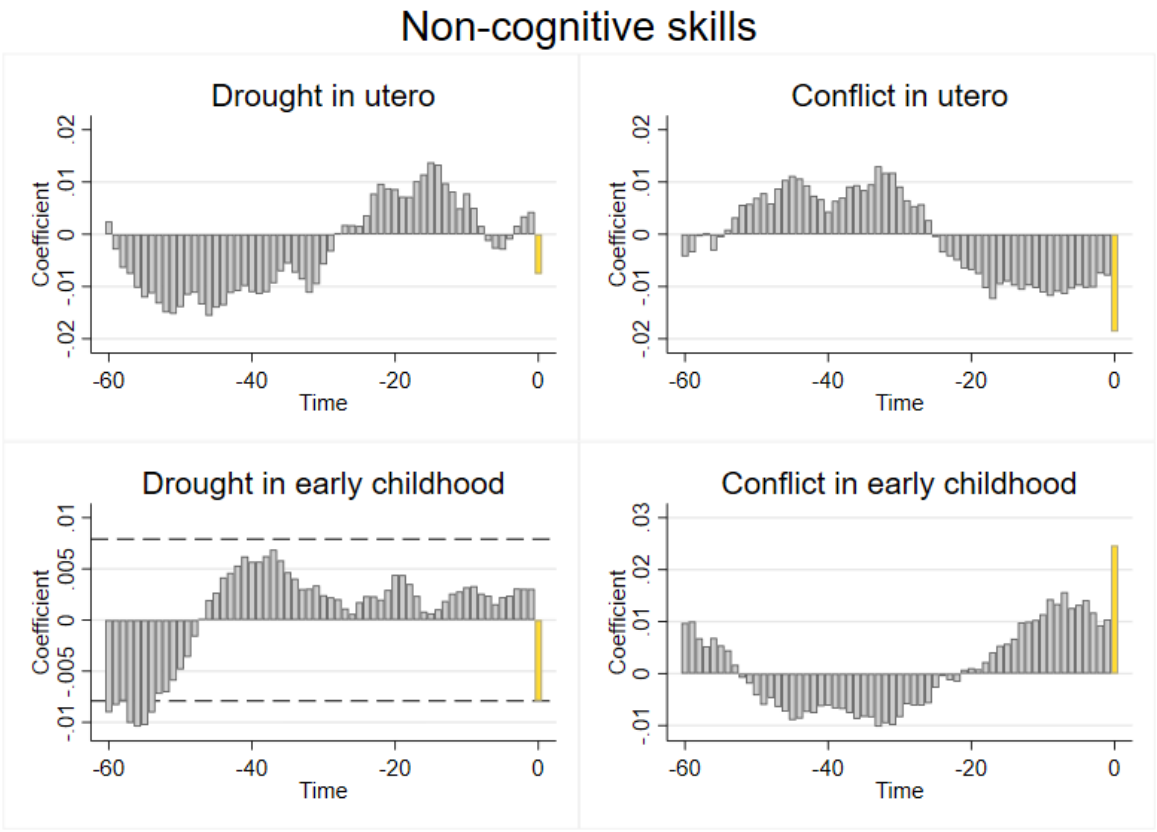
Notes: We randomly reshuffle the drought and conflict variables within each country and re-run or main regression.

Figure A.11: Placebo Effects – Different Time Periods



Notes: We use conflict and drought data from time periods before a child's conception (but keeping the total length of utero and early childhood period constant) and re-run our main regression. To illustrate, the point estimate on -1 for early childhood uses conflict/drought from the time period ending just before the conception of the child, the point estimate on -2 moves the period from -1 30 days into the past and so on.

Figure A.12: Placebo Effects – Different Time Periods



Notes: We use conflict and drought data from time periods before a child's conception (but keeping the total length of utero and early childhood period constant) and re-run our main regression. To illustrate, the point estimate on -1 for early childhood uses conflict/drought from the time period ending just before the conception of the child, the point estimate on -2 moves the period from -1 30 days into the past and so on.

