# From Childhood Abduction to Adulthood: Enduring Consequences for Women in Uganda*

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**Abstract**

Girls and women are disproportionately exposed to forced displacement and physical and sexual violence during armed conflicts. Between the mid-1980s and the mid-2000s, the Lord's Resistance Army (LRA) abducted over 50,000 people in Northern Uganda, including more than 25,000 children. We study approximately 550 women in Northern Uganda, half of whom were abducted before or during adolescence. Leveraging the plausibly exogenous nature of LRA abductions and combining incentivized behavioral games with detailed survey data, we assess the long-term effects of childhood abduction on a range of socioeconomic and mental health outcomes, as well as on behavioral traits and preferences. Childhood abduction significantly reduces educational attainment but has little persistent effect on economic activity, marriage outcomes, or risk tolerance. In contrast, nearly two decades after the conflict ended, formerly abducted women still exhibit substantially higher rates of depressive symptoms and perceived stress, heightened stress responses, reduced social support and prosociality, and greater grit. These findings highlight the need for post-conflict interventions that prioritize long-term mental health and social reintegration, alongside standard investments in education and livelihoods.

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# 1 Introduction

Violent conflicts have been a constant throughout history, shaping human behavior and the development of societies and institutions (Bowles, 2009; Tilly, 2017).[1] The effects of war on men, including in the long run, have been extensively studied (Ager et al., 2021; Blattman and Annan, 2010; Blattman and Miguel, 2010). Less is known about its impacts on women, who often suffer severely from both immediate targeted violence and the long-term consequences of the loss of loved ones, displacement, and the breakdown of social structures. Violence against girls is especially common during armed conflicts, and sexual violence has been long recognized as a weapon of war (Cohen, 2013; Fourati et al., 2021; Guarnieri and Tur-Prats, 2023; Nordås and Cohen, 2021).[2] One of the most severe forms of war-induced victimization is the abduction of children for the purpose of forced labor and sexual servitude. Abductions linked to armed conflicts have increased in recent years. According to the United Nations, more than 20,000 children suffered grave violations in conflict areas in 2023. These include the abduction of over 4,000 children (UN, 2024).[3]

In this paper, we examine the long-term impact of conflict-induced childhood abductions on women's mental health, socioeconomic outcomes, non-cognitive traits and economic preferences. We conduct our study in Northern Uganda, where the conflict between the Lord's Resistance Army (LRA) and the government led to over 25,000 child abductions between the mid-1980s and the mid-2000s (Pham et al., 2008). We re-validate and then leverage the previously documented plausible exogeneity of LRA abductions in the seminal work by Blattman and Annan (2010) to compare outcomes for formerly abducted and not abducted women from the same villages. This approach allows us to evaluate and quantify the consequences of an extreme manifestation of war victimization on women's well-being two decades later.

Of particular interest are mental health outcomes. Women in low-income countries face mental health challenges at higher rates than those in high-income countries, even in the absence of violent conflicts (Fisher et al., 2012; Gelaye et al., 2016).[4] Importantly, poor mental health has been found to worsen economic outcomes by making it hard to find and maintain employment; lowering focus, energy and motivation; disrupting education and lowering aspi-

[1] Both civil and inter-state wars have increased dramatically since 2020, with over 50 organized armed conflicts and over 200,000 conflict-related deaths recorded in the year 2022 alone (Davies et al., 2023).

[2] See also (Mishori et al., 2023) for a report on conflict-related sexual violence during the recent conflict in Ethiopia.

[3] According to UN (2024), 5,301 children were killed and 6,348 severely injured in 2023, a 35 percent increase over the previous year and the highest registered since these data have been reported.

[4] This has been attributed to the higher incidence of depression risk factors, such as higher rates of poverty, economic insecurity, limited access to healthcare, cultural stigma and a series of risk factors linked to gender inequality such as domestic violence, discrimination, limited access to education, and economic dependence (Patel and Kleinman, 2003; Lund et al., 2010).

rations; and setting up a vicious cycle of poverty and mental disorder (see, e.g., Angelucci and Bennett, 2024; Baranov et al., 2020; Cummings and Davies, 1994; Lund et al., 2024). Violent conflicts and victimization further exacerbate these bidirectional linkages between economic outcomes and mental health. Childhood abductions are a uniquely severe form of victimization for several reasons. First, they disrupt a fundamental process for healthy development, the formation of a secure attachment to a trustworthy caregiver, and replace it with exposure to violence and other trauma. Even in the absence of exposure to violence, attachment theory identifies separation from parents and caregivers as a key factor that significantly increases the risk of mental health challenges and developmental impairments (Bowlby, 1969). Further, during crises and disasters, pre-existing vulnerabilities and disadvantages (including chronic disorders, developmental disabilities, mental health issues, or a history of adversities) are known risk factors for heightened psychosocial difficulties, potentially leading to long-term effects on the development of cognitive and non-cognitive skills that are essential for economic and social well-being. Studies in psychiatry and clinical psychology confirm that the extreme trauma endured by abducted children and adolescents severely affects their physical and mental health, well-being, and socio-emotional development (see, e.g., Gossmann et al., 2024).

During the conflict examined in this study, the LRA abducted boys to serve as combatants (i.e., child soldiers) and girls to provide forced labor and to be married to the combatants as a reward for their war-related activities. Annan et al. (2011) estimate that about 17 percent of girls and 25 percent of boys in Northern Uganda were abducted during the conflict. Girls were typically abducted for the purposes of marriage, manual labor, and in some cases combat. Using data collected shortly after the conflict ended, Annan et al. (2011) provide evidence of minimal immediate impact of the abduction on women's socioeconomic outcomes, including education and economic activities. This lack of impact is likely due to the limited opportunities for education and employment available to women in this region, even in the absence of abduction. Yet, they also report evidence of severe emotional distress among the girls who had suffered, witnessed or were forced to perpetuate violent acts.

In this study, we evaluate the effects of abduction twenty years after the conflict ended. We conduct a survey of more than 500 women, between the ages of 18 and 54, living in one subcounty of Kitgum district in Northern Uganda. This area was severely affected by the LRA conflict and, due to its remoteness, was less likely to have benefited from substantial humanitarian aid and NGO assistance (Stites et al., 2006). About half of the women in our sample were abducted by the LRA as children, and of them, about half were kept in captivity for one year or longer. We conduct a comprehensive survey and implement four incentivized behavioral games to generate a wide range of individual outcomes. We group

such outcomes into three main categories: 1) mental health; 2) socioeconomic outcomes, and 3) non-cognitive traits and preferences.

We employ two widely used measures of mental health: the Edinburgh Post Natal Depression Scale (Cox et al., 1987; Cox, 2019) and the Perceived Stress Scale (Cohen et al., 1994, 1983). The former has been validated in low-income countries among comparably fragile populations (Evans et al., 2022; Shrestha et al., 2016). The latter is a widely recognized index of subjective experience of stress that is increasingly used in low- and middle-income countries and is found to be reliable in assessing stress across a broad range of culturally diverse settings (Katus et al., 2022; Vallejo et al., 2018). Additionally, we attempt to estimate four psychological and behavioral responses to stress which describe how individuals usually react to threats or challenges; fight, flight, tend, and befriend. These responses may have important implications for life outcomes.

We examine impacts on socioeconomic outcomes using survey measures. They include education,[5] poverty and vulnerability,[6] marital status, number of biological children, and social support. To elicit non-cognitive skills and preferences, we employ four incentivized behavioral games. Since most of the women are illiterate and internet connectivity is limited, we opted for simple protocols centered around individual decision-making rather than strategic interactions [7] and obtained incentivized measures of grit (Alan et al., 2019), competitiveness (Gneezy et al., 2009), risk tolerance (Eckel and Grossman, 2008), and prosociality (Bauer et al., 2014).

Our findings are sobering. First, we note that even the not-abducted women in our sample have alarmingly high levels of depression symptoms and stress: about 60 percent exhibit any depressive symptoms and 20 percent to severe stress.[8] Still, twenty years after returning to their communities, we find even worse mental health outcomes among the formerly abducted, including a 25 percent increase in the likelihood of being depressed and a 40 percent increase in severe stress. The impacts are greatest among women abducted at a younger age.

In line with the findings of Annan et al. (2011), the formerly abducted women do not seem to be worse off in terms of economic activity and income, likely because the area is homogeneously poor and offers universally limited opportunities. The formerly abducted, however,

[5]We measure educational attainment by whether the woman completed at least primary school. Less than 40 percent of the women in our sample did.

[6]We employ three measures of poverty and vulnerability. The first is the likelihood of having earned no income in the past year; the second is the likelihood of having experienced food scarcity regularly in the past 3 months (no food at least once a week); the third is the likelihood of having experienced water scarcity regularly in the past 3 months (no water for drinking and cooking at least once a week).

[7]We used visual aids and provided multiple examples to explain each one. We describe the implementation of the data collection in detail in Section 2. The instructions can be found in the Online Appendix.

[8]We note that these women were also indirectly impacted by the conflict as everyone else in the region. This is representative of the effects of protracted conflict, where even those spared direct violence are affected by the violence.

also have lower education, more biological children, and lower social support. Among their non-cognitive traits and preferences, we find evidence of increased grit and suggestive evidence of lower prosociality and increased competitiveness. We do not find statistically significant differences in risk attitudes.

In addition to these primary outcomes, we explore the effect of abduction on women's stress responses. In particular, we assess the frequency of a behavioral response that has been theorized to be associated specifically with women: the tend-and-befriend stress response mechanism (Taylor et al., 2000). Grounded in evolutionary theory, its main prediction is that when threatened, females "tend" to offspring and selectively "befriend" others (mainly family and friends, but also strangers possibly including the aggressor) to maximize the likelihood of receiving help and protection for themselves and their children. This strategy contrasts the fight-or-flight response mechanism, implicitly assumed to operate similarly in men and women (Cannon, 1932), but that has been found to apply primarily to men (Islam et al., 2023). Consistent with expectations, our data reveal that, among our study participants, a tend-and-befriend reaction is more frequent than a fight-or-flight one. However, we also find that abduction heightened both responses, especially for those abducted at a younger age.

Our identifying assumption is that, within villages, the timing and targeting of LRA abductions were largely unrelated to pre-existing characteristics. However, no pre-abduction census data exist for this population. As a result, we cannot conduct comprehensive balance tests of pre-victimization characteristics. To assess the plausibility of the identifying assumption, we thus draw on multiple complementary sources of evidence. First, extensive qualitative evidence, based on interviews with abductees, former combatants, and conflict-affected individuals, documents the largely indiscriminate nature of LRA abduction raids (Kelly et al., 2016; Pham et al., 2009, 2008). This literature describes the raids as sudden and opportunistic with limited scope for systematic targeting. Second, we leverage three independent quantitative data sources for comparable cohorts of women to examine an array of pre-abduction characteristics. These data sources are the original dataset collected by Annan et al. (2011) and two recent retrospective surveys of women by our study team (Cassar et al., 2025; Lambert, 2025). Restricting all data to our study district, we find that abducted and non-abducted women are comparable along observable pre-war characteristics. However, as in all retrospective conflict studies, residual unobserved differences at the time of the abduction cannot be fully ruled out.

Our study is most closely related to Annan et al. (2011), Annan et al. (2009) and Blattman and Annan (2010), which examine the short-run impacts of LRA abductions in Northern Uganda. They validate empirically and exploit the plausible exogeneity of the LRA's child abductions in Northern Uganda to estimate the impacts on a large set of life outcomes

through survey data collected in the mid-2000s, shortly after the conflict ended. Building on this research, we extend the analysis to approximately twenty years after the end of the conflict to estimate its long-term impacts on women, and add to the existing literature by incorporating validated measures of mental health and incentivized behavioral games. We also explore a novel behavioral stress response, tend-and-befriend, alongside a broader set of outcomes.

Our study also contributes to the wider literature on the adverse effects of conflict exposure on later-life outcomes, including health (e.g., Akresh et al., 2012; Bundervoet et al., 2009; Minoiu and Shemyakina, 2014), education (e.g., Bertoni et al., 2019; Chamarbagwala and Morán, 2011; Leon-Ciliotta, 2012; Shemyakina, 2011), marriage and fertility (e.g., La Mattina, 2017; Alix-Garcia et al., 2022), and domestic violence (e.g., Cesur and Sabia, 2016; Cesur and Kibris, 2023; Stojetz and Brück, 2023).[9] A recent strand of this literature focuses on the enduring impact of war victimization on mental health (Bratti et al., 2015; Favara et al., 2022).[10] For instance, research using geographical variation in exposure to aerial bombings during World War II in Germany (Akbulut-Yuksel et al., 2022) and during the Vietnam War (Singhal, 2019) suggests significant negative long-term effects of bombings on the mental health of individuals who were children at the time of the war. Complementing this, other studies have highlighted the detrimental impact of war on the mental health of soldiers (Cesur et al., 2013; Gade and Wenger, 2011). We contribute evidence on the enduring impacts of one of the most severe forms of victimization suffered by girls in conflict situations: childhood abductions for the purpose of forced labor and sexual abuse.[11]

Incorporating incentivized behavioral games allows us to contribute to the literature on the impact of war-related traumatic events on individual preferences, providing unique insights into how abduction experiences shape cognitive and non-cognitive outcomes. Research in this domain has demonstrated, for instance, that exposure to war violence increases interpersonal trust (Gilligan et al., 2014), trustworthiness (Bauer et al., 2018), cooperativeness (Bauer et al., 2016; Gneezy and Fessler, 2012), egalitarianism (Bauer et al., 2014), generosity (Whitt and Wilson, 2007), and social and political engagement (Bellows and Miguel, 2009).

[9] See Blattman and Miguel (2010), Justino et al. (2013), Justino (2018), Kadir et al. (2019), and Verwimp et al. (2019) for comprehensive reviews of this literature.

[10] A large literature in clinical and social psychology, and health has identified significant associations between depression and a number of risk factors exacerbated by armed conflicts, including childhood abduction— and suggests that these associations are particularly germane for women. These factors include economic distress during pregnancy (e.g., Beck, 2001; Goyal et al., 2010), lack of social support (e.g., Collins et al., 1993; Elsenbruch et al., 2007; Cho et al., 2022; Yim et al., 2016) and early childhood adversity and abuse (e.g., Gibb et al., 2007; Merrick et al., 2017). For impacts on later life outcomes, see the review in Gossmann et al. (2024) and Muldoon et al. (2014); Okello et al. (2007) for work in Uganda.

[11] Boys are also abducted during conflicts, primarily for the purpose of child soldiering. For studies of child soldiering, see for instance, Bauer et al. (2018); Blattman and Annan (2010); Cassar et al. (2014).

Other work, however, has suggested that exposure to civil conflict increases prosociality only toward the in-group, hence strengthening moral norms rooted in kinship (Bauer et al., 2014; Cassar et al., 2013; Cecchi et al., 2016; Rohner et al., 2013). Recent studies by Gangadharan et al. (2022) and Islam et al. (2023) suggest that war violence can lead to an increase in antisocial behavior, especially among men and individuals most exposed to violence as well as those exposed at a younger age. There are also contrasting findings on the effects of conflict on risk preferences, with studies documenting greater risk aversion (Callen et al., 2014; Jakiela and Ozier, 2019), greater risk tolerance (Gangadharan et al., 2022; Voors et al., 2012), and no changes in risk preference (Gilligan et al., 2014). We contribute to this growing body of research by examining the impact of childhood abduction on non-cognitive traits and preferences.[12] Specifically, we focus on traits that have produced mixed findings, such as risk preferences and prosociality, as well as those that have not been thoroughly explored in post-war settings, such as competitiveness and grit.[13]

Our findings reveal the profound mental health, socioeconomic, and behavioral impacts of childhood abduction on adult women, persisting twenty years after their return. These results highlight the need for multidimensional government programming in fragile and conflict-affected settings. While the abducted women exhibit more grit, a testament to human adaptability, their elevated risk of depression, stress, and diminished social support highlight that both psychological and socioeconomic needs must be addressed to foster true recovery and integration.

# 2 Study Design

## 2.1 Context: The LRA Conflict in Uganda

The conflict between the Lord's Resistance Army (LRA) and the Ugandan Army spanned from 1986 to approximately 2006. The LRA, a rebel army that emerged in the late 1980s, was formed in response to President Museveni overthrowing a government primarily composed of Acholi people. Originally responding to the rise of the National Resistance Army (NRA), the LRA was led by Joseph Kony, who claimed to fight for the interests of the Acholi people and for the establishment of a regime based on his version of biblical principles. The LRA quickly escalated its violence, sustaining it primarily through widespread abductions, particularly in the North. The Acholi people, constituting the majority in this region, witnessed the forced

[12] We use the terms "traits" and "preferences" interchangeably in the paper.

[13] Cassar et al. (2023) provides one of the few experimental studies documenting the impact of war violence on competitiveness in Sierra Leone. The findings provide evidence of a differential impact by gender and parenthood, with increased competitiveness only observed among mothers.

displacement of almost 1.5 million individuals, the equivalent to 90 percent of the entire Acholi population. An estimated 50,000 to 80,000 people were abducted during the conflict, and more than half of them were children. Boys were typically forced into child soldiering roles, while girls faced forced labor, coerced marriages and sexual abuse. In fact, the religious nature of the LRA prohibited sexual relationships (hence civilian rape) outside of marriage. Annan et al. (2009) highlights that the system of forced marriage was tightly regulated at the highest levels and frequently utilized as a means to reward or promote combatants, making forced marriages the usual way of committing sexual abuse against girls. Annan et al. (2011) estimate that approximately one-sixth of all girls in Northern Uganda were abducted during the war.