Table A.1: Balance Test

	Low Violence	High Violence	
	Mean (Std.Dev.)	Mean (Std.Dev.)	p-Value
Panel A. Conflict Exposure in Utero			
Household Wealth	2.755	2.707	0.379
	(1.420)	(1.389)	
Age of Household Head	1.170	1.164	0.866
	(0.375)	(0.370)	
Sex of Household Head	37.598	40.054	0.770
	(10.299)	(12.308)	
Household Size	2.173	2.462	0.001
	(0.862)	(1.317)	
Mother's Age	31.244	30.277	0.507
	(6.105)	(6.373)	
Mother's Education	5.029	3.635	0.906
	(4.645)	(4.291)	
Panel B. Conflict Exposure in Early Childhood			
Household Wealth	2.879	2.645	0.988
	(1.433)	(1.372)	
Age of Household Head	1.171	1.162	0.833
	(0.376)	(0.369)	
Sex of Household Head	37.680	40.487	0.607
	(10.344)	(12.592)	
Household Size	2.138	2.532	0.756
	(0.837)	(1.382)	
Mother's Age	31.198	30.112	0.115
	(6.099)	(6.411)	
Mother's Education	4.661	3.526	0.462
	(4.605)	(4.238)	

Notes: The full sample is split at the median value of conflict exposure in utero in Panel A and early childhood in Panel B. The p-value of the test of equality of means is based on standard errors clustered at DHS cluster level and after netting out fixed effects.

Table A.2: Children's physical development

Dependent variable:	Percentiles of					
	Height for age		Weight for age		Weight for height	
	(1)	(2)	(3)	(4)	(5)	(6)
Conflict in utero, 50km	−89.224	−93.830	−94.715	−99.475	−14.216	−14.398
	(26.550)***	(26.466)***	(29.783)***	(29.609)***	(36.776)	(36.771)
Conflict in early childhood, 50km	−152.343	−149.087	−294.417	−292.125	−253.868	−254.120
	(53.414)***	(53.941)***	(53.593)***	(53.985)***	(59.338)***	(59.575)***
Drought in utero	−71.264	−71.014	−120.752	−120.591	−83.228	−82.673
	(22.503)***	(22.359)***	(21.781)***	(21.666)***	(23.390)***	(23.387)***
Drought in early childhood	2.573	1.899	−30.214	−31.112	−58.195	−57.820
	(16.750)	(16.722)	(17.302)*	(17.322)*	(17.377)***	(17.410)***
Country-Cluster Effects	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes	yes	yes
Mother Controls	no	yes	no	yes	no	yes
Household Controls	no	yes	no	yes	no	yes
R^2	0.30	0.30	0.33	0.33	0.29	0.30
N	29370	29360	26513	26503	29833	29823

Notes: Mother Controls include age-fixed effects and years of schooling. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

Table A.3: Effects of Hazards on Wealth

Dependent variable:	Household Wealth		
	(1)	(2)	(3)
Conflict in utero, 50km	−0.010	−0.009	−0.008
	(0.007)	(0.006)	(0.006)
Conflict in early childhood, 50km	−0.009	−0.006	−0.006
	(0.008)	(0.007)	(0.007)
Drought in utero	−0.012	−0.012	−0.012
	(0.005)**	(0.005)**	(0.005)**
Drought in early childhood	−0.005	−0.006	−0.007
	(0.003)*	(0.003)**	(0.003)**
Country-Cluster Effects	yes	yes	yes
Child Age Effects	yes	yes	yes
Country-Month Effects	yes	yes	yes
Mother Controls	no	yes	yes
Household Controls	no	no	yes
R^2	0.65	0.67	0.67
N	51608	51599	51597

Notes: Household Controls are age and sex of the household head, household size. **Standard errors** allow for arbitrary correlation within 50km.

Table A.4: Effects of Hazards on Drinking and Smoking

Dependent variable:	Partner drunk		Mother smokes	
	(1)	(2)	(3)	(4)
Conflict in utero, 50km	0.00237	0.00250	0.00082	0.00078
	(0.00309)	(0.00270)	(0.00051)	(0.00050)
Conflict in early childhood, 50km	0.00098	0.00217	−0.00035	−0.00043
	(0.00373)	(0.00386)	(0.00043)	(0.00041)
Drought in utero	0.00761	0.00653	0.00016	0.00008
	(0.00297)**	(0.00300)**	(0.00068)	(0.00068)
Drought in early childhood	0.00155	0.00110	0.00034	0.00024
	(0.00086)*	(0.00096)	(0.00019)*	(0.00021)
Country-Cluster Effects	yes	yes	yes	yes
Household Controls	no	yes	no	yes
R^2	0.00	0.01	0.00	0.00
N	11239	11239	39771	39771

Notes: Partner drinks is a dummy indicating whether the partner/husband of the mother is often drunk. Mother smokes is also a dummy variable for whether a mother smokes or not. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