In 2005, the International Criminal Court issued a warrant against Kony for 21 war crimes, including rape, enslavement, and murder (Dunn, 2004). Peace talks commenced in 2006 but faced prolonged negotiations and ultimately collapsed in 2008 when Kony refused to sign the agreement. Following the breakdown of peace talks, the Ugandan and Sudanese governments initiated Operation Lightning Thunder, targeting LRA forces and bases. While the operation did not capture Kony or entirely dismantle the LRA, it forced the LRA out of Northern Uganda, prompting the Acholi people to start returning to their homes.

## 2.2 Sample Recruitment and Women's Abduction Status

We recruited study participants from 20 of the 34 villages in Mucwini East subcounty of Kitgum District in Northern Uganda, a region heavily affected by the Lord's Resistance Army (LRA) conflict (Apuuli, 2004). Data collection was facilitated by long-standing working relationships between one of the authors and village- and subcounty-level leaders in Mucwini East.[14] Recruitment began in early January 2022, following meetings with local leaders, the acquisition of the required subcounty-level permits, and formal research clearance from the Uganda National Council for Science and Technology.

Data collection took place during community workshops where women were invited at a specific date randomly assigned across participants. Participants were offered free transportation to the workshop venue, lunch, and an attendance fee. A combination of budget and power considerations led us to aim for 29 workshops with approximately 20 participants per workshop, for a total sample size of about 580 women. To account for anticipated non-attendance, we invited more women than needed, i.e., 2 or 3 additional women per workshop, for a total of approximately 650 women.

[14]Co-author Christine Mbabaze from Makerere University in Uganda had previously conducted qualitative research in the area, focusing on formerly abducted women and examining their reintegration process through the use of religious rituals.

To recruit women for the workshop, we worked with local leaders and the assistance of a mobilizer to identify 650 women approximately between the ages of 18 and 54 at the time of data collection (i.e., born roughly between 1968 and 2000) who were living in areas heavily affected by the conflict.[15] Because the war began in the mid-1980s and continued until the mid- to late-2000s, this age range allows us to sample women who were exposed to the conflict during childhood or adolescence. Prior research on the LRA conflict suggests that individuals born before 1968 or after 2000 faced a substantially lower risk of abduction during these formative years (Dunn, 2004; Van Acker, 2004; Blattman and Annan, 2010).

We received a list of 647 women from the mobilizer and local leaders. The list included the women's abduction status, as recorded by village leaders. Of these 647 women, 562 attended their assigned workshop date, corresponding to a participation rate of 86.9 percent. Participation did not differ by childhood abduction status (84.9 percent abducted, 88.8 percent never abducted, p-value = 0.14; we formally test this using regression analysis in Appendix Table A1).

Among those 562 who attended, 15 women were found to be outside the target age range (younger than 18 or older than 54), 5 women had to leave the workshop early for unrelated reasons, and 1 woman was deemed ineligible due to a mental disability. These women were not included in the workshop (although a show-up fee was given to them). The final eligible sample therefore consisted of 626 women, of whom 541 participated in the workshop, which produced a take-up rate of 86.4 percent.[16] Again, even among this eligible sample, participation rates do not differ by abduction status (84.2 percent abducted, 88.5 percent never abducted, p-value = 0.12), as shown in Appendix Table A1.

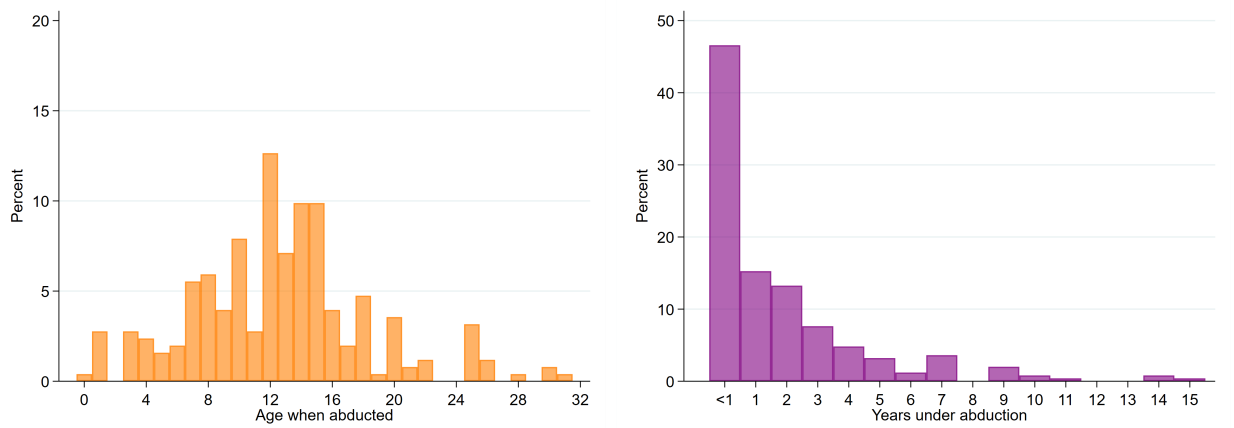
Of the final sample of 541 women between the ages of 18 and 54, nearly half (264 women) reported in the survey that they had been abducted during the conflict.[17] We refer to these women as "formerly abducted" or FA. We refer to the 277 women who reported not being abducted as "never abducted" or NA. On average, the FA women were abducted when they were 12.5 years old. The left panel of Figure 1 shows the full age distribution at the time of abduction. Over one-third of the FA women were abducted when they were 10 years old or

[15] Although we emphasized to the mobilizer the importance of identifying all women in the pre-specified age range, the absence of a formal population registry and uncertainty surrounding exact dates of birth prevent us from verifying whether all eligible women were identified. This limitation is compounded by frequent short-distance migration between neighboring villages and the common use of aliases, which may have led to incomplete or imprecise identification. Such challenges are typical of data collection in fragile and post-conflict settings. Despite these constraints, we asked multiple sources (local enumerators) to ensure the integrity of the recruitment process and the reliability of the data collected.

[16] Women were unable to show up at the agreed time and place for a variety of reasons, such as child sickness, or urgent farm work.

[17] We were unable to record a current village of residence for one of the 541 women in our final sample. As a result, she is dropped from any specification that includes village fixed effects and yielding a working sample of 540.

Figure 1: Age when abducted and time in abduction




Note: The figure on the left displays the age distribution at the time of abduction for the 264 formerly abducted women in our sample. The figure on the right displays the number of years they spent in abduction.

younger, and about 50 percent between the ages of 11 and 17. Only about 15 percent were 18 or older at the time of the abduction. This implies that the vast majority of abductions took place during childhood. The abduction lasted on average slightly more than a year and a half, with 45 percent being kept for less than a year, and 55 percent at least one year, as shown in the right panel of Figure 1. We do not have information on the number of weeks or months in abduction for the women who reported being kept in captivity for less than 1 year.

Given that the villages included in this sample have all experienced conflict, we expect the entirety of our sample, including the non-abducted, to have been exposed at least indirectly to war violence. However, we posit that only the FA women directly experienced abduction and other severe forms of victimization, including sexual violence. We approached the questionnaire design with caution, as we were concerned that inquiries about physical and sexual violence could potentially trigger severe distress among the women and negatively impact their psychological well-being during the workshop. Instead, we opted to ask a series of yes or no questions referring to events that they may have witnessed or experienced during the conflict (referring to violence and abduction but not explicitly to sexual violence) which we use to generate a "trauma index."[18] We find that, on average, FA women experienced nearly double the number of traumatic events as compared to the non-abducted women

[18]The 12 events are: 1) Someone shot bullets at you or your home; 2) You received a severe beating or were attacked by someone; 3) You were tied up or locked up as a prisoner; 4) You received a serious physical injury in a battle or rebel attack; 5) You were forced to carry heavy loads or do other forced labor; 6) You witnessed an attack by the LRA or battle with UPDF; 7) You witnessed beatings or torture of other people; 8) You witnessed a killing; 9) You witnessed the rape or sexual abuse of a woman; 10) Another family member or friend was murdered or died violently; 11) Another family member or friend disappeared or was abducted; 12) Someone took or destroyed your personal property.

(6.65 vs. 3.57, p-value = 0.000). The full distribution of the trauma index for abducted and not-abducted women is displayed in Appendix Figure A2. We note, however, that while we were able to calculate the trauma index for all the FA, due to a programming error in the survey administration, only about 18 percent of the NA answered the questions related to the trauma index. In Sections 5.4 and 5.5, we assess whether this omission could have biased our findings, for instance by priming abducted women to reflect more on childhood trauma relative to non-abducted women. We find no evidence consistent with such priming effects.

## 2.3 Data Collection

We implemented the planned 29 workshops between January and July 2022, each involving groups of 16 to 20 women. Data collection was conducted by a team of 10 enumerators and 1 team leader, all women and fluent in the local language. Each workshop took place in the same location, a restaurant facility in a centrally located village (Lagot Cugu) where all the subcounties' villagers go for market activities.[19] The study participants were offered transportation to the research location and back to their villages by bus. Each participant was required to confirm their name and home village both before boarding the bus and upon entering the workshop meeting room. Since the workshop lasted 4 to 5 hours, we also provided lunch to both participants and enumerators.

The women received substantial compensation from participating in the workshop. The payments were structured so that the largest component was a uniform flat fee of 40,000 shillings (about 8 USD) provided to everyone as compensation for participating and missing an entire day of work. In addition, the women could gain variable additional earnings from participating in the incentivized behavioral games. On average, they earned 25,000 shillings from the games, leading to average total earnings of 65,000 shilling, a large sum of money for our demographic, especially considering that the majority reported earning no income in the past year. For the 36 percent of our sample who receive regular income during the year, 65,000 shillings corresponds to about 3 weeks' worth of pay, given that the average weekly salary among those who report being paid is 20,000 shillings, with the median being 10,000 shillings.

At the beginning of each workshop, every woman was randomly assigned an identification number, which was used throughout the workshop in place of their names. During the workshop, participants were interviewed in private by a local female enumerator speaking the local Acholi language. Each interview took between 1 hour and 1 hour and a half. In addition, all women participated in four incentivized behavioral games, which we refer to

[19]The facility offered a private meeting area that allowed for privacy and limited outside distractions.

below as "activities."

To streamline the process and reduce the workshop duration, participants were split into two groups. The workshop started with all women participating in a game designed to measure grit ("Activity 1"), followed by a competitiveness task ("Activity 2"). Afterward, half of the participants, selected at random based on their identification numbers, left the workshop room to be interviewed in private by one of the 10 enumerators. Meanwhile, the other half remained in the main room and participated in a risk elicitation task ("Activity 3") and a prosociality task ("Activity 4"). Once the first group completed their interviews, the two groups switched roles, with those who had been interviewed returning to participate in activities 3 and 4, and the remaining participants leaving the room to be interviewed. This strategy minimized waiting times and ensured that both the interviews and activities were conducted efficiently. In addition, this implementation strategy allows us to investigate whether the survey, which required participants to recall war victimization experiences from 20 years earlier, could have a priming effect on their behavior in the incentivized games conducted afterward (risk elicitation and prosociality tasks). We found no evidence of such an effect. We account, however, for the ordering of the survey relative to activities 3 and 4 in our empirical analysis, as detailed in Section 3. We formally examine and discuss priming effects in Section 5.5.

## 2.4 Outcomes and Hypotheses

Next, we describe our primary outcomes of interest, focusing on mental health outcomes and stress responses in Section 2.4.1, socioeconomic outcomes in Section 2.4.3, and behavioral preferences generated from the incentivized games in Section 2.4.4. In each case, we describe how the data map to the constructed outcomes and discuss hypotheses for the impacts of war victimization.

### 2.4.1 Mental Health

A substantial and growing literature documents the bidirectional relationship between mental health and socioeconomic outcomes: life adversities undermine psychological well-being, while poor mental health exacerbates economic hardship, creating a self-reinforcing cycle (e.g., Angelucci and Bennett, 2024; Baranov et al., 2020; Ridley et al., 2020; Lund et al., 2024). Depression among women has especially pronounced consequences for both maternal and child well-being, including in prenatal periods (Field, 2011; Gelaye et al., 2016; Surkan et al., 2011; Wado et al., 2014).

Research also shows that exposure to war violence during childhood has long-lasting mental health effects (Akbulut-Yuksel et al., 2022; Singhal, 2019). Evidence from psychology similarly links childhood adversities and abuse to later-life mental health problems (e.g., Christ et al., 2019; Gibb et al., 2007; Khan et al., 2015; Merrick et al., 2017). Childhood abductions sever ties with family—the main source of emotional support in early life (Bowlby, 1969).[20] They may also involve physical injuries and traumatic memories. When sexual violence occurs, stigma can further impede reintegration, constrain marriage prospects, and reduce access to material support.[21] This evidence suggests that childhood abduction should have persistent consequences for women's mental health. We focus on two dimensions: the likelihood of depression and the likelihood of severe stress.

To measure likelihood of depression, we use the **Edinburgh Postnatal Depression Scale (EPDS)** (Cox et al., 1987; Cox and Holden, 2003; Cox, 2019). Although designed for the perinatal period, the EPDS has been validated for broader populations (Cox et al., 1996; Bergink et al., 2011; Matijasevich et al., 2014; GWA, 2006). It consists of 10 items referring to feelings in the past week and yields a score from 0–30, with 13 as the conventional threshold indicating risk of depression. Its simplicity allows non-specialists to administer it effectively[22], and the tool has been validated in multiple low-income settings, including Uganda (Evans et al., 2022; Shrestha et al., 2016; Stewart et al., 2013; Atuhaire et al., 2023).

Stress is measured using the **Perceived Stress Scale (PSS-10 Cohen)**—a widely used tool capturing perceived stress over the past month (Cohen et al., 1983, 1994; Cohen, 2013). Respondents rate how often they experienced certain feelings (*0=never* to *4=always*), and the summed score ranges from 0–40. A threshold of 26 indicates severe stress. Like the EPDS, the PSS-10 has been validated across diverse cultural settings (Katus et al., 2022; Vallejo et al., 2018).

### 2.4.2 Stress response mechanisms: Tend-and-befriend and fight-or-flight

A novel contribution of our study is the examination of the *fight-or-flight* and *tend-and-befriend* theories of human stress response (Taylor et al., 2000), which describe how individuals cope with environmental and relational threats. These frameworks rest on two

[20] For examples of studies showing correlations between limited social support and adverse health outcomes for women and children, see: Cho et al. (2022); Collins et al. (1993); Elsenbruch et al. (2007); Yim et al. (2016); Webster et al. (2000).

[21] From an evolutionary perspective, psychological pain functions as a signal of conditions detrimental to fitness. In the context of abduction—severed family ties, physical harm, and stigma—depression may act as such a signal, motivating reduced investment in children or other activities (Hagen, 1999; Hagen and Syme, 2021).

[22] Although self-reported well-being can be subject to reporting bias, several procedures—private interviews, confidentiality assurances, and standardized wording—helped mitigate this concern. Any residual bias would not be expected to correlate systematically with abduction status

elements: (1) behavioral reactions that enhance survival under threat, and (2) the hormonal mechanisms that shape stress responses through physiological changes triggered by perceived danger.

Classic accounts emphasized testosterone-driven fight-or-flight patterns and assumed gender similarity (Cannon, 1932). More recent evidence shows, however, that women display distinct hormonal profiles under stress: oxytocin release is stronger, testosterone can inhibit oxytocin, and estrogen modulates its effects (Cohen and Lansing, 2022). These findings align with evolutionary arguments that direct physical confrontation entailed higher risks for women and their dependent children (Campbell, 1999; Benenson et al., 2022).[23] As a result, affiliative responses, such as seeking support and reinforcing social bonds, may have represented safer, more adaptive strategies. The tend-and-befriend framework therefore predicts that stressed women may increase caregiving and selectively affiliate with individuals who provide protection, information, or resources.[24] Importantly, recent research shows that both women and men draw on all four patterns (*tend, befriend, fight, flight*) and that tend-and-befriend behaviors are frequently endorsed by both (Levy et al., 2019; Singer et al., 2017).

To study how childhood abduction shapes these coping mechanisms, we adapted an existing 80-item instrument by selecting 16 items, i.e., four for each reaction type (*tend, befriend, fight, flight*), based on their relevance to our population. Appendix B lists the items. Respondents indicate how often they use each strategy on a 5-point Likert scale (*5=always, 4=most of the time, 3=some of the time, 2=rarely, 1=never*). For each response category, we sum the corresponding items to create an index ranging from 4 to 20, with higher scores indicating a stronger tendency toward that coping pattern.

### 2.4.3 Socioeconomic Outcomes

Childhood abduction can disrupt the accumulation of human capital by removing children from school and shaping their labor market opportunities in adulthood. These effects may be less pronounced in our setting, where returns to education are modest due to limited non-farm employment and where the prolonged civil conflict weakened school infrastructure and displaced many non-abducted children as well (Annan et al., 2011).

Exposure to violence may also influence marriage markets and fertility by altering gender ratios, reducing the availability of men, raising women's age at marriage, and increasing female-headed households (Akresh et al., 2023; De Walque, 2006; Hidalgo-Aréstegui et al.,

[23] Empirical evidence also documents sex differences in physiological and behavioral responses to stress (Smeets et al., 2009; Nickels et al., 2017; Probst et al., 2017).