Table A.5: Effects of Hazards on Child Mortality

Dependent variable:	# Deaths		Death rate	
	(1)	(2)	(3)	(4)
Conflict in utero, 50km	0.001	0.001	0.000	0.000
	(0.002)	(0.002)	(0.000)	(0.000)
Conflict in early childhood, 50km	−0.002	−0.001	−0.001	−0.001
	(0.002)	(0.002)	(0.001)	(0.000)
Drought in utero	0.001	0.001	0.000	0.000
	(0.002)	(0.002)	(0.000)	(0.000)
Drought in early childhood	−0.001	−0.001	−0.000	−0.000
	(0.001)	(0.001)	(0.000)	(0.000)
Country-Cluster Effects	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes
Country-Birth Month Effects	yes	yes	yes	yes
Mother Controls	no	yes	no	yes
Household Controls	no	yes	no	yes
R^2	0.19	0.19	0.18	0.18
N	51608	51597	51608	51597

Notes: # Deaths is the number of deaths in the last 5 years. Death rate is the number of deaths divided by the total number of kids in the last 5 years. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

Table A.6: Additional Hazard: Flood Fatalities

Dependent variable:	Cog. Skills	Non-Cog. Skills	Investment	Breastfeeding	Fertility
	(1)	(2)	(3)	(4)	(5)
Flood deaths in utero	0.013	0.013	−0.002	−0.001	0.041
	(0.010)	(0.014)	(0.022)	(0.007)	(0.005)***
Flood deaths in early childhood	−0.011	−0.012	−0.010	−0.011	0.023
	(0.004)**	(0.006)**	(0.009)	(0.015)	(0.003)***
Conflict in utero, 50km	−0.022	−0.021	−0.003	−0.010	−0.028
	(0.007)***	(0.010)**	(0.014)	(0.006)*	(0.004)***
Conflict in early childhood, 50km	0.008	0.028	0.031	0.035	−0.014
	(0.008)	(0.011)**	(0.017)*	(0.008)***	(0.006)**
Drought in utero	−0.007	−0.010	−0.019	−0.013	−0.002
	(0.005)	(0.008)	(0.012)	(0.006)**	(0.004)
Drought in early childhood	0.002	−0.010	−0.015	−0.022	0.007
	(0.003)	(0.004)**	(0.007)**	(0.004)***	(0.002)***
Country-Cluster Effects	yes	yes	yes	yes	yes
Rain Controls	yes	yes	yes	yes	yes
Age Year Effects	yes	yes	yes	yes	yes
Age Month Effects	no	no	no	yes	no
Country Birth Month Effects	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes
R^2	0.44	0.39	0.41	0.60	0.47
N	33380	33003	33641	15203	34617

Notes: In this table we add rainfall controls to our baseline regression. Controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.

Table A.7: Split by Mother's Education

Sample:	Cog. Skills	Non-Cog. Skills	Total Inv.	Mom's Inv.	Dad's Inv.	Fertility
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: More educated mothers						
Conflict in utero, 50km	−0.025	−0.025	0.008	0.008	−0.008	−0.029
	(0.008)***	(0.011)**	(0.015)	(0.014)	(0.010)	(0.005)***
Conflict in early childhood, 50km	−0.008	0.025	0.074	0.053	0.039	−0.027
	(0.009)	(0.011)**	(0.018)***	(0.016)***	(0.013)***	(0.006)***
Drought in utero	−0.017	−0.009	−0.034	−0.007	−0.022	0.009
	(0.008)**	(0.009)	(0.014)**	(0.013)	(0.009)**	(0.004)**
Drought in early childhood	−0.001	−0.011	−0.022	−0.008	−0.009	0.016
	(0.004)	(0.005)**	(0.008)***	(0.007)	(0.006)	(0.002)***
R^2	0.48	0.48	0.51	0.59	0.56	0.60
N	26308	26180	26530	26530	26530	27109
Panel B: Less educated mothers						
Conflict in utero, 50km	−0.009	−0.011	−0.011	−0.001	−0.016	−0.024
	(0.006)	(0.012)	(0.017)	(0.014)	(0.010)	(0.005)***
Conflict in early childhood, 50km	0.008	0.012	0.039	0.024	−0.004	0.006
	(0.008)	(0.014)	(0.019)**	(0.017)	(0.012)	(0.008)
Drought in utero	−0.005	−0.010	−0.013	0.007	0.015	−0.004
	(0.004)	(0.009)	(0.014)	(0.011)	(0.007)**	(0.004)
Drought in early childhood	0.000	−0.004	−0.009	−0.000	0.003	−0.002
	(0.003)	(0.005)	(0.007)	(0.006)	(0.004)	(0.003)
Country-Cluster Effects	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes	yes
R^2	0.46	0.46	0.49	0.49	0.43	0.48
N	23113	22261	23335	23335	23335	24488

Notes: All controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.

Table A.8: Robustness Check: Excluding Conflict in Neighboring Countries

Dependent variable:	Cog. Skills		Non-Cog. Skills		Investment	
	(1)	(2)	(3)	(4)	(5)	(6)
Conflict in utero, 50km	−0.029	−0.026	−0.027	−0.026	0.015	0.017
	(0.006)***	(0.005)***	(0.009)***	(0.009)***	(0.013)	(0.013)
Conflict in early childhood, 50km	0.004	0.007	0.034	0.036	0.041	0.047
	(0.008)	(0.008)	(0.012)***	(0.012)***	(0.019)**	(0.019)**
Drought in utero	−0.012	−0.011	−0.011	−0.011	−0.022	−0.021
	(0.004)***	(0.004)**	(0.007)	(0.007)	(0.010)**	(0.010)**
Drought in early childhood	−0.005	−0.005	−0.012	−0.012	−0.015	−0.015
	(0.003)*	(0.003)*	(0.004)***	(0.004)***	(0.006)**	(0.006)**
Country-Cluster Effects	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes	yes	yes
Mother Controls	no	yes	no	yes	no	yes
Household Controls	no	yes	no	yes	no	yes
R^2	0.42	0.44	0.40	0.40	0.44	0.45
N	45836	45826	44932	44922	46248	46239

Notes: In this table we exclude fatalities in neighboring countries and re-calculate our two conflict exposure measures. Controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.

Table A.9: Robustness Check: Temperature and Precipitation Controls

Dependent variable:	Cog. Skills	Non-Cog. Skills	Investment	Breastfeeding	Fertility
	(1)	(2)	(3)	(4)	(5)
Conflict in utero, 50km	−0.021	−0.015	−0.005	−0.009	−0.026
	(0.006)***	(0.008)*	(0.012)	(0.006)*	(0.004)***
Conflict in early childhood, 50km	−0.000	0.027	0.044	0.027	−0.016
	(0.007)	(0.009)***	(0.014)***	(0.007)***	(0.005)***
Drought in utero	−0.009	−0.005	−0.026	−0.012	0.006
	(0.004)*	(0.006)	(0.010)**	(0.005)**	(0.003)*
Drought in early childhood	−0.000	−0.008	−0.014	−0.020	0.006
	(0.003)	(0.004)**	(0.006)**	(0.004)***	(0.002)***
Country-Cluster Effects	yes	yes	yes	yes	yes
Age Year Effects	yes	yes	yes	yes	yes
Age Month Effects	no	no	no	yes	no
Country Birth Month Effects	yes	yes	yes	yes	yes
Rainfall & Temperature Controls	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes
R^2	0.44	0.40	0.44	0.61	0.49
N	46180	45211	46618	21062	48316

Notes: In this table we add rainfall and temperature controls to our baseline regressions. Controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.

Table A.10: Robustness Check: Outliers, Functional Form, and Additional Controls,

Dependent variable:	Cognitive Skills				Non-Cognitive Skills				Total Investment			
	Drop Top 1%	Linear Spec.	Sex-Age Effects	Occupation Effects	Drop Top 1%	Linear Spec.	Sex-Age Effects	Occupation Effects	Drop Top 1%	Linear Spec.	Sex-Age Effects	Occupation Effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Conflict in utero, 50km	−0.022		−0.022	−0.022	−0.019		−0.019	−0.018	0.001		−0.000	−0.000
	(0.005)***		(0.005)***	(0.005)***	(0.008)**		(0.008)**	(0.008)**	(0.011)		(0.011)	(0.011)
Conflict in early childhood, 50km	−0.004		−0.003	−0.004	0.024		0.024	0.024	0.070		0.068	0.067
	(0.007)		(0.006)	(0.006)	(0.009)***		(0.009)***	(0.009)***	(0.014)***		(0.013)***	(0.013)***
Drought in utero	−0.009	−0.008	−0.010	−0.010	−0.007	−0.005	−0.009	−0.008	−0.028	−0.023	−0.027	−0.027
	(0.004)**	(0.004)*	(0.004)**	(0.004)**	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)***	(0.010)**	(0.010)***	(0.010)***
Drought in early childhood	0.000	0.001	0.000	−0.001	−0.008	−0.006	−0.008	−0.008	−0.019	−0.013	−0.019	−0.020
	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)**	(0.003)*	(0.003)**	(0.003)**	(0.005)***	(0.005)**	(0.005)***	(0.005)***
Conflict in utero, 50km, linear		0.449				−1.723				0.839		
		(1.008)				(1.088)				(1.557)		
Conflict in early childhood, 50km, linear		−0.086				0.421				0.396		
		(0.179)				(0.183)**				(0.243)		
Country-Cluster Effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	no	no	yes	yes	no	no	yes	yes	no	no
Country-Month Effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Child Age-Sex Effects	no	no	yes	yes	no	no	yes	yes	no	no	yes	yes
Mother Occupation Effect	no	no	no	yes	no	no	no	yes	no	no	no	yes
R^2	0.44	0.44	0.44	0.45	0.40	0.40	0.40	0.40	0.45	0.45	0.45	0.46
N	48930	49419	49419	49216	47944	48439	48439	48245	49365	49863	49863	49660