[24] Affiliation and coalition-building may also have been adaptive for men (Geary and Flinn, 2002), and prosocial responses appear to buffer stress across both sexes (Von Dawans et al., 2012).

2025; Islam et al., 2016). Because abductions in Northern Uganda affected large numbers of boys and girls, the direction and magnitude of marriage and fertility effects are difficult to predict ex ante.

We additionally examine how abduction shaped women's social support networks. War generally erodes trust (Kijewski and Freitag, 2018), yet post-conflict reconciliation efforts can strengthen social ties (Cilliers et al., 2016; Annan et al., 2011). Formerly abducted women might therefore experience either stronger or weaker support: strengthened networks through reconciliation, or weakened ones due to stigma, trauma, or disrupted family relationships. The net effect is ambiguous.

Education is measured as the highest completed level of schooling. Because educational attainment is very low in our sample, our preferred indicator equals 1 if the woman completed at least primary school and 0 otherwise. Nearly 90 percent of women engage in unpaid farming. Our first measure of vulnerability is an indicator equal to 1 if the respondent earned no income in the past year, and 0 otherwise. We also capture food and water insecurity by asking how often, in the previous three months, respondents lacked food to eat or clean water for cooking and drinking. We construct two indicators equal to 1 if each type of scarcity occurred at least once per week, and 0 otherwise.

We assess marital outcomes—marital status, age at first marriage, number of children (almost all women have at least one), and the likelihood of being in a polygynous union, which is about 30 percent in our sample.

Finally, we measure social support using the Maternity Social Support Scale (MSSS), a validated tool (Webster et al., 2000). The scale captures agreement with six statements on support from family and friends, help from a partner, partner conflict, partner control, and feeling unloved.[25]

### 2.4.4 Traits and Preferences

War-led exposure to violence may shape not only socioeconomic outcomes but also non-cognitive traits and preferences. Victimization could weaken perseverance, sharing, and willingness to take risks, yet Post-Traumatic Growth (PTG) theory emphasizes that adversity can also foster resilience, prosociality, and openness to challenge. To assess how abduction affected these traits, we implemented four incentivized behavioral games measuring grit, competitiveness, risk preferences, and prosociality. Detailed instructions and protocols are provided in the Online Appendix.

**Grit**

[25]Responses follow a 5-point Likert scale: 5=*always*, 4=*most of the time*, 3=*some of the time*, 2=*rarely*, 1=*never*. The total score ranges from 6 to 30, with higher values indicating greater perceived support.

Grit, closely related to a "growth mindset" (Dweck, 2006), reflects perseverance toward long-term goals and predicts education, labor outcomes, health, and stress resilience (Duckworth et al., 2007; Tang et al., 2021; Wang et al., 2023). Evidence from developing countries shows similar patterns (Díaz et al., 2012; Cunningham et al., 2016). Trauma could suppress perseverance, yet adversity may also generate resilience; indeed, Annan et al. (2011) find that many formerly abducted women in Northern Uganda reintegrated socially despite high distress.

Activity 1 adapts Alan et al. (2019) to measure persistence under repeated choice. After an initial set of simple Raven puzzles (Stage 1), participants face five rounds (Stage 2) in which they choose either an easy puzzle (generating 5,000 shillings if solved correctly) or a harder one (generating 15,000 shillings if solved correctly). After each round, they receive feedback before choosing again. In Stage 3, they pre-select the difficulty level for a final round held later in the workshop and may request a booklet of practice puzzles. We construct two grit measures: the number of hard tasks chosen in Stage 2 and the Stage 3 difficulty choice.[26] In analysis, we control for Stage 1 performance and for risk preferences.

### Competitiveness

Predictions for victimization's impact on competitiveness are ambiguous. Scarcity and stigma may encourage cooperation and reduce competitive behavior, yet high needs—especially for caregivers—may increase the value of competition. Evidence from Sierra Leone shows that conflict exposure generally reduced competitiveness but with large heterogeneity among women (Cassar et al., 2023), consistent with Falk and Hermle (2018)'s argument that gender gaps in preferences narrow under severe constraints.

Activity 2 uses a simple physical task from Gneezy et al. (2009): throwing balls into a basket. Before playing, each woman chooses between piece-rate pay (5,000 shillings per success) and a competitive scheme (15,000 shillings per success if she outperforms an anonymous competitor). This choice is our measure of competitiveness. We also elicit confidence by asking whether she believes she will perform worse, the same, or better than another woman.

### Risk Preferences

Existing evidence on violence and risk preferences is mixed: some contexts show higher risk tolerance post-conflict (Voors et al., 2012), while others show increased risk aversion (Moya, 2018). Northern Uganda studies also document heterogeneity (Lowes et al., 2020; Rockmore et al., 2016).

In Activity 3, we use the Eckel and Grossman (2008) lottery task. Participants choose one

[26] We also record whether the participant requested the practice booklet.

of six lottery tickets, each paying one of two outcomes based on a coin flip at the end of the workshop. Lottery 1 offers a sure 35,000 shillings; Lottery 6 pays either 95,000 or 5,000 shillings with equal probability. The chosen lottery number (1–6) is our measure of risk tolerance.

**Prosociality**

Many studies find that conflict increases prosociality, especially toward in-group members.[27] Others document increases in anti-social behavior following severe or early-life exposure (Gangadharan et al., 2022; Islam et al., 2023).

Activity 4 uses four dictator-game allocations similar to Bauer et al. (2014). Each woman divides a 40,000-shilling endowment between herself and an anonymous recipient whose gender and abduction status vary: a formerly abducted woman in the workshop; a non-abducted woman in the workshop; a woman from the same village; and a man from the same village. We randomized the order of decisions at the workshop level. Participants may allocate any amount in multiples of 10,000. We construct (i) an overall prosociality measure (share given across all decisions), (ii) an empathy measure (giving to abductees versus non-abductees), and (iii) a homophily measure (giving to women versus men).

# 3 Empirical Strategy

Our study was designed to test the long-term effects of abduction on mental health, socioeconomic outcomes and behavioral preferences. To estimate these impacts, we compare the outcomes of formerly abducted women (FA) to those of never abducted (NA) women. The identifying assumption is that the LRA abducted girls in a plausibly exogenous manner. This allows us to estimate the following equation for each of our outcome variables:

$$Y_{iv} = \alpha + \beta FA_{iv} + \gamma X_{iv} + \delta_v + \varepsilon_{iv} \tag{1}$$

where $Y_{iv}$ is the outcome of interest observed for woman $i$ from village $v$, and FA is an indicator equal to 1 if the woman was formerly abducted, and 0 if she was never abducted. We include village fixed effects, $\delta_v$. In our most parsimonious specification, the set of controls

[27]Examples include Blattman and Annan (2010); Bellows and Miguel (2009); Voors et al. (2012); Bauer et al. (2014); Gneezy and Fessler (2012); see also evolutionary explanations such as Darwin (1872); Bowles (2009); Choi and Bowles (2007); Henrich (2004); Turchin et al. (2016).

$X$ includes only age, an indicator for the timing of the data collection,[28] and an indicator for the timing of the survey being before or after activities 3 and 4, as previously explained.

The set of controls is limited because all other individual characteristics are potentially endogenous to abduction status. As part of our robustness checks, we replicate the analysis by selecting the set of controls in $X$ through the Double Lasso method, as proposed by Belloni et al. (2014).[29] We cluster the standard errors at the workshop level, our data collection unit. Given that we have a large number of outcome variables, hence multiple hypotheses, we correct the p-values associated to each hypothesis within the same "family" of outcomes (i.e., mental health, stress response, socioeconomic outcomes, non-cognitive traits and preferences) by employing the step-down multiple testing method developed by Romano and Wolf (2005).

## 3.1 Threats to Identification

The empirical challenge in our study is that we do not know the counterfactual for the formerly abducted woman, i.e., what their outcomes would have been had they not been abducted. The primary threat to identification is the potential selective targeting of abductees based on their characteristics at the time of abduction and selective survival based on some of the outcomes under study. Both formerly abducted and non-abducted samples were recruited from areas that were heavily affected by the LRA conflict. Our identification strategy is only valid if abductions were plausibly exogenous during the LRA conflict. In other words, our identifying assumption is that when the LRA combatants abducted individuals from their villages, they did so indiscriminately and not on the basis of individuals' or households' observable characteristics.

Further, for our results to be internally valid, it also needs to be the case that the women recruited into our study are not somehow positively selected. For example, they are not more likely to have survived or remained in the study area due to observable traits correlated with our outcomes of interest. We discuss these threats to identification—randomness of abduction and selective attrition—in the next subsections.

### 3.1.1 Plausible Exogeneity of Abductions

The plausible exogeneity assumption underlying our ability to infer causality has been tested and corroborated empirically by Annan et al. (2011) and Blattman and Annan (2010), through extensive qualitative and quantitative work conducted shortly after the conclusion of

[28] The data collection started with about 200 women in January-February 2022. The second round of data collection occurred in May 2022. The final round took place in June-July 2022.

[29] This approach enables us to systematically select controls that are both predictive of the outcome variable and correlated with the treatment variable, thereby reducing potential omitted variable bias.

the war. They document, for instance in their qualitative work, that LRA leaders themselves suggested that they did not abduct a select group. Blattman and Annan (2010) further notes that the LRA's crimes against civilians led to their losing popular support, leaving indiscriminate abductions as its primary instrument for recruitment. They note, "[i]n fieldwork, it proved nearly impossible, even with the help of former rebel leaders, to find youth who voluntarily joined after 1991" and that rebels abducted "all able-bodied civilians to carry the loot"(Blattman and Annan, 2010, p.887). Randomness in the risk of abduction was heightened by the spaced layout of villages, the ad-hoc nature of targeting, and a preference among the abductors for nighttime operations.

Beyond these quantitative works in economics, psychological, anthropological, and sociological research converges on a similar view of selection into abduction. Qualitative studies of formerly abducted girls emphasize that they were seized during nighttime raids or attacks on schools because they happened to be present, with adolescent age and gender—rather than household wealth or status—shaping their risk and subsequent allocation as "wives" or domestic laborers (Carlson and Mazurana, 2008; Kiconco, 2015). Ethnographic and gender-focused studies describe LRA abductions as large-scale, opportunistic, and experienced as "chance events" by affected families, taking place "at any location, day and time" across homes, fields, schools, and IDP camps (Veale and Stavrou, 2003; Dolan, 2009; Finnström, 2008). Work based on the testimonies of escapees similarly emphasizes that adolescent Acholi girls were widely seized during night raids and roadside attacks and only later allocated to roles as domestic laborers, "wives," or fighters, with little evidence that household wealth or parental characteristics systematically shaped who was taken (Baines, 2014; Stout, 2013; Stewart, 2020). Psychological studies reinforce this picture, documenting that children from a broad cross-section of war-affected households—often from almost every extended family in some communities—were abducted in mass raids and forced conscription campaigns (Veale and Stavrou, 2003; Betancourt et al., 2009; Pfeiffer et al., 2011; Amone-P'Olak et al., 2013). Population-based mapping and human-rights reports similarly portray abductions as widespread across sub-counties and concentrated in villages, IDP camps, and schools along LRA routes, rather than in particular socioeconomic strata (Pham et al., 2009; Amnesty International, 2011; Human Rights Watch, 2010).

Taken together with the previously discussed quantitative analyses, these non-economic studies further support our working assumption that, within conflict-affected communities, conditional on age, sex, and location, selection into LRA abduction was largely opportunistic and close to random at the household level.

Demonstrating the exogenous nature of abductions with quantitative data is more difficult, largely due to data limitations. Pre-war census records are absent, and while retrospec-

tive surveys of formerly abducted women capture individual and family characteristics at the time of abduction, constructing comparable measures for non-abducted girls is far more challenging. The core issue is that LRA abductions spanned more than two decades, leaving no single reference point against which to anchor recall-based "pre-abduction" characteristics for those who were never taken.

The only pre-abduction characteristic in our dataset is age at abduction.[30] To assess the plausible exogeneity of abductions, we draw on three external data sources from adjacent counties and comparable cohorts of women. First, we use data collected by Annan et al. (2011) in Northern Uganda in the mid-2000s. Their sample was constructed by randomly selecting households from the 2002–2003 U.N. World Food Program lists and compiling rosters of all youth residing in those households in 1996. This produced a sample of nearly 900 young women, stratified by subcounty and abduction status, with oversampling of the abducted. Their analysis shows little evidence of selection into abduction based on individual or family characteristics. Using the original data, we replicate their comparisons while restricting the sample to our study area, Kitgum district, and report the results in Panel A of Table 1. The evidence indicates no meaningful differences in household characteristics between abducted and non-abducted girls in Kitgum.

Second, we analyze pre-abduction characteristics using a comparable stratified random sample of formerly abducted and non-abducted women recruited from the same area (Mucwini East subcounty of Kitgum) for a follow-up study (Cassar et al., 2025). Third, we replicate the analysis using a sample of formerly abducted and non-abducted women recruited from a neighboring subcounty of Kitgum (Mucwini Main) for a parallel study of couples (i.e., abducted and non-abducted wives and husbands) in the region (Lambert, 2025). Recruitment strategies in both studies mirror our own: potential participants were identified with the support of village leaders and local facilitators, and age (18–50) was the sole eligibility criterion. Because the original violence occurred 15–30 years prior and women in this area cannot be approached without prior approval from community leaders, precluding a random sample, this was the only feasible sampling strategy. Study participants were then randomly selected from the age-eligible lists provided by village leaders.

Panel B of Table 1 presents pairwise mean comparisons using the random sample of 494 women from Cassar et al. (2025). Panel C of Table 1 presents mean comparisons between 214 formerly abducted and not abducted women independently sampled in Lambert (2025).[31]

[30] An inadvertent oversight and miscommunication with the survey firm led us not to include questions on pre-abduction status in the primary survey used here. Per our IRB approval, we also did not retain personally identifying information from the 2022 sample when our 2024 survey was fielded as part of Cassar et al. (2025). Given the size of Mucwini East subcounty, substantial overlap between the samples is likely, but we cannot assert this with certainty.

[31] Lambert (2025) sampled both men and women. Appendix Table A2 presents the same pairwise mean

Table 1:
Pre-abduction Characteristics of Women in Kitgum from Three Data Sources

| | Formerly Abducted versus Non-Abducted | |
|---|---|---|
| | Unadjusted means | Conditional |
| *Panel A: Independently-drawn sample of women in Kitgum district in 2006-2007 n=267 (Annan et al., 2011)* | | |
| Respondent Age | −0.25[0.83] | −0.26[0.87] |
| Household Size During War | 0.59[0.40] | 0.51[0.39] |
| Father Was a Farmer During War | 0.06[0.05] | 0.08[0.05] |
| Standard Normal Index of HH Wealth in 1996 | 0.08[0.17] | 0.09[0.12] |
| Father Completed At Least Primary School | −0.02[0.11] | 0.03[0.09] |
| Mother Completed At Least Primary School | 0.10[0.05]* | 0.10[0.04]** |
| Paternal Death Before 1996 | −0.00[0.04] | 0.00[0.05] |
| *Panel B: Independently-drawn sample of women in Kitgum district in 2024 n=494 (Cassar et al., 2025)* | | |
| Respondent Age | 0.020[0.002]*** | 0.022[0.004]*** |
| Household Size During War | 0.002[0.006] | 0.008[0.007] |
| Father Lived in the Household During War | −0.115[0.037]*** | 0.050[0.056] |
| Father Completed At Least Primary School | −0.054[0.042] | −0.065[0.044] |
| Mother Completed At Least Primary School | −0.002[0.065] | 0.029[0.069] |
| Father Was a Farmer During War | −0.033[0.041] | −0.038[0.053] |
| *Panel C: Independently-drawn sample of women in Kitgum district in 2024 n=214 (Lambert, 2025)* | | |
| Respondent Age | 0.012[0.004]*** | 0.009[0.005]* |
| Household Size During War | 0.010[0.011] | 0.013[0.011] |
| Father Was in Subsistence Farming During War | −0.039[0.064] | −0.000[0.070] |
| Landholdings in Acres During War | −0.000[0.001] | 0.000[0.001] |
| Above Median Landholdings During War | 0.054[0.062] | 0.012[0.071] |
| Number of Cattle Owned During War | −0.002[0.001] | −0.002[0.002] |
| Father Completed At Least Primary School | 0.043[0.088] | 0.109[0.092] |
| Mother Completed At Least Primary School | −0.009[0.140] | 0.007[0.154] |
| Father Lived in the Household During War | −0.134[0.067]** | −0.111[0.085] |

Note: This table compares retrospectively collected observable characteristics of women in Kitgum district, by their abduction status. All presented characteristics refer to the time of abduction, not their current status. The "Unadjusted means" column reports the coefficient obtained for the corresponding variable in the first column from a linear probability regression where the abduction status (0-1 dummy, equal to 1 for formerly abducted women) is regressed on such variable without controls. The "Conditional" column presents the coefficients obtained for each variable in the first column when the regression includes all the variables. Robust standard errors are reports in square brackets. Panel A presents the data collected by Annan et al. (2011) shortly after the end of the conflict in the mid-2000s. We have obtained the original data from the authors and restricted the analysis to the Kitgum district, where our study was conducted. Panel B presents the data obtained for an independently drawn sample of women living in the same subcounty (Mucwini East) of Kitgum as our current sample (Cassar et al., 2025). Panel C presents data from an independent randomly-sampled survey of formerly abducted and not abducted women sampled from an adjacent subcounty (Mucwini Main) in the Kitgum district (Lambert, 2025). *** p<0.01, ** p<0.05, * p<0.10.