Notes: In columns 1,4, and 7 we drop the top one percent of the fatality distribution. In columns 2, 5, and 8 we do not take the log of fatalities. In columns 3, 6 and 9 we add sex by age fixed effects. All other controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.

Table A.11: Parent's Alternative Time Use

Dependent variable:	Working Mother		Time spent listening to/watching/browsing					
			Radio		TV		Internet	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Conflict in utero, 50km	−0.0007	−0.0008	−0.0003	0.0007	0.0009	0.0016	−0.0000	0.0006
	(0.0024)	(0.0024)	(0.0029)	(0.0028)	(0.0014)	(0.0014)	(0.0013)	(0.0012)
Conflict in early childhood, 50km	−0.0017	−0.0010	0.0010	0.0021	0.0001	0.0007	−0.0017	−0.0012
	(0.0028)	(0.0028)	(0.0031)	(0.0030)	(0.0020)	(0.0020)	(0.0024)	(0.0023)
Drought in utero	−0.0017	−0.0018	0.0001	0.0011	0.0014	0.0020	0.0002	0.0003
	(0.0019)	(0.0019)	(0.0024)	(0.0023)	(0.0014)	(0.0014)	(0.0012)	(0.0012)
Drought in early childhood	−0.0013	−0.0014	0.0018	0.0021	0.0012	0.0013	0.0009	0.0006
	(0.0011)	(0.0011)	(0.0013)	(0.0013)	(0.0009)	(0.0009)	(0.0007)	(0.0007)
Country-Cluster Effects	yes	yes	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes	yes	yes	yes	yes
Mother Controls	no	yes	no	yes	no	yes	no	yes
Household Controls	no	yes	no	yes	no	yes	no	yes
R^2	0.49	0.50	0.37	0.40	0.59	0.61	0.63	0.66
N	51501	51490	51578	51567	51484	51473	33688	33688

Notes: Working Mother is a dummy indicating whether a mother has a job. Mother Controls include age fixed effects and years of schooling. Household Controls are age and sex of the household head, household size, and wealth score. **Standard errors** allow for arbitrary correlation within 50km.

Table A.12: Robustness Check: Migration History

Sample:	Full Migration Sample			Migrated before Birth		
	Cog. Skills	Non-Cog. Skills	Total Inv.	Cog. Skills	Non-Cog. Skills	Total Inv.
	(1)	(2)	(3)	(4)	(5)	(6)
Conflict in utero, 50km	−0.020	−0.014	0.007	−0.017	−0.015	0.007
	(0.007)***	(0.009)	(0.013)	(0.007)**	(0.009)*	(0.013)
Conflict in early childhood, 50km	0.004	0.032	0.077	0.005	0.038	0.076
	(0.008)	(0.010)***	(0.016)***	(0.008)	(0.011)***	(0.016)***
Drought in utero	−0.010	−0.000	−0.031	−0.010	−0.005	−0.028
	(0.006)	(0.008)	(0.013)**	(0.006)	(0.008)	(0.013)**
Drought in early childhood	0.000	−0.008	−0.026	0.003	−0.010	−0.023
	(0.003)	(0.004)*	(0.007)***	(0.004)	(0.005)**	(0.007)***
Country-Cluster Effects	yes	yes	yes	yes	yes	yes
Child Age Effects	yes	yes	yes	yes	yes	yes
Country-Month Effects	yes	yes	yes	yes	yes	yes
Mother Controls	yes	yes	yes	yes	yes	yes
Household Controls	yes	yes	yes	yes	yes	yes
R^2	0.43	0.39	0.42	0.44	0.40	0.44
N	29527	29420	29782	26907	26793	27138

Notes: All controls and fixed effects are defined in Table 2. **Standard errors** are clustered at the DHS cluster level.