Across both datasets, the individual characteristics we examine include age, household size, parents' education, and whether the father lived in the same household as the surveyed woman at the time of the war. The set of variables in Panel B also includes father's occupation and

comparisons as Panel C of Table 1, but for men. These comparisons are directly comparable to those presented in Blattman and Annan (2010), which also focused on both men and women. They show that the abducted men do not differ from the non-abducted men along their observable wartime characteristics.

measures of household wealth, specifically land holding and owned cattle. For each variable, we report unconditional mean differences between abducted and not abducted women, as well as differences obtained when controlling for the full set of available war-time characteristics.

### 3.1.2 Imbalance in Age

Both Cassar et al. (2025) and Lambert (2025) observe that formerly abducted women are older than non-abducted women, and the same pattern appears in our study: abducted women are about five years older on average (34 vs. 29).[32] These age differences arise because recruitment occurred at a single point in time but included women born across roughly 25 years, during which the intensity of LRA abductions shifted dramatically. Women in their 20s at the time of data collection were children in the 2000s, when abductions had sharply declined, whereas women in their 30s and 40s grew up in the 1980s–1990s, when abductions were widespread. Consequently, younger cohorts contain far more non-abducted women, and older cohorts a much higher share of abducted women. Thus, the observed age imbalance reflects the population age distribution of abducted women rather than age-specific differences in abduction risk.

We address this issue empirically in several ways. First, all regression analyses include age. Second, as part of our robustness checks, we implement entropy balancing on age, reweighting the sample to achieve balance on this variable; the corresponding weighted estimates appear in the Appendix Tables A6-A9.

With the exception of age, the formerly abducted and non-abducted women are largely comparable along observable characteristics, as shown in column 2 of Table 1, a pattern consistent with prior research on this conflict. We note one imbalance in the unconditional row means for whether the respondent's father was living at home during periods of high war intensity. Although this appears to suggest that abducted women were less likely to have had their father present during the war, we caution against interpreting this as evidence of genuine selection into abduction. The challenge lies in constructing a comparable measure of father's presence across groups. For abducted women, the question referred to whether their father lived in the household "at the time of rampant abduction in the area," which respondents naturally interpret as the period surrounding their own abduction. However, as discussed above, the reference period is ambiguous for non-abducted women: abductions spanned more than two decades, and respondents' interpretation of the "time of rampant abduction in the area" likely varies with their age and lived context. Consequently, the observed imbalance may reflect cohort differences in how respondents map this recall prompt

[32]Table A4 in the Appendix reproduces the analysis displayed in Table 1, restricting the specification in column (2) to include only age as a control.

onto specific years, rather than true differences in father's presence at the time abductions occurred.

### 3.1.3 Selective Attrition

It is plausible that exposure to war-related violence, especially abduction, may lead to selective attrition. For example, if survival rates varied systematically with specific individual characteristics, the formerly abducted women in our sample could represent a selected subset of all abducted women. However, in our study setting, the vast majority of abducted girls appear to have eventually returned home. Population-based evidence from the Survey of War-Affected Youth (SWAY), conducted at the conclusion of the conflict, in 2004, indicates that in the affected area roughly one in six young women had experienced abduction, and that only about 7 percent of abducted females (compared to 22 percent of abducted males) had not returned by the time of the survey (Annan and Blattman, 2006).

Reception-center and NGO records further show that more than 20,000 abducted children were processed through formal reception centers such as GUSCO and World Vision, although independent evaluations stress that these centers captured only a portion of all returnees, since many abducted girls and young women returned directly to their communities without entering the formal system (Allen and Schomerus, 2006; Allen, 2020). Together, these sources suggest that the vast majority of abducted girls eventually did return home.

Importantly, though, any survival-based positive selection would likely attenuate our estimated effects of abduction: characteristics associated with survival (e.g., better health or resilience) would predict more favorable post-abduction trajectories, thereby narrowing the observed differences between abducted and non-abducted women.

A second concern is that abduction may have affected women's likelihood of migrating out of the study area, for instance, by altering their marriage prospects or family circumstances. Generally, migration to nearby villages and parishes is common, especially due to marriage. However, migrating to a different district is uncommon, and migrating outside the Acholi-speaking region, which comprises the northern districts of Kitgum, Gulu and Pader is extremely rare. Selective out-migration would bias our estimates upward, creating artificially large differences between abducted and non-abducted women, only if the most advantaged non-abducted women and the most disadvantaged abducted women were more likely to leave. While we lack census-like longitudinal data tracking all households before and after the conflict to directly quantify these patterns, evidence from Lambert (2025) who studies couples made of abducted and non-abducted men and women in a nearby subcounty of Kitgum, is informative. In her data, there is no evidence of assortative matching into marriage by abduction status, nor any indication of differential migration out of the village, parish, or dis-

trict. Specifically, Lambert (2025) finds that only 10 percent of women migrated out of their district of birth, 28 percent to a different sub-county, 60 percent to a different parish, and 74 percent to a different village. Crucially, as shown in Table A3, these migration patterns do not differ by abduction status, suggesting that selective migration or migration-related attrition is unlikely to bias our estimates upward.

# 4 Results

This section presents our main results. We start by providing descriptive statistics for all outcomes of interest, and by conducting simple tests of equality of means for abducted and not abducted women. We then present and discuss our findings on the impact of childhood abductions on mental health, socioeconomic well-being, and behavioral preferences.

## 4.1 Descriptive Statistics

Table 2 displays descriptive statistics for all variables of interest for the full sample, and for formerly abducted and not abducted women separately. The table also reports the number of observations available for each variable. While we have a total sample of 541 women, a few women (5 to 10 percent) preferred not to answer some sensitive questions, specifically related to mental health and stress responses. In addition, the experimental data are missing for Activities 3 and 4 from one workshop, due to the accidental misplacement during data collection of the documentation recording individual choices in these activities.[33] The Social Support Index is fully available only for women who reported having a spouse or a partner (430) as 4 of the 6 questions in the index refer to the relationship between the respondent and her spouse. As a robustness check, in Section 5, we replicate all analyses on a "working sample" of women with complete data for all outcomes. We also examine whether the likelihood of having missing data is systematically associated with observable characteristics, which could bias this supplementary analysis.

The women in our sample are 31 years old, on average. Formerly abducted women are a few years older than the non-abducted, with the average NA woman being 29 years old and the average FA woman being 34 years old ($p-value$=0.000). Despite efforts to recruit women of similar age, we encountered two challenges in the field. First, as discussed in Section 3.1.2, targeting women in their 20s meant recruiting women who were children in the early 2000s, when the intensity of abductions drastically declines, therefore resulting in fewer FA women

[33]All activities were conducted using pen and paper. The field team then recorded individual decisions on a Data Form (one per workshop), which was subsequently scanned and digitized. The detailed workshop instructions can be found in the Online Appendix.

Table 2: Descriptive Statistics

| | Full Sample | | | Not Abducted | | | Formerly Abducted | | | FA-NA |
|---|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | Std Dev | N | Mean | Std Dev | N | Mean | Std Dev | P-Value |
| **Panel A** | | | | | | | | | | |
| Edinburgh Index | 526 | 15.392 | 4.884 | 268 | 14.287 | 5.113 | 258 | 16.539 | 4.357 | 0.000*** |
| Likely Depressed | 526 | 0.707 | 0.455 | 268 | 0.597 | 0.491 | 258 | 0.822 | 0.384 | 0.000*** |
| Cohen Index | 501 | 23.136 | 5.437 | 257 | 22.370 | 5.071 | 244 | 23.943 | 5.699 | 0.001*** |
| Severely Stressed | 501 | 0.242 | 0.428 | 257 | 0.187 | 0.390 | 244 | 0.299 | 0.459 | 0.003*** |
| **Panel B** | | | | | | | | | | |
| Fight | 514 | 9.815 | 3.126 | 260 | 9.396 | 3.031 | 254 | 10.244 | 3.168 | 0.002*** |
| Flight | 520 | 11.163 | 2.714 | 267 | 10.854 | 2.602 | 253 | 11.490 | 2.795 | 0.007*** |
| Tend | 525 | 14.038 | 2.395 | 272 | 13.923 | 2.495 | 253 | 14.162 | 2.280 | 0.253 |
| Befriend | 530 | 11.755 | 3.207 | 272 | 11.324 | 3.208 | 258 | 12.209 | 3.149 | 0.001*** |
| **Panel C** | | | | | | | | | | |
| >= Primary School | 541 | 0.336 | 0.473 | 277 | 0.397 | 0.490 | 264 | 0.273 | 0.446 | 0.002*** |
| No Income | 541 | 0.384 | 0.487 | 277 | 0.375 | 0.485 | 264 | 0.394 | 0.490 | 0.659 |
| Food Scarcity | 537 | 0.644 | 0.479 | 276 | 0.634 | 0.483 | 261 | 0.655 | 0.476 | 0.610 |
| Water Scarcity | 539 | 0.315 | 0.465 | 275 | 0.316 | 0.466 | 264 | 0.314 | 0.465 | 0.961 |
| Married | 541 | 0.614 | 0.487 | 277 | 0.592 | 0.492 | 264 | 0.636 | 0.482 | 0.291 |
| Polygynous Marriage | 541 | 0.194 | 0.396 | 277 | 0.177 | 0.382 | 264 | 0.212 | 0.410 | 0.301 |
| Age First Marriage | 420 | 18.452 | 2.870 | 205 | 18.054 | 2.434 | 215 | 18.833 | 3.192 | 0.005*** |
| Children | 541 | 3.366 | 2.246 | 277 | 2.801 | 2.225 | 264 | 3.958 | 2.115 | 0.000*** |
| Social Support Index | 430 | 18.891 | 5.192 | 216 | 19.644 | 5.410 | 214 | 18.131 | 4.857 | 0.002*** |
| **Panel D** | | | | | | | | | | |
| Grit Measure 1 | 540 | 2.367 | 1.743 | 276 | 2.029 | 1.703 | 264 | 2.720 | 1.717 | 0.000*** |
| Grit Measure 2 | 541 | 0.702 | 0.458 | 277 | 0.668 | 0.472 | 264 | 0.739 | 0.440 | 0.072* |
| Decision to Compete | 519 | 0.329 | 0.470 | 261 | 0.307 | 0.462 | 258 | 0.353 | 0.479 | 0.264 |
| Risk Tolerance | 540 | 3.257 | 1.588 | 276 | 3.275 | 1.619 | 264 | 3.239 | 1.557 | 0.788 |
| Avg. Share Given | 521 | 0.229 | 0.210 | 261 | 0.233 | 0.215 | 260 | 0.226 | 0.207 | 0.710 |

Note: Each row reports number of observations, mean and standard deviation for each of the variables listed in column 1. Each Panel refers to a "family" of outcomes of interest, i.e., mental health outcomes in Panel A, stress response mechanisms in Panel B, socio-economic outcomes in Panel C and Behavioral Measures in Panel D. For the indexes in Panel A (Edinburgh and Cohen indexes) and all measures in Panel B, the number of observations refers to the number of women who answered all the questions composing the index. We report statistics for the *Full Sample* of women, the sample of *Not Abducted* women and the sample of *Formerly Abducted* women. All variables are described in Section 2. The survey questions can be found in Appendix B. The final column represents a difference in means p-value between abducted and not abducted women for each outcome variable. *** p<0.01, ** p<0.05, * p<0.1.

in this age group. The opposite applies to women in their 30s, who were children when child abductions by the LRA were rampant. Second, there is uncertainty in reported ages, as many women are unsure of their exact year of birth.

Panel C of Table 2 reports descriptive statistics for our set of socioeconomic outcomes. Educational attainment is low, with fewer than 40 percent of the sample having completed primary education. Farming is the primary economic activity, providing work for 90 percent of the women. This appears to be subsistence farming for many of the women, as 38 percent (40 percent of those engaged in farming) had not earned any income in the past year. Food scarcity is widespread, with over 60 percent of women reporting that they frequently (defined as once a week or more) went without food for themselves or their families over the past

three months. Similarly, water scarcity is a significant issue, affecting more than 30 percent of women on a regular basis during the same period.

About 61 percent of the sampled women are married, with the remaining 39 percent being single (17 percent), separated (11 percent), or widowed (7 percent). Nearly one third of the married women are in a polygynous marriage, with no statistically significant differences by abduction status. The average woman in this sample has 3 biological children, and the formerly abducted women typically have one more child than the not abducted women (3.9 vs. 2.8 children).

Table 2 presents mean comparisons for all variables between formerly abducted and non-abducted women. The $p$-values in the last column indicate that formerly abducted women are significantly more likely to experience mental health problems (Panel A) and to employ fight, flight, and befriend stress responses (Panel B) compared to non-abducted women. They are also less likely to have completed at least primary school but do not differ significantly in economic activities, poverty, or marital status. Formerly abducted women have more biological children and report lower levels of social support (Panel C). Additionally, they exhibit higher levels of grit but show no significant behavioral differences in the other incentivized games (Panel D). In the next section, we examine the robustness of these findings using regression analysis.

## 4.2 The Long-Term Impacts of Childhood Abductions

In the following subsections, we report our findings on the effects that abduction have on mental health and stress responses mechanisms (Section 4.2.1). Then, we examine the impacts on socioeconomic outcomes (Section 4.2.2), and on non-cognitive traits and behavioral preferences (Section 4.2.3). Finally, in Section 5, we conduct robustness checks and present exploratory results from (not preregistered) analysis of heterogeneous impacts of the abduction experience by the women's age at the time of abduction.

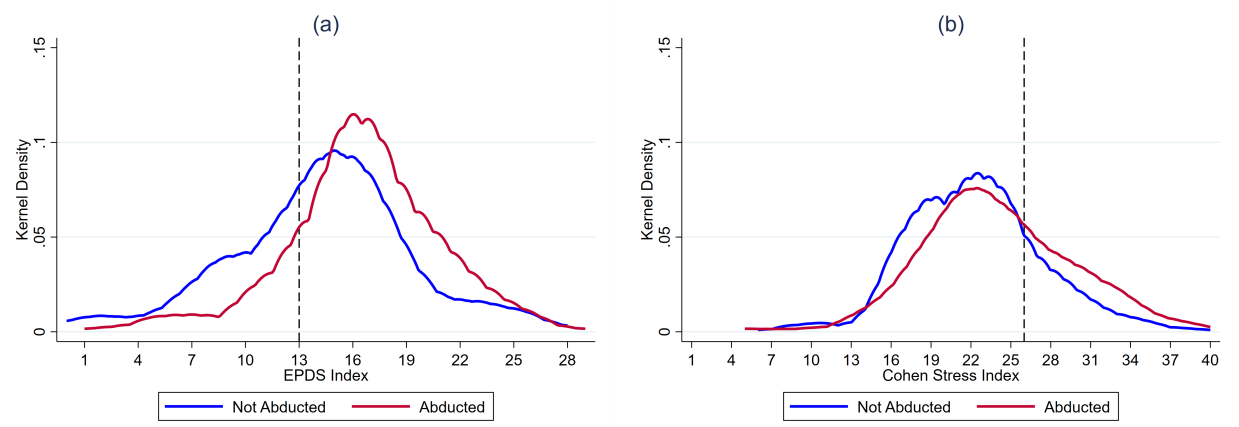
### 4.2.1 Impact on Mental Health

**Depression and Perceived Stress**

We start by investigating whether childhood abductions have left long-term consequences on the women's risk of depression by analyzing both the EPDS scores and the proportion of women scoring above the threshold frequently used in the literature to identify high likelihood of depression (EPDS score>13). The Cronbach's alpha for the EPDS is 0.76, indicating that our instrument for the risk of depression has good internal validity.

Panel (a) of Figure 2 displays the distributions of the EPDS scores by abduction status,

Figure 2: EPDS and PSS-10




Note: Panel (a) and Panel (b) of the figure display the Kernel densities of the two measures of mental health: the Edinburgh Postnatal Depression Scale (EPDS) and the Cohen stress scale (PSS-10), respectively. The vertical dashed lines indicate the thresholds levels used to identify high likelihood of clinical depression for the EPDS index, and severe stress for the Cohen index.

revealing a statistically significant difference between the two distributions (Mann-Whitney test for equality of distributions $p-value$=0.000), a difference also observed for the means (FA: 16.539, NA:14.287; $p-value$=0.000). Recalling that the EPDS index is intended only as a screening tool and not to diagnose depression severity, a more conservative estimate would be comparing the proportion of women whose score is above the threshold (>13) to those below. Even by this metric, we cannot reject the hypothesis that the formerly abducted women are at higher risk of depression than those who were not abducted (FA: 0.822, NA:0.597; $p-value$=0.000).

Table 3 reports the estimates from equation (1) for both the EPDS score (column 1) and the dichotomous indicator for the likelihood of depression (column 2). The results observed in Figure 2 are confirmed when conducting regression analysis including controls and village fixed effects, clustering the standard errors at the session level and correcting the errors for multiple hypotheses testing. The estimates indicate that formerly abducted women are 17.5 percentage points more likely to be depressed than women who were not abducted as children. This corresponds to a 29 percent increase over the mean observed among the not abducted women (59.7 percent of the not abducted women are at high risk of depression).

Next, we examine the women's perceived stress levels, as measured by the Cohen stress scale (PSS). The Cronbach's alpha for the PSS stands at 0.69, indicating moderate to good internal consistency. In panel (b) of Figure 2, we present the PSS score distributions for women who were abducted as children and those who were not. The comparison reveals a notable disparity between the two groups, as evidenced by a statistically significant difference in the distributions (test for equality of distributions $p-value$=0.0012) and in the mean PSS

Table 3: Impact of Abduction on Mental Health

| | Edinburgh Index (EPDS) | Likely Depressed (EPDS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 1.676*** | 0.175*** | 1.015* | 0.078 |
| | (0.448) | (0.041) | (0.567) | (0.047) |
| | [0.001] | [0.001] | [0.052] | [0.052] |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 525 | 525 | 500 | 500 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

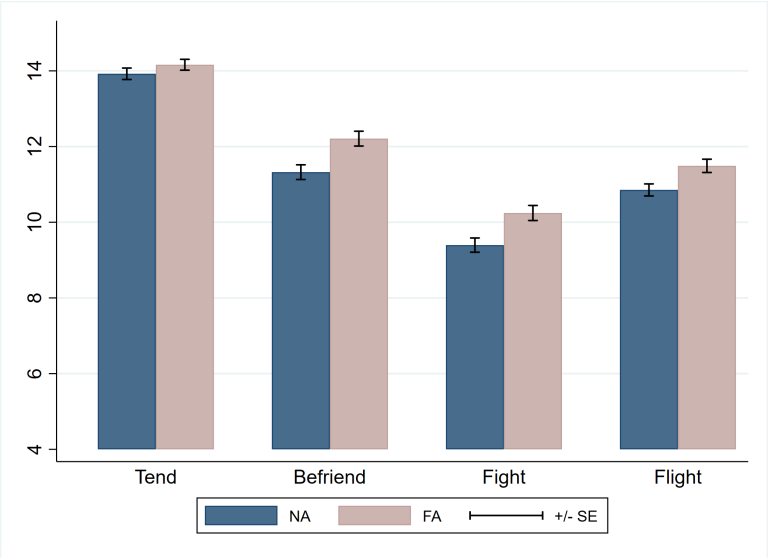
Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely of depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26), and 0 otherwise. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the prosociality game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

scores (FA: 23.943, NA: 22.370; p=0.001). Once again, taking a more conservative approach, we also compare the proportion of women whose scores surpass the threshold for severe stress (>26). We find that formerly abducted women have a significantly higher stress perception compared to non-abducted women (FA: 0.299, NA: 0.187; p=0.003). This is confirmed by regression analysis. Columns 3 and 4 of Table 3 present the coefficients generated by estimating equation (1) for both the PSS score (column 3) and the 0-1 indicator for being above the severe stress threshold (column 4). The core findings that abduction experiences significantly elevate the women's stress perceptions are confirmed for both measures, although the estimates are significant at the 10 percent level.

**Stress Response Mechanisms**

Next, we examine whether the experience of childhood abduction has impacted the women's stress response mechanisms. Figure 3 reports the average score for each of the four stress responses elicited by our survey; tend, befriend, fight, and flight. First, we note that paired t-tests of the four response mechanisms show that the within-subject ranking is highly significant for both formerly abducted and not abducted women: tend is the most frequent self-reported reaction, followed by befriend, flight, and then fight. The latter stress response is the least frequent in both women groups. Importantly, while maintaining the rankings, abduction appears to increase all four stress responses, as shown in Panel B of Table 2: sig-

Figure 3: Stress Response: Tend, Befriend, Fight, Flight




Note: We report the average score for each of the four stress responses. Each index sums the answers to 4 questions eliciting how often the respondent reacts to stressful situations in a given way, on a 5-point Likert scale (1= Never to 5 = Always). Therefore, each index ranges from a minimum of 4 to a maximum of 20 points. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific items used for each outcome.

nificantly so for befriend (FA: 12.209, NA: 11.324; p=0.001), fight (FA: 10.244; NA: 9.396, p=0.002) and flight (FA: 11.490, NA: 10.854; p= 0.007), and insignificantly so for tend (FA:14.162, NA:13.923; p=0.253), which nevertheless remains the most frequent response.

These findings are confirmed by regression analysis. The estimates displayed in Table 4 indicate a long-term increase in stress responses following abduction. Specifically, formerly abducted women are more likely to fight, flee and befriend, as compared to not abducted women. The effect sizes are similar in magnitude; we see an increase of 0.21 standard deviations from the control mean for the fight score, a 0.23 standard deviation increase for the flight score and a 0.24 increase for the befriend score. The heightened stress response mechanisms displayed by formerly abducted women suggest that the traumatic events that these women suffered during childhood taught them coping skills that they continue to employ.

### 4.2.2 Impact on Socioeconomic Outcomes

In this section, we examine the effects of childhood abduction on socioeconomic outcomes across six indicators: primary education attainment, whether the women earned any income in the past year, vulnerability to food, or water scarcity, their marital status, number of children, and their Social Support score.

The estimates in column 1 of Table 5 indicate that being formerly abducted is associated with a 6.7 percentage point reduction in the likelihood of completing at least primary edu-

Table 4: Impact of Abduction on Stress Responses

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 0.208* | 0.234** | 0.125 | 0.243* |
| | (0.105) | (0.086) | (0.092) | (0.120) |
| | [0.045] | [0.016] | [0.093] | [0.045] |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 513 | 519 | 524 | 529 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1..

cation ($p < 0.1$), relative to a mean of 39.7 percent among non-abducted women. This does not lead, however, to reduced economic opportunities for abducted women or higher vulnerability to poverty. This is likely due to the scarcity of job opportunities, in an environment where farming is the primary source of work for all, and where all individuals face similar vulnerability to economic shocks and shortages of food and water.

Next we consider impacts on marriage and fertility. First, we find that abduction does not affect marital status: formerly abducted women are equally likely to be married and no more or less likely to be in a polygynous marriage. We also examine age at first marriage and find suggestive, though not statistically significant, evidence of a modest increase among formerly abducted women, consistent with the broader literature. We also observe a positive association between abduction and the number of biological children. As shown in column 5 of Table 5, being abducted is associated with having 0.335 more children ($p < 0.05$) compared to the mean of 2.8 children observed among non-abducted women. This result reflects the fact that some abducted women returned home with children born during captivity. In our sample, 12 percent of all abducted women (31 in total) and 23 percent of those abducted for at least one year returned with a child. Excluding these women from the analysis reduces the estimated impact of abduction on the number of children from 0.33 to 0.23; the estimated coefficient remains significant at the 10 percent level.[34] This suggests that while having a child

[34]These estimates are not reported in our main tables but are available upon request.

Table 5: Impact of Abduction on Socioeconomic Outcomes

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | Age First Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Formerly Abducted | -0.066* | 0.048 | 0.029 | -0.045 | 0.002 | -0.008 | 0.420 | 0.335** | -1.158** |
| | (0.038) | (0.046) | (0.039) | (0.038) | (0.043) | (0.048) | (0.249) | (0.128) | (0.509) |
| | [0.223] | [0.584] | [0.668] | [0.535] | [0.971] | [0.971] | [0.227] | [0.029] | [0.060] |
| Not Abducted Mean | 0.397 | 0.375 | 0.634 | 0.316 | 0.592 | 0.177 | 18.054 | 2.801 | 19.644 |
| Observations | 540 | 540 | 536 | 538 | 540 | 540 | 419 | 540 | 430 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The number of observations is lower for the Social Support index due to missing values for women who do not have a partner (4 of 6 questions are about relationship with partner and partner's support). *** p<0.01, ** p<0.05, * p<0.1.

during captivity contributes to the observed impact on number of children, abducted women who did not give birth while captive also tend to have more children than non-abducted women. This may stem from reduced household bargaining power over family planning or increased preferences for children, possibly as a form of social support.

Finally, the last column of Table 5 indicates that abduction had a statistically significant negative impact on our validated measure of perceived social support. Specifically, the estimates in column 6 of Table 5 indicate that childhood abduction reduced the Social Support Index by 1.155 units ($p < 0.05$), i.e., a decline of about 6 percent.[35] These findings differ from those of Annan et al. (2011), who, shortly after the conflict's end, reported that abducted women had successfully reintegrated and self-reported higher levels of social support compared to non-abducted women. This discrepancy may suggest that abducted women initially received support upon returning home, but such assistance has diminished over time.

Our findings on number of children and social support are robust to our correction for multiple hypotheses through the Romano-Wolf step-wise procedure (Romano and Wolf, 2005).

[35]The analysis for this measure has fewer observations due to missing responses from women without partners, as the index includes 4 questions specific to partner relationships.

Table 6: Impact of Abduction on Preferences (Behavioral Games)

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Formerly Abducted | 0.633*** | 0.076* | 0.072 | 0.004 | -0.028* |
| | (0.176) | (0.037) | (0.046) | (0.137) | (0.016) |
| | [0.002] | [0.060] | [0.110] | [0.967] | [0.110] |
| Not Abducted Mean | 2.029 | 0.668 | 0.307 | 3.275 | 0.233 |
| Observations | 518 | 519 | 510 | 539 | 520 |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column (3), we add controls for confidence and risk preferences, which is standard practice when assessing competitiveness. *** p<0.01, ** p<0.05, * p<0.1..

### 4.2.3 Impact on Traits and Preferences

Table 6 reports the impact of abduction on our measures of behavioral traits and preferences, obtained by the four incentivized games described in Section 2.4.4: grit, competitiveness, risk tolerance, and prosociality.

Notably, formerly abducted women exhibit greater grit than their non-abducted counterparts. For our first measure of Grit, formerly abducted individuals scored 32 percent higher than not abducted, a magnitude not just large, but highly significant (a 0.633 unit increase over a 2.029 mean, $p < 0.01$, Romano-Wolf p-value = 0.002). Similarly, our second measure of Grit reveals a positive and significant association with abduction, albeit with a smaller coefficient of 0.076 ($p < 0.1$, Romano-Wolf p-value = 0.052), equivalent to a 11.5 percent increase over the mean observed for not abducted women. These results suggest a strong positive relationship between abduction experiences and increased grit, and are consistent with previous findings by Annan et al. (2009, 2011).

In terms of competitiveness, our estimates indicate that formerly abducted individuals are about 7 percentage points more likely to choose to compete (22.8 percent increase) than not abducted women, though this result is not statistically significant at the conventional levels (Romano-Wolf p-value = 0.11). The effect on risk tolerance is negligible, with a coefficient of 0.006 and no statistical significance (Romano-Wolf p-value = 0.944).

In contrast with some of the existing literature that finds increased prosociality among victims, we found that women who were formerly abducted are, if anything, less willing to

share their endowment with anonymous others than those who were never abducted. Recall that, in our prosociality game, participants had to make four allocation decisions with their endowment: whether to give to a formerly abducted woman, give to a not abducted woman, give to a woman from the same village, and give to a man from the same village. For the purpose of this analysis, we examine the share of the endowment allocated to the recipient, averaging across the 4 decisions. Appendix Table A5 presents the results obtained for the four decisions separately.

Column 5 of Table 6 reveals that formerly abducted women share 10 percent less of their endowment on average compared to not abducted women, although the coefficient is only marginally significant (p¡0.1 and Romano-Wolf p-value = 0.11). Appendix Table A5 suggests that being formerly abducted lowered the amount women chose to give to all four targets (other formerly abducted women, not-abducted women, village women, and village men), but marginally significantly so only towards other former abductees (Column 1 of Table A5). Interestingly, all women displayed substantial empathy by giving more if the recipient was a formerly abducted woman (share of endowment given to FA: 27.8 percent, to NA: 19.7 percent, paired t-test p=0.000). They also displayed some homophily by giving marginally more to another woman than to a man (share given to a woman: 18.8 percent, to a man: 16.9 percent, paired t-test p=0.055), but such differences by abduction status and gender of the recipient applied equally to abducted and not abducted women.

In summary, results generated by the incentivized games reveal significant differences in grit between formerly abducted and non-abducted individuals; the evidence for effects on competitiveness and sharing tendencies is weaker. Risk tolerance appears unaffected by the abduction experience.

# 5 Robustness Checks and Heterogeneity Analysis

## 5.1 Entropy Balancing by Age

As discussed in Section 3.1.2, given the challenging research context, we relied on local facilitators and village leaders to generate lists of abducted and non-abducted women between the ages of 18 and 54. Because abduction intensity varied sharply over time, this recruitment process necessarily reproduced the underlying cohort structure of abduction in the population: the younger cohort in our sample consists largely of non-abducted women (approximately 66 percent), whereas the cohort of women aged 30 and above consists predominantly of abducted women (approximately 61 percent).

In all regression analyses we controlled for age. In addition, here we replicate our analysis

after implementing entropy balancing by age, which allows us to re-weight the sample of non-abducted women so that their age distribution matches that of abducted women. This procedure ensures that any remaining differences in outcomes are not mechanically driven by the underlying cohort structure of abduction. Our results remain virtually unchanged when using these entropy-balanced weights, as shown in Appendix Tables A6 to A9, reinforcing the conclusion that age imbalance does not drive our main findings.

## 5.2 Working Sample without Missing Values

A problem we have encountered with our data is the presence of missing values for some of the variables, specifically our measures of mental health and stress responses, and for the games. As a result, the sample size used in the analysis varies across dependent variables, ranging from 500 to 540. As an additional robustness check, we replicate the analysis using the 446 women (i.e., 82 percent of the surveyed women) for whom we have complete survey data, which we define as our "working sample." We start by assessing whether the likelihood of having missing values, and therefore not being in the working samples, varies by abduction status or other observable characteristics. We do not find any evidence of such selection into the working sample, as shown in Appendix Table A10. The replication of our primary analysis on the working sample, shown in Tables A11 to A14 shows that most of our findings are robust to this sample restriction. Notably, the estimates in Table A11 confirm the strong impact of the abduction experience on our mental health measures, while Table A14 highlights the positive relationship between abduction and grit.[36]

## 5.3 Double Lasso Controls

In our empirical specification, we included village fixed effects and indicators related to the data collection logistics, such as ordering effects and the timing of data collection. The only demographic variable we controlled for was age, as we considered other individual characteristics (e.g., poverty measures) to be potentially endogenous to abduction status.

As a robustness check, in Tables A15 to A18, we report estimates using the Double Lasso procedure (Belloni et al., 2014) for control variable selection. This analysis, although it employs controls that are likely endogenous, serves solely to assess the robustness of the estimated impact of abduction on each outcome.

For mental health outcomes, controls are drawn from all socioeconomic variables (listed in Panel C of Table 2), along with age, village fixed effects, data collection wave, and ordering indicator. For socioeconomic outcomes, the Double Lasso procedure selects controls from all

[36] We do not see abduction impact on marital and fertility outcomes in the working sample.

other socioeconomic variables, the EPDS and Cohen scales, age, village fixed effects, data collection wave, and ordering indicator. Similarly, for game-generated outcomes, the Double Lasso procedure selects controls from all socioeconomic variables, along with the EPDS and Cohen scales, age, village fixed effects, data collection wave, and ordering indicator.[37]

The estimated impacts of abduction on the EPDS score, the likelihood of depression, the fight-and-befriend stress response (at the 10 percent level), and grit are all robust to the expanded set of controls.

## 5.4 Priming Test: Partial Replication with a Similar Cohort

In our study, the mental health module was administered after questions on demographics, socio-economic outcomes, and war experiences. This ordering may have created an unintended emotional prime, potentially amplifying the estimated effects of abduction on mental health outcomes. While we cannot definitively rule out this possibility, we undertake a replication exercise to assess the magnitude of this concern. Specifically, we replicate our analysis of the impact of abduction on mental health outcomes using a sample of comparable women from a nearby subcounty independently collected by Lambert (2025). In that survey, married women and men's mental health was assessed using the same index for stress (Cohen Index) that we employ, as well as a closely related measure of depression symptoms (PHQ-9). Crucially, Lambert (2025) asked all participants the full battery of war experience questions at the beginning of the survey. This was followed by questions on current economic activities and several subsections of detailed questions on their family and children. The substantial separation between the war experience and the mental health modules reduces the likelihood that questions about war experiences —particularly the recall of abduction — heightened reported mental-health symptoms through priming effects, thereby driving possible associations between abduction and mental health outcomes.

The estimates in Table 7 indicate that the impacts of abduction on both mental health indicators are broadly comparable across the two samples, suggesting that priming effects are unlikely to drive our results. If anything, the results using Lambert (2025) are larger than those obtained with our data.

[37]In addition, for the grit outcomes, the set of possible controls include the number of correct puzzles solved in the first stage of the task, which we controlled for when generating our primary results, displayed in columns 1 and 2 of Table 6. For the competitiveness outcome, the set of possible controls include the confidence measure and the risk preference measures, which we included in the set of controls when generating our primary tables, consistent with standard practice in the literature.

Table 7: Impact of Abduction on Mental Health - Comparison to Lambert (2025)

| | Edinburgh Index (EPDS) | PhQ9 Index *Lambert 2025* | Cohen Index | Cohen Index *Lambert 2025* |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 0.328*** | 0.444*** | 0.200* | 0.359*** |
| | (0.088) | (0.092) | (0.112) | (0.097) |
| Not Abducted Mean | 0.000 | -0.000 | 0.000 | 0.000 |
| Observations | 525 | 214 | 500 | 214 |
| Basic Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 24 | 29 | 24 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Columns 1 and 3 report estimates generated from our sample. Columns 2 and 4 replicates the analysis on the Lambert (2025)'s sample. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The PhQ-9 is a scale ranging from 0 to 27, with higher values indicating greater risk of depression. The dependent variables are standardized around the sample-specific *Not Abducted* mean; therefore, the estimates are expressed in standard deviation from such mean. *** p<0.01, ** p<0.05, * p<0.1.

## 5.5 Priming Test: Survey Ordering Effects

As an additional check for possible priming effects, we exploit the randomization of the order of the survey relative to Activities 3 and 4, i.e., the risk-elicitation game and the pro-sociality game. We had hypothesized that asking about war-related experiences might prime abducted women in ways that could affect their behavior in these tasks, and had therefore randomly selected workshop participants who would participate in the last two game activities either before or after participating in the survey. We test for priming effects on the behavior in the last two games in Appendix Table A19. The results indicate that the survey ordering impacted (only) risk preferences. In particular, those who answered survey questions (and were therefore primed to think about their childhood and the conflict) before participating in the risk elicitation exercise, displayed more risk tolerance. Importantly, this pattern is not significantly different for abducted and non-abducted women, which is suggestive evidence that the survey modules did not differentially prime the two groups of women.

## 5.6 Heterogeneity Analysis

We conduct heterogeneity analysis to examine how the age of abduction affected the women in our sample. As shown in Figure 1 and discussed in Section 2.2, one third of the abducted women were abducted when they were 10 or younger, i.e., pre-pubescent, and about 50

percent were between the ages of 11 and 17, i.e., adolescents. The remaining women were abducted when they were 18 or older. We replicate our analysis for all outcomes of interest by substituting our abduction indicator in equation (1) of Section 3 with two indicators: an indicator equal to 1 if the woman was abducted when still a child (age<11), and 0 otherwise, and one indicator equal to 1 if the woman was abducted as a teen (age>=11), and 0 otherwise. Being not formerly abducted remains the baseline category.

We find that women abducted at a younger age may have experienced more severe outcomes. Girls taken when they were 10 years old or younger tend to display worse depression symptoms and, to an extent, more severe stress (see Appendix Figure A3 and Appendix Table A20), although the differences are not statistically significant. We observe similar patterns when looking at the fight stress response and, more notably, the befriend response, which appears to be heightened when the abduction occurred during childhood. In contrast, the tendency towards flight is developed to a comparable degree by all abducted women, regardless of their age at abduction.

The heterogeneity analysis of impacts on socioeconomic outcomes, displayed in Appendix Figure A3 and Appendix Table A22, provides a number of noteworthy results. First, the negative impacts of abduction on educational attainment are concentrated among the women who were abducted when they were 11 or older, possibly because those abducted at a younger age had a greater chance to return to school after abduction had ended. The observed impact may reflect both the direct disruption to schooling caused by abduction as well as potentially because older adolescents/adult women have fewer opportunities to resume education after a prolonged interruption. Second, (only) women who were abducted at a younger age are more likely than not abducted women to have received no income in the past year. Third, maybe unsurprisingly, the observed impact of abduction on number of children seems to be driven by women who were abducted in their teens, i.e., during or post-puberty. Importantly, the age of abduction plays a critical role in the impact of the abduction experience on the women's perceived social support: those abducted as children report less social support than not abducted women and women abducted at a later age, although the latter difference is not statistically significant. Finally, when examining traits and preferences (Appendix Figure A3 and Appendix Table A23), we find that all abducted women, no matter the age of abduction, show more grit.

We also perform heterogeneity analysis by the duration of abduction. However, we interpret these findings with caution, as the length of captivity is likely endogenous; older or more resilient girls may have been able to escape or secure release earlier. Our findings, displayed in Appendix Figure A4 and Appendix Tables A24 to A27, consistently demonstrate that negative impacts of the abduction tend to be more pronounced the longer the time in captivity.

This applies especially to our risk of depression measure, the flight stress responses, and our findings regarding education, number of children and social support. The positive impact of abduction on grit, on the other hand, is observed equally for women abducted for less than 1 year and those abducted for 1 year or longer.

# 6 Conclusions

This study investigates the long-term consequences of childhood abduction by the LRA on women's mental health, socioeconomic outcomes, traits, and preferences in Northern Uganda. Given that child abduction is one of the most severe and prevalent forms of war victimization, understanding its lasting impact is crucial for many conflict-affected countries (UN, 2024).[38] We show that extreme victimization during conflict continues to shape women's lives even decades later.

We find evidence of significant and persistent impacts of abduction on mental health. Formerly abducted women exhibit higher levels of depression symptoms, perceived stress, and stress reactivity, consistent with evidence from psychology on the long-lasting effects of childhood trauma (e.g., Okello et al. (2007)). These effects are particularly pronounced among women abducted at a younger age, highlighting the importance of timing and severity of trauma. Socioeconomic outcomes are also affected, though less uniformly. Abducted women have lower educational attainment, greater fertility, and lower perceived social support among the abducted, but overall poverty levels do not differ by abduction, likely due to the widespread deprivation in the study area. Incentivized behavioral reveal impacts on non-cognitive traits. Consistent with Annan et al. (2009, 2011), abducted women display higher levels of grit, alongside suggestive evidence of an increased competitiveness and lower prosociality, but no differences in risk preferences. These findings highlight the complexity of the impact of childhood trauma on preferences and decision-making.

While our study leverages the plausibly exogenous nature of abduction and we attempted to statistically address possible threats to causal identification, limitations remain. The reliance on self-reported measures introduces potential recall biases, particularly regarding traumatic events experienced at a young age. Our comparison group consists of women who were also exposed to substantial conflict-related trauma, including displacement and the loss of relatives; as a result, our estimates capture the incremental impact of abduction over and above other wartime experiences. Survival bias may also play a role: although historical accounts suggest relatively high rates of return among abducted girls, those who survived

[38] Other instruments of war include killing, maiming, forced labor and sexual violence without abduction (UN, 2024).

and returned may be positively selected on individual characteristics, such as physical health and unobserved resilience. While this would likely bias the estimated effects of mental health downward, the higher levels of grit observed among formerly abducted women may partly reflect selection.

In conclusion, our research addresses several gaps in the literature by examining the multifaceted and long-term impacts of childhood abduction, which is a severe and understudied instrument of war. Our findings shed light on the enduring effects of physical and sexual violence experienced during childhood abduction on adult women's mental health, education, social support, and non-cognitive traits over 20 years after the abduction and the war ended. As armed conflict and gender-based violence continue to rise globally, understanding these long-run consequences is increasingly urgent. The extremely high prevalence of depression among victimized women underscores the need for sustained, targeted mental health interventions, especially given evidence that commonly used reintegration programs yielded limited mental health benefits (Muldoon et al., 2014) and the severe scarcity of mental health services in fragile settings (Dokkedahl et al., 2015). Overall, the wide-ranging and long-term impacts identified in our study highlight the challenges faced by women in rebuilding their lives after experiencing great trauma. At the same time, the fact that the abducted women continue to exhibit greater grit than the non-abducted also offers hope and shows that the human capacity for resilience and determination can endure even in the face of the most profound adversity.

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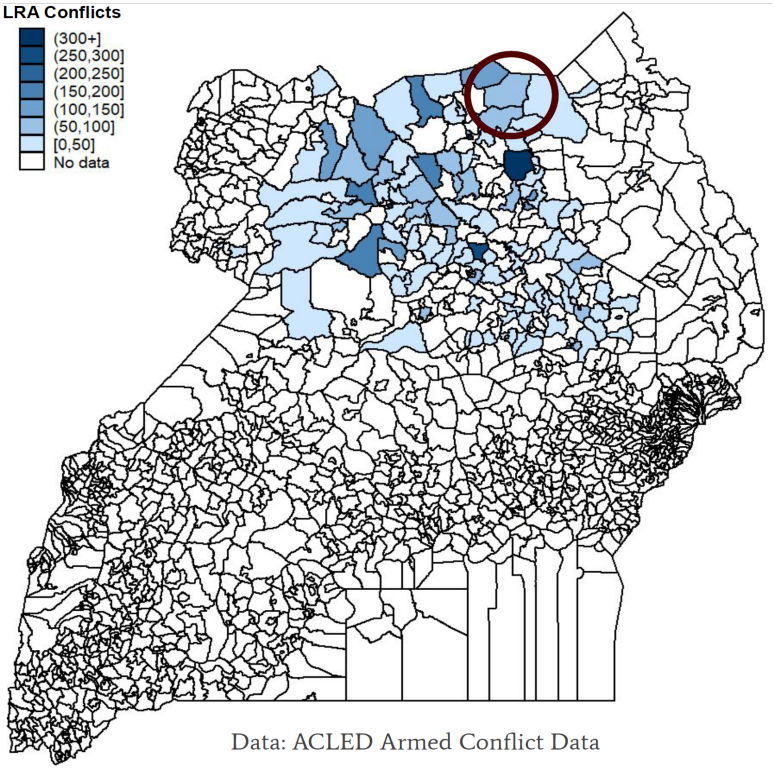
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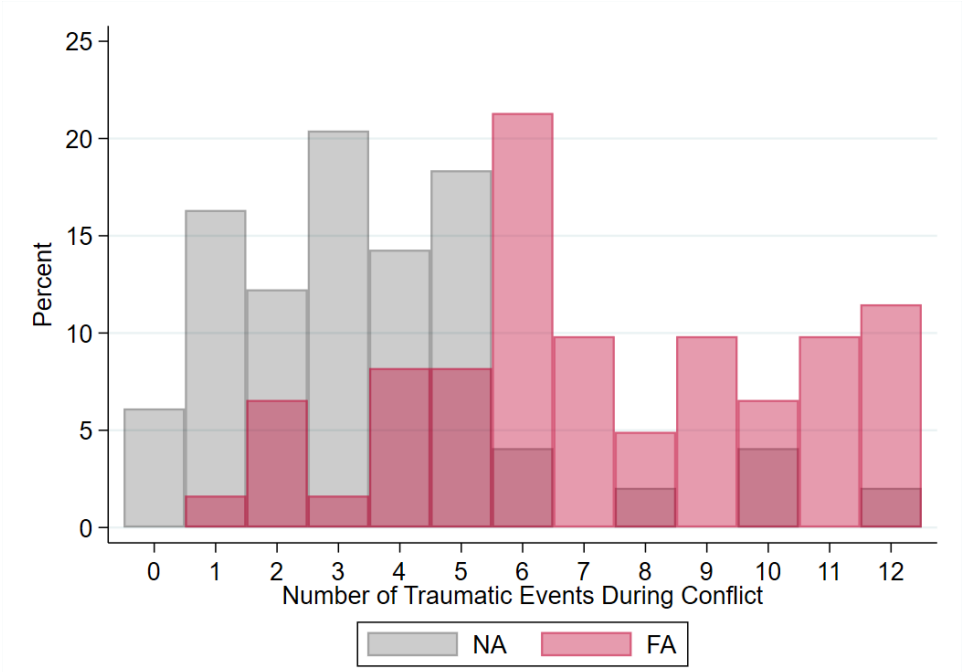
# Appendix A: Additional Figures and Tables

Figure A1: LRA Conflicts in Uganda



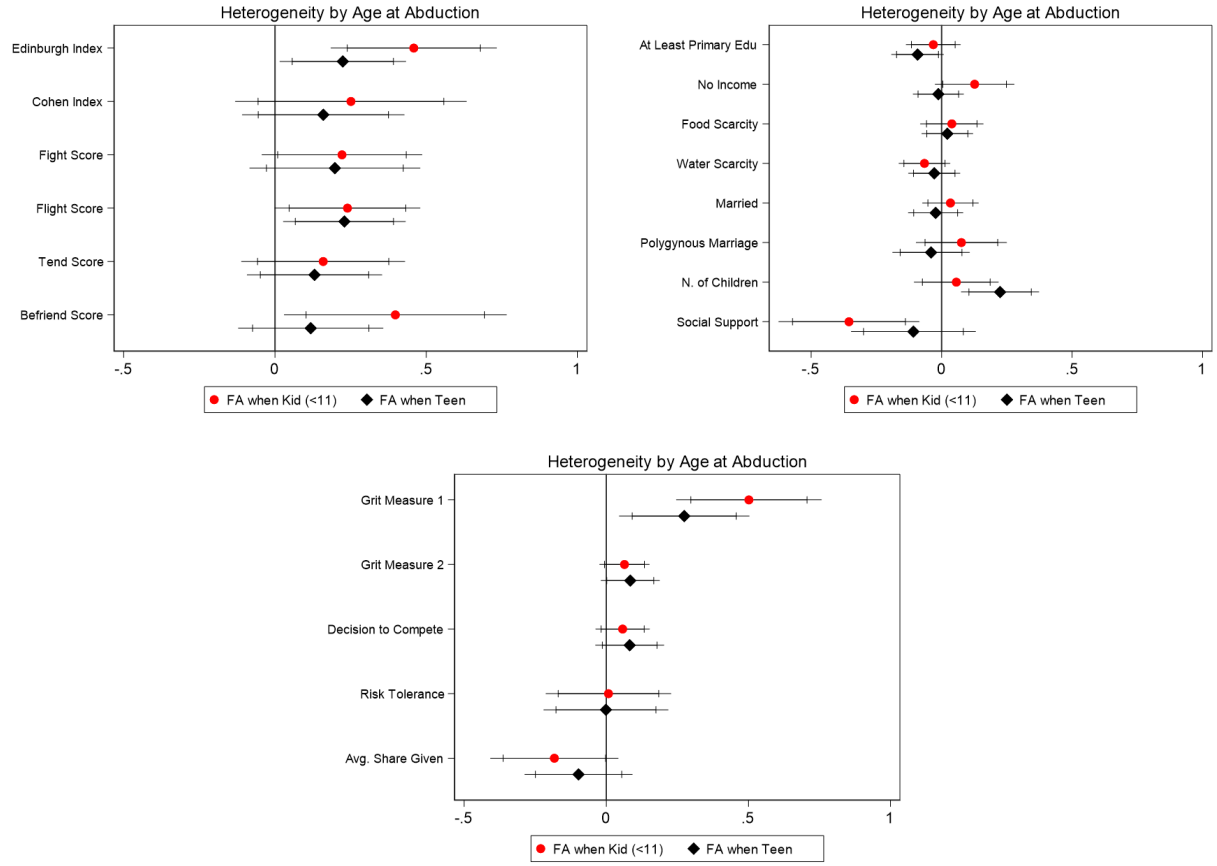

Note: The map identifies Ugandan subcounties by intensity of LRA conflict, according to ACLED data found at https://acleddata.com/. The circle in the figure identifies the Kitgum district, where we conducted our study.

Figure A2: Trauma Index by Abduction Status



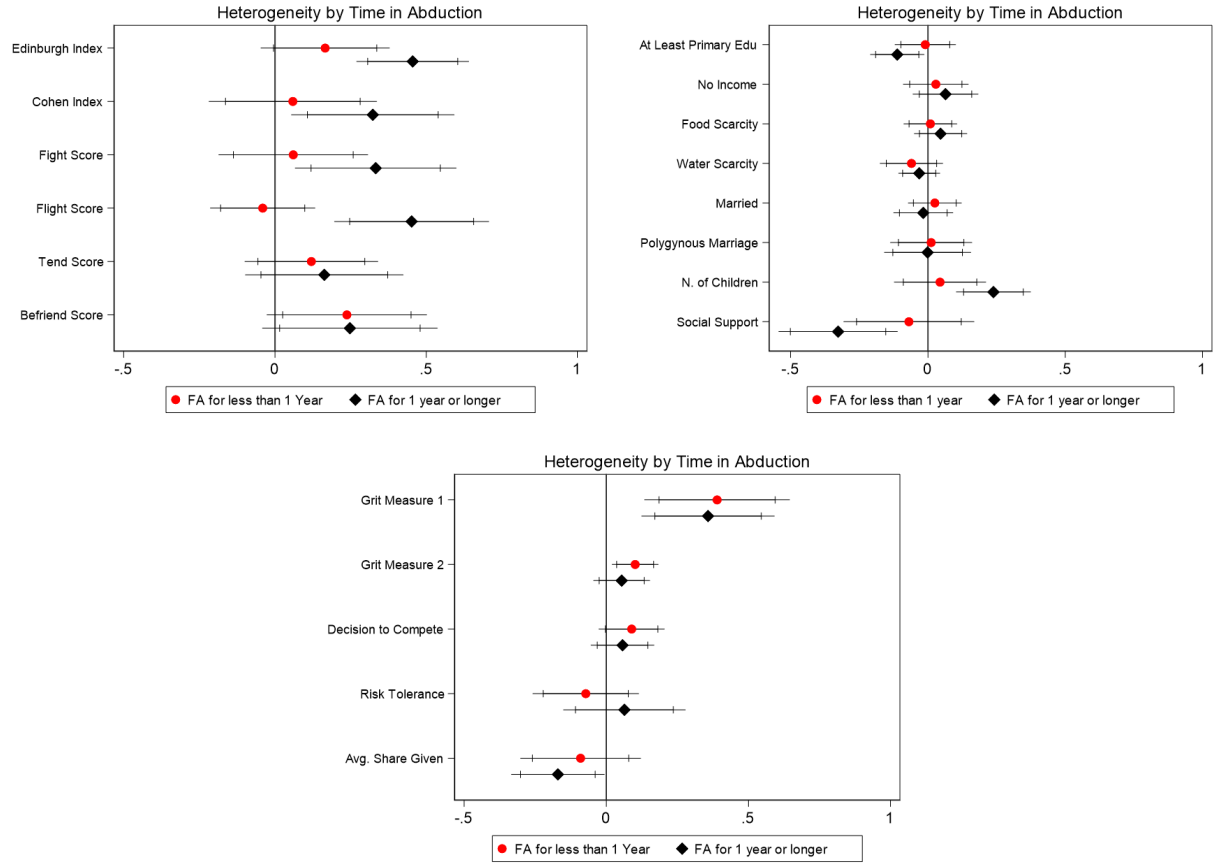

Note: The figure reports the number of different types of traumatic events women were exposed to during the conflict. The 12 events are: 1) Someone shot bullets at you or your home; 2) You received a severe beating or were attacked by someone; 3) You were tied up or locked up as a prisoner; 4) You received a serious physical injury in a battle or rebel attack; 5) You were forced to carry heavy loads or do other forced labor; 6) You witnessed an attack by the LRA or battle with UPDF; 7) You witnessed beatings or torture of other people; 8) You witnessed a killing; 9) You witnessed the rape or sexual abuse of a woman; 10) Another family member or friend was murdered or died violently; 11) Another family member or friend disappeared or was abducted; 12) Someone took or destroyed your personal property. Due to an implementation mistake in the field, this survey question was asked to all the formerly abducted women, but to only 18 percent of the not abducted women.

# Figure A3: Estimated Impacts by Age at Abduction




Note: The figures display the estimated coefficients obtained for each of the listed outcomes, along with their 90 percent confidence intervals, as derived from the regression analyses reported in Tables A20 to A23.

Figure A4: Estimated Impacts by Time in Abduction




Note: The figures present the estimated coefficients along with their 90 percent confidence intervals, as derived from the regression analyses reported in Tables A24 to A27.

Table A1: Analysis of Women's Selection into the Study

| | Participated *Full Sample* | Participated *Eligible Sample* |
|---|---|---|
| | (1) | (2) |
| Formerly Abducted | -0.041 | -0.044 |
| | (0.033) | (0.033) |
| Observations | 647 | 626 |
| Not Abducted Mean | 0.888 | 0.885 |
| Village FE | Yes | Yes |

Note: Robust standard errors, clustered at the workshop level, in parentheses. The outcome variable is a 0-1 dummy equal to 1 if the recruited woman participated in the workshop and 0 if she did. Column 1 includes all the 647 women invited to participate in the study. Column 2 excludes women who were older than 54 or younger than 18, plus one woman who was deemed ineligible due to a mental disability, and 5 women who had to leave the workshop for family reasons. The *Not Abducted Mean* represents the mean share of not abducted women who participated in the study, from all recruited women (Column 1) or from all recruited women conditional on eligibility (Column 2). *** p<0.01, ** p<0.05, * p<0.1.

Table A2:
Pre-Abduction characteristics of men in Kitgum from Lambert (2025)

| *Panel A: Independently drawn sample of 214 men in Kitgum district of Uganda (Lambert, 2025)* | Formerly Abducted versus Non-Abducted | |
|---|---|---|
| | Unadjusted means | Conditional |
| Year of Birth | -0.005* [0.003] | -0.004 [0.004] |
| Household Size During War | 0.002 [0.010] | 0.010 [0.012] |
| Father Engaged in Subsistence Farming During War | -0.056 [0.084] | -0.088 [0.083] |
| Landholdings in Acres During War | 0.000 [0.000] | 0.000 [0.000] |
| Above Median Landholdings During War | 0.016 [0.069] | -0.019 [0.082] |
| Number of Cattle Owned During War | -0.001 [0.002] | -0.002 [0.002] |
| Father Completed At least Primary School | -0.078 [0.115] | -0.149 [0.129] |
| Mother Completed At least Primary School | 0.055 [0.220] | 0.220 [0.237] |
| Father Lived in the Household During War | -0.080 [0.064] | -0.108 [0.077] |

Note: This table compares various retrospectively collected observable characteristics of men in Kitgum district, by their abduction status. The data were independently collected as part of a study of married couples in an adjacent subcounty of Kitgum – Mutcwini Main – by one of the authors (Lambert, 2025). All presented characteristics are as at the time of abduction, not their current status. The "Unadjusted means" column reports the coefficient obtained for the corresponding variable in the first column from a linear probability regression where the abduction status (0-1 dummy, equal to 1 for formerly abducted men) is regressed on such variable without controls. The "Conditional" column presents the coefficients obtained for the variables on the first column when the regression includes all the variables. Robust standard errors are reports in square brackets. *** p<0.01, ** p<0.05, * p<0.10.

Table A3: Migration and Abduction Status from Lambert (2025)

| | Migrated District | Migrated Subcounty | Migrated Parish | Migrated Village |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | -0.001 | 0.026 | -0.037 | 0.026 |
| | (0.040) | (0.062) | (0.068) | (0.059) |
| Observations | 214 | 214 | 214 | 214 |
| Not Abducted Mean | 0.103 | 0.278 | 0.608 | 0.742 |

Note: Robust standard errors in parentheses. Each outcome is a binary variable that takes the value of 1 if the woman migrated out of that geographic entity and 0 otherwise. All regressions control for age. *Not Abducted Mean* represents the proportion of not abducted women who migrated at that geographic level. The data were independently collected as part of a study of married couples in an adjacent subcounty of Kitgum – Mutcwini Main – by one of the authors (Lambert, 2025). *** p<0.01, ** p<0.05, * p<0.1.

Table A4:
Pre-abduction Characteristics of Women in Kitgum - Conditional on age only

| | Formerly Abducted versus Non-Abducted | |
|---|---|---|
| | Unadjusted means | Conditional on age |
| *Panel A: Independently-drawn sample of women in Kitgum district in 2006-2007 n=267 (Annan et al., 2011)* | | |
| Respondent Age | −0.25[0.83] | |
| Household Size During War | 0.59[0.40] | 0.60[0.41] |
| Father Was a Farmer During War | 0.06[0.05] | 0.06[0.06] |
| Standard Normal Index of HH Wealth in 1996 | 0.08[0.17] | 0.08[0.17] |
| Father Completed At Least Primary School | −0.02[0.11] | −0.02[0.11] |
| Mother Completed At Least Primary School | 0.10[0.05]* | 0.10[0.05]* |
| Paternal Death Before 1996 | −0.00[0.04] | −0.01[0.03] |
| *Panel B: Independently-drawn sample of women in Kitgum district in 2024 n=494 (Cassar et al., 2025)* | | |
| Respondent Age | 0.020[0.002]*** | |
| Household Size During War | 0.003[0.006] | 0.009[0.008] |
| Father Lived in the Household During War | −0.113[0.040]*** | 0.072[0.043]* |
| Father Completed At Least Primary School | −0.052[0.047] | −0.033[0.047] |
| Mother Completed At Least Primary School | −0.004[0.059] | 0.049[0.058] |
| Father Was a Farmer During War | −0.036[0.039] | −0.015[0.034] |
| *Panel C: Independently-drawn sample of women in Kitgum district in 2024 n=214 (Lambert, 2025)* | | |
| Respondent Age | 0.012[0.004]*** | |
| Household Size During War | 0.010[0.011] | 0.012[0.010] |
| Father Was in Subsistence Farming During War | −0.039[0.064] | −0.036[0.066] |
| Landholdings in Acres During War | −0.000[0.001] | −0.001[0.000]** |
| Above Median Landholdings During War | 0.054[0.062] | 0.008[0.063] |
| Number of Cattle Owned During War | −0.002[0.001] | −0.002[0.001]** |
| Father Completed At Least Primary School | 0.043[0.088] | 0.122[0.092] |
| Mother Completed At Least Primary School | −0.009[0.140] | 0.048[0.142] |
| Father Lived in the Household During War | −0.134[0.067]** | −0.083[0.081] |

Note: This table compares retrospectively collected observable characteristics of women in Kitgum district, by their abduction status. All presented characteristics refer to the time of abduction, not their current status. The "Unadjusted means" column reports the coefficient obtained for the corresponding variable in the first column from a linear probability regression where the abduction status (0-1 dummy, equal to 1 for formerly abducted women) is regressed on such variable without controls. The "Conditional on age" column presents the coefficients obtained for each variable in the first column when the regression includes age. Robust standard errors are reports in square brackets. Panel A presents the data collected by Annan et al. (2011) shortly after the end of the conflict in the mid-2000s. We have obtained the original data from the authors and restricted the analysis to the Kitgum district, where our study was conducted. Panel B presents the data obtained for an independently drawn sample of women living in the same subcounty (Mucwini East) of Kitgum as our current sample (Cassar et al., 2025). Panel C presents data from an independent randomly-sampled survey of formerly abducted and not abducted women sampled from an adjacent subcounty (Mucwini Main) in the Kitgum district (Lambert, 2025). *** p<0.01, ** p<0.05, * p<0.10.

Table A5: Prosociality - Additional Estimates

| | % to FA | % to NA | % to Woman | % to Man | % to (FA-NA) | % to (W-M) | Always Gave 0 |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Formerly Abducted | -0.038 | -0.022 | -0.022 | -0.014 | -0.015 | -0.009 | 0.022 |
| | (0.023) | (0.024) | (0.022) | (0.021) | (0.027) | (0.023) | (0.036) |
| | [0.132] | [0.364] | [0.364] | [0.592] | [0.827] | [0.827] | [0.818] |
| Not Abducted Mean | 0.285 | 0.197 | 0.189 | 0.168 | 0.087 | 0.025 | 0.314 |
| Observations | 519 | 519 | 519 | 519 | 518 | 518 | 520 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. In the prosociality activity, each woman had to make four allocation decisions, and one of them would be chosen for payment. For each allocation decision, the respondent was given an endowment of 40,000 Ugandan Shilling, and had to decide how much to give to an unknown recipient: 0, 25%, 50%, 75% or 100%. The 4 possible recipients were: A formerly abducted woman (FA), a not abducted woman (NA), a woman from your village (Woman), a man from your village (Man). We report abduction impacts on each of these allocation decisions in columns 1) to 4). The dependent variable in column 5) is the difference between the percentages of the endowment allocated to a FA and an NA woman. The The dependent variable in column 6) is the difference between the percentages of the endowment allocated to a Woman and a Man from the respondent's village. The dependent variable in column 7) is a 0-1 dummy equal to 1 if the respondent decides to keep the endowment in all 4 allocation decisions. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Impact of Abduction on Mental Health - Entropy Balanced

| | Edinburgh Index (EPDS) | Likely Depressed (EPDS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 1.676*** | 0.181*** | 1.336** | 0.100** |
| | (0.431) | (0.040) | (0.519) | (0.044) |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 525 | 525 | 500 | 500 |
| Basic Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely of depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26), and 0 otherwise. Controls are: An indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In all regressions, we implement entropy balancing by age, i.e., we re-weight the sample of non-abducted women so that their average age matches that of abducted women. *** p<0.01, ** p<0.05, * p<0.1.

Table A7: Impact of Abduction on Stress Response- Entropy Balanced

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 0.217* | 0.268*** | 0.080 | 0.223* |
| | (0.112) | (0.081) | (0.095) | (0.118) |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 513 | 519 | 524 | 529 |
| Basic Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls are: An indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In all regressions, we implement entropy balancing by age, i.e., we re-weight the sample of non-abducted women so that their average age matches that of abducted women. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Impact of Abduction on Socioeconomic Outcomes- Entropy Balanced

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | Age First Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Formerly Abducted | -0.070 | 0.051 | 0.041 | -0.035 | -0.001 | -0.008 | 0.424 | 0.492** | -1.002* |
| | (0.041) | (0.047) | (0.038) | (0.044) | (0.040) | (0.052) | (0.365) | (0.201) | (0.531) |
| | [0.223] | [0.584] | [0.668] | [0.535] | [0.971] | [0.971] | [0.227] | [0.029] | [0.060] |
| Not Abducted Mean | 0.397 | 0.375 | 0.634 | 0.316 | 0.592 | 0.177 | 18.054 | 2.801 | 19.644 |
| Observations | 540 | 540 | 536 | 538 | 540 | 540 | 419 | 540 | 430 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls are: An indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In all regressions, we implement entropy balancing by age, i.e., we re-weight the sample of non-abducted women so that their average age matches that of abducted women. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Impact of Abduction on Behavioral Preferences - Entropy Balanced

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Formerly Abducted | 0.659*** | 0.065 | 0.053 | -0.002 | -0.027 |
| | (0.165) | (0.038) | (0.048) | (0.136) | (0.018) |
| Not Abducted Mean | 2.029 | 0.668 | 0.307 | 3.275 | 0.233 |
| Observations | 518 | 519 | 510 | 539 | 520 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column (3), we add controls for confidence and risk preferences, which is standard practice when assessing competitiveness. Controls are: An indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In all regressions, we implement entropy balancing by age, i.e., we re-weight the sample of non-abducted women so that their average age matches that of abducted women. *** p<0.01, ** p<0.05, * p<0.1.

Table A10: Selection into Working Sample

| | In Working Sample | In Working Sample | In Working Sample |
|---|---|---|---|
| | (1) | (2) | (3) |
| Formerly Abducted | -0.003 | -0.001 | 0.000 |
| | (0.036) | (0.035) | (0.035) |
| Age | | -0.000 | -0.001 |
| | | (0.002) | (0.003) |
| Primary | | | 0.023 |
| | | | (0.043) |
| No Income | | | -0.023 |
| | | | (0.032) |
| Married | | | 0.006 |
| | | | (0.027) |
| Children | | | 0.003 |
| | | | (0.012) |
| Data Wave | -0.026 | -0.027 | -0.026 |
| | (0.017) | (0.017) | (0.016) |
| Survey First | -0.025 | -0.025 | -0.028 |
| | (0.032) | (0.032) | (0.032) |
| Not Abducted Mean | 0.834 | 0.834 | 0.834 |
| Observations | 540 | 540 | 540 |
| Village FE | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. The dependent variable is a 0-1 indicator, equal to 1 if the respondent is in the working sample, meaning that she does not have any missing values for all outcomes of interest. Note that while 541 women participated in the workshop, 1 woman has missing village information, and is therefore dropped from the analysis, due to the inclusion of village FEs. *** p<0.01, ** p<0.05, * p<0.1.

Table A11: Impact of Abduction on Mental Health: Working Sample

| | Edinburgh Index (EDPS) | Likely Depressed (EDPS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 1.568*** | 0.178*** | 1.063* | 0.085* |
| | (0.498) | (0.048) | (0.541) | (0.043) |
| | [0.001] | [0.001] | [0.025] | [0.025] |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 446 | 446 | 446 | 446 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: The analysis is restricted to a working sample that includes the subset of women for whom we have a response to all survey questions. Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26). Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the prosociality game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A12: Impact of Abduction on Stress Responses: Working Sample

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 0.247** | 0.178* | 0.110 | 0.149 |
| | (0.105) | (0.096) | (0.106) | (0.132) |
| | [0.029] | [0.070] | [0.260] | [0.260] |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 446 | 446 | 446 | 446 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: The analysis is restricted to a working sample that includes the subset of women for whom we have a response to all survey questions. Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A13: Impact of Abduction on Socioeconomic Outcomes: Working Sample

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Formerly Abducted | -0.053 | 0.029 | 0.048 | -0.029 | 0.021 | 0.019 | 0.189 | -1.353* |
| | (0.050) | (0.050) | (0.045) | (0.044) | (0.047) | (0.073) | (0.152) | (0.664) |
| | [0.203] | [0.864] | [0.590] | [0.864] | [0.864] | [0.864] | [0.510] | [0.113] |
| Not Abducted Mean | 0.397 | 0.375 | 0.635 | 0.314 | 0.592 | 0.299 | 2.801 | 19.644 |
| Observations | 446 | 446 | 446 | 446 | 446 | 274 | 446 | 359 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: The analysis is restricted to a working sample that includes the subset of women for whom we have a response to all survey questions. Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The number of observation is lower for the Social Support index due to missing values for women who do not have a partner (4 of 6 questions are about relationship with partner and partner's support). *** p<0.01, ** p<0.05, * p<0.1.

Table A14: Impact of Abduction on Preferences (Behavioral Games): Working Sample

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Formerly Abducted | 0.725*** | 0.081* | 0.110** | -0.076 | -0.031* |
| | (0.206) | (0.043) | (0.050) | (0.128) | (0.016) |
| | [0.003] | [0.074] | [0.056] | [0.466] | [0.074] |
| Not Abducted Mean | 2.025 | 0.668 | 0.289 | 3.274 | 0.233 |
| Observations | 446 | 446 | 446 | 446 | 446 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: The analysis is restricted to a working sample that includes the subset of women for whom we have a response to all survey questions. Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column (3), we add controls for confidence and risk preferences, which is standard practice when assessing competitiveness. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column(3), we add controls for confidence and risk preferences (as standard practice when assessing competitiveness). *** p<0.01, ** p<0.05, * p<0.1..

Table A15: Robustness: Mental Health - Double Lasso

| | Edinburgh Index (EDPS) | Likely Depressed (EDPS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 1.233*** | 0.143*** | 0.724 | 0.053 |
| | (0.405) | (0.041) | (0.485) | (0.038) |
| | [0.012] | [0.003] | [0.252] | [0.252] |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 492 | 493 | 472 | 472 |
| Lasso Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely of depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26), and 0 otherwise. Controls were selected using the Double Lasso method (Belloni et al. (2014) on the full set of variables in Panel C of Table 2, age, village dummies and an indicator for the data collection wave. *** p<0.01, ** p<0.05, * p<0.1..

Table A16: Robustness: Stress Responses - Double Lasso

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Formerly Abducted | 0.162* | 0.113 | 0.125 | 0.216** |
| | (0.098) | (0.097) | (0.079) | (0.096) |
| | [0.513] | [0.514] | [0.514] | [0.513] |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 470 | 475 | 481 | 516 |
| Basic Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls were selected using the Double Lasso method (Belloni et al. (2014) on the full set of variables in Panel C of Table 2, plus the Edinburgh index and the Cohen scale, age, village dummies and an indicator for the data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A17: Robustness: Socioeconomic Outcomes - Double Lasso

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Formerly Abducted | -0.043 | -0.007 | -0.032 | -0.026 | 0.023 | -0.002 | 0.110 | -0.623 |
| | (0.042) | (0.043) | (0.045) | (0.041) | (0.044) | (0.055) | (0.140) | (0.517) |
| | [0.955] | [0.999] | [0.982] | [0.990] | [0.998] | [0.999] | [0.999] | [0.955] |
| Not Abducted Mean | 0.397 | 0.375 | 0.634 | 0.316 | 0.592 | 0.299 | 2.801 | 19.644 |
| Observations | 526 | 490 | 460 | 521 | 525 | 321 | 526 | 393 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls were selected using the Double Lasso method (Belloni et al. (2014) on the full set of variables in Panel C (other than the dependent variable) of Table 2, plus the Edinburgh index and the Cohen scale, age, village dummies and an indicator for the data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A18: Robustness: Behavioral Preferences - Double Lasso

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Formerly Abducted | 0.612*** | 0.095** | 0.070* | -0.058 | -0.034** |
| | (0.152) | (0.041) | (0.042) | (0.148) | (0.017) |
| | [0.004] | [0.208] | [0.279] | [0.279] | [0.126] |
| Not Abducted Mean | | 0.668 | 0.307 | 3.275 | 0.233 |
| Observations | 539 | 541 | 519 | 524 | 520 |
| Lasso Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls were selected using the Double Lasso method (Belloni et al. (2014) on the full set of variables in Panel C of Table 2, plus the Edinburgh index and the Cohen scale, age, village dummies and an indicator for the data collection wave. *** p<0.01, ** p<0.05, * p<0.1..

Table A19: Impact of Abduction on Behavioral Preferences - Survey Ordering

| | Risk Tolerance | Avg. share given |
|---|---|---|
| | (1) | (2) |
| Formerly Abducted | 0.205 | -0.028 |
| | (0.218) | (0.021) |
| Survey First | 0.387* | -0.028 |
| | (0.225) | (0.029) |
| FA*Survey First | -0.516 | 0.027 |
| | (0.320) | (0.032) |
| Survey Last NA Mean | 3.075 | 0.248 |
| Observations | 539 | 520 |
| Basic Controls | Yes | Yes |
| Village FE | Yes | Yes |
| Clusters | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Half of the sample completed the survey before the risk elicitation (Activity 1) and the prosociality (Activity 2) incentivized activities "Survey First" is a 0-1 dummy equal to 1 if the survey preceded the activities. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. Controls are: age and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A20: Heterogeneity by Age at Abduction: Mental Health

| | Edinburgh Index (EDPS) | Likely Depressed (EDPS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| FA when Kid (<11) | 2.344*** | 0.174** | 1.272 | 0.120 |
| | (0.683) | (0.063) | (0.946) | (0.070) |
| | [0.003] | [0.010] | [0.202] | [0.119] |
| FA when Teen | 1.146** | 0.176*** | 0.810 | 0.045 |
| | (0.519) | (0.044) | (0.663) | (0.049) |
| | [0.043] | [0.001] | [0.202] | [0.222] |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 525 | 525 | 500 | 500 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely of depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26), and 0 otherwise. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1..

Table A21: Heterogeneity by Age at Abduction: Stress Responses

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| FA when Kid (<11) | 0.221* | 0.239* | 0.142 | 0.398** |
| | (0.129) | (0.117) | (0.120) | (0.179) |
| | [0.160] | [0.084] | [0.314] | [0.060] |
| FA when Teen | 0.198 | 0.229** | 0.111 | 0.118 |
| | (0.137) | (0.098) | (0.098) | (0.117) |
| | [0.237] | [0.059] | [0.314] | [0.314] |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 513 | 519 | 524 | 529 |
| Basic Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. *** p<0.01, ** p<0.05, * p<0.1.

Table A22: Heterogeneity by Age at Abduction: Socioeconomic Outcomes

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| FA when Kid (<11) | -0.032 | 0.126* | 0.039 | -0.066 | 0.034 | 0.076 | 0.125 | -1.921** |
| | (0.051) | (0.074) | (0.059) | (0.048) | (0.052) | (0.085) | (0.175) | (0.711) |
| | [0.975] | [0.387] | [0.975] | [0.635] | [0.975] | [0.930] | [0.974] | [0.033] |
| FA when Teen | -0.092* | -0.013 | 0.022 | -0.028 | -0.023 | -0.040 | 0.498*** | -0.585 |
| | (0.049) | (0.047) | (0.048) | (0.048) | (0.051) | (0.072) | (0.161) | (0.629) |
| | [0.270] | [0.975] | [0.975] | [0.975] | [0.975] | [0.975] | [0.017] | [0.930] |
| Not Abducted Mean | 0.397 | 0.375 | 0.634 | 0.316 | 0.592 | 0.299 | 2.801 | 19.644 |
| Observations | 540 | 540 | 536 | 538 | 540 | 332 | 540 | 430 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1..

Table A23: Heterogeneity by Age at Abduction: Games

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| FA when Kid (<11) | 0.853*** | 0.064 | 0.057 | 0.012 | -0.038 |
| | (0.211) | (0.043) | (0.046) | (0.174) | (0.023) |
| | [0.004] | [0.276] | [0.373] | [0.992] | [0.244] |
| FA when Teen | 0.466** | 0.084 | 0.082 | -0.002 | -0.021 |
| | (0.189) | (0.050) | (0.059) | (0.173) | (0.019) |
| | [0.044] | [0.244] | [0.310] | [0.992] | [0.417] |
| Not Abducted Mean | 2.029 | 0.668 | 0.307 | 3.275 | 0.233 |
| Observations | 518 | 519 | 510 | 539 | 520 |
| Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column (3), we add controls for confidence and risk preferences, which is standard practice when assessing competitiveness. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1.

Table A24: Heterogeneity by Time in Abduction: Mental Health

| | Edinburgh Index (EDPS) | Likely Depressed (EDPS>13) | Cohen Index | Severely Stressed (Cohen>26) |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| FA for less than 1 year | 0.847 | 0.121** | 0.299 | 0.040 |
| | (0.530) | (0.054) | (0.686) | (0.048) |
| | [0.105] | [0.030] | [0.571] | [0.384] |
| FA for 1 year or longer | 2.325*** | 0.217*** | 1.639** | 0.112* |
| | (0.462) | (0.042) | (0.666) | (0.058) |
| | [0.001] | [0.001] | [0.016] | [0.062] |
| Not Abducted Mean | 14.287 | 0.597 | 22.370 | 0.187 |
| Observations | 525 | 525 | 500 | 500 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. The EPDS index has values ranging from 0 to 30, with higher values indicating greater risk of depression. The Cohen index has values ranging from 0 to 40, with higher values indicating more severe stress. The dependent variable in column 2) is an indicator equal to 1 if the EPDS index is above the threshold used for likely of depression (13), and 0 otherwise. The dependent variable in column 4) is an indicator equal to 1 if the Cohen stress scale is above the threshold used to identify severe levels of stress (26), and 0 otherwise. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1.

Table A25: Heterogeneity by Time in Abduction: Stress Responses

| | Fight Score | Flight Score | Tend Score | Befriend Score |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| FA less than 1 year | 0.060 | -0.041 | 0.105 | 0.238* |
| | (0.120) | (0.084) | (0.097) | (0.129) |
| | [0.773] | [0.773] | [0.406] | [0.131] |
| FA for 1 year or longer | 0.333** | 0.451*** | 0.142 | 0.248* |
| | (0.130) | (0.124) | (0.114) | (0.141) |
| | [0.030] | [0.001] | [0.364] | [0.131] |
| Not Abducted Mean | 0.000 | 0.000 | -0.000 | 0.000 |
| Observations | 513 | 519 | 524 | 529 |
| Controls | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. Each stress response measure is standardized around the control (Not Abducted) mean; the estimates are therefore reported in standard deviations from such mean. See Section 2.4.2 for a description of the stress response measures, and Appendix B for the specific survey questions used for each outcome. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1.

Table A26: Heterogeneity by Time in Abduction: Socioeconomic Outcomes

| | At Least Primary Edu | No Income | Food Scarcity | Water Scarcity | Married | Polygynous Marriage | N. of Children | Social Support |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| FA less than 1 year | -0.010 | 0.029 | 0.009 | -0.060 | 0.025 | 0.012 | 0.098 | -0.376 |
| | (0.054) | (0.058) | (0.047) | (0.056) | (0.047) | (0.072) | (0.181) | (0.627) |
| | [0.995] | [0.995] | [0.995] | [0.849] | [0.995] | [0.995] | [0.995] | [0.990] |
| FA for 1 year or longer | -0.112** | 0.064 | 0.046 | -0.032 | -0.017 | -0.001 | 0.529*** | -1.770*** |
| | (0.048) | (0.058) | (0.047) | (0.037) | (0.053) | (0.077) | (0.147) | (0.571) |
| | [0.065] | [0.849] | [0.895] | [0.929] | [0.995] | [0.995] | [0.004] | [0.011] |
| Not Abducted Mean | 0.397 | 0.375 | 0.634 | 0.316 | 0.592 | 0.299 | 2.801 | 19.644 |
| Observations | 540 | 540 | 536 | 538 | 540 | 332 | 540 | 430 |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Clusters | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "At Least Primary Edu" is a 0-1 dummy equal to 1 if the woman completed at least primary education. "No Income" is a 0-1 dummy equal to 1 if the woman earned no income in the past year. "Food scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available food at least once a week for the past 3 months. "Water scarcity" is a 0-1 dummy equal to 1 if the woman or her family had no available water for drinking and cooking at least once a week in the past 3 months. "Married" and "Polygynous Marriage" are 0-1 dummies for being married and for being in a polygynous marriage. "Age First Marriage" refers to the woman's age at the time of her first marriage. "Social Support" is the Maternity Social Support Scale (MSSS), with values ranging from 6 to 30; higher values indicate greater social support. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1.

Table A27: Heterogeneity by Time in Abduction: Games

| | Grit Measure 1 | Grit Measure 2 | Decision to Compete | Risk Tolerance | Avg. share given |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| FA for less than 1 year | 0.663*** | 0.102** | 0.089 | -0.117 | -0.019 |
| | (0.211) | (0.040) | (0.056) | (0.147) | (0.022) |
| | [0.012] | [0.025] | [0.273] | [0.581] | [0.581] |
| FA for 1 year of longer | 0.609*** | 0.054 | 0.057 | 0.103 | -0.036** |
| | (0.194) | (0.048) | (0.054) | (0.170) | (0.017) |
| | [0.012] | [0.554] | [0.554] | [0.581] | [0.079] |
| Not Abducted Mean | 2.029 | 0.668 | 0.307 | 3.275 | 0.233 |
| Observations | 518 | 519 | 510 | 539 | 520 |
| Basic Controls | Yes | Yes | Yes | Yes | Yes |
| Village FE | Yes | Yes | Yes | Yes | Yes |
| Clusters | 28 | 28 | 28 | 28 | 28 |

Note: Robust standard errors, clustered at the workshop level, in parentheses. Multiple hypothesis corrected p-values using the Romano-Wolf (2005) procedure are reported in square brackets. "Grit Measure 1" is the number of hard puzzles a woman decided to attempt in Stage 2 of the Grit task, out of 5 possible tasks. "Grit Measure 2" is a dummy variable equal to 1 if the woman decided to attempt the hard puzzle in Stage 3 of the Grit, and equal to 0 if she chose the easy puzzle instead. "Decision to Compete" is an indicator equal to 1 if the woman chose to compete in the Competition task, 0 if she chose the piece-rate payment. "Risk tolerance" takes values 1 to 6, with 1 indicating the choice of the safe bet and 6 the choice of the riskiest lottery. "Avg. share given" is the share of endowment given in the prosociality game, averaged across the 4 recipients. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. In columns (1) and (2) we control for number of tasks correctly solved in round 1 of the activity, and for risk preferences. In column (3), we add controls for confidence and risk preferences, which is standard practice when assessing competitiveness. Controls are: age, an indicator for the order in which the survey was conducted, i.e., before or after the risk elicitation and the donation game, and an indicator for data collection wave. The data collection occurred in three waves: January/February 2022, May 2022 and June/July 2022. *** p<0.01, ** p<0.05, * p<0.1.

# Appendix B: Survey Measures

**Edinburgh Index**

Please indicate the answer that comes closest to how you have felt IN THE PAST 7 DAYS, not just how you feel today.

Have you been able to laugh and see the funny side of things
a. As much as you always could
b. Not quite so much now
c. Definitely not so much now
d. Not at all.

Have you looked forward to the enjoyment of things
a. As much as you ever did
b. Rather less than you used to
c. Definitely less than you used to
d. Hardly at all

Have you been anxious or worried for no good reason
a. No, not at all
b. Hardly ever
c. Yes, sometimes
d. Yes, very often

Have you felt scared or panicky for no very good reason
a. Yes, quite a lot
b. Yes, sometimes
c. No, not much
d. No, not at all

Things have been getting on top of you
a. Yes, most of the time you haven't been able to cope at all
b. Yes, sometimes you haven't been coping as well as usual
c. No, most of the time you have coped quite well
d. No, have been coping as well as ever

Have you been so unhappy that you have had difficulty sleeping
a. Yes, most of the time
b. Yes, sometimes
c. Not very often
d. No, not all

Have you felt sad or miserable
a. Yes, most of the time
b. Yes, quite often
c. Not very often
d. No, not at all

Have you been so unhappy that you have been crying
a. Yes, most of the time
b. Yes, quite often
c. Only occasionally
d. No, never

The thought of harming yourself has occurred to you
a. Yes, quite often
b. Sometimes
c. Hardly ever
d. Never

**Perceived Stress Scale (Cohen)**

In the following questions I will ask to indicate how often you felt or thought a certain way in the last month.

In the last month, how often have you been upset because of something that happened unexpectedly?
0. Never
1. Rarely
2. Some of the times
3. Most of the times

4. Always

In the last month, how often have you felt that you were unable to control the important things in your life?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you felt nervous and "stressed"?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you felt confident about your ability to handle your personal problems?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you felt that things were going your way?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you found that you could not cope with all the things that you had to do?
0. Never
1. Rarely

2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you been able to control irritations in your life?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you felt that you were on top of things?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you been angered because of things that were outside of your control?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
0. Never
1. Rarely
2. Some of the times
3. Most of the times
4. Always

**Stress Responses**

On a scale from 1 (NEVER) to 5 (ALWAYS) how much do you agree or disagree with the following statements:

When I'm stressed, I talk to friends to let off steam.

1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

My family is the most important thing to me in times of stress.

1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

Stressful situations make me cry.

1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

When I'm stressed, I get moody and grumpy.

1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

When I'm stressed, I shout or raise my voice.

1. Never
2. Rarely
3. Some of the times

4. Most of the times
5. Always

If someone causes me stress, I attempt to enlist the cooperation of others to help me against them.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

When under stress, I tend to seek female company and hugs from girlfriends helps to reduce my stress.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

I tackle stressful situations head on to get them out of the way.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

Stressful situations make me feel like giving up.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

In times of stress, I bottle things up and hold them inside and try to deal with them on my own.
1. Never

2. Rarely
3. Some of the times
4. Most of the times
5. Always

My religion helps me deal with my stress.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

When I'm stressed, I'm more likely to fight with others.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

Tending to others helps reduce my stress.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

I feel that I want to run away from stressful situations.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

I join social groups to reduce my vulnerability to stressful situations.
1. Never
2. Rarely

3. Some of the times
4. Most of the times
5. Always

I feel that it is important to protect children from stressful situations.
1. Never
2. Rarely
3. Some of the times
4. Most of the times
5. Always

**No income**

Have you received consistent (every week or month) income over the past year?
1. Yes, I'm paid, or I earn money weekly or monthly
2. No, some weeks/months I earn money, others I don't
3. I only earned money a few times over the past year
4. I have not earned any money over the past year
5. I prefer not to answer

No Income is a binary variable equal to 0 if they selected 4 on this question and 1 otherwise.

**Food Scarcity**

In the past 3 months, how often have you or your family not had food to eat?
1. Never
2. Rarely (less than one meal per month, on average)
3. Sometimes (about one meal per week, on average)
4. Often (more than one meal per week, on average)
5. Very often (about or more than one meal per day, on average)
6. I do not know

Food Scarcity is a binary variable equal to 1 if they selected 3, 4, or 5 and 0 otherwise.

**Water Scarcity**

In the past 3 months, how often have you or your family not had clean water to cook and drink?
1. Never
2. Rarely (less than one meal per month, on average)
3. Sometimes (about one meal per week, on average)
4. Often (more than one meal per week, on average)
5. Very often (about or more than one meal per day, on average)
6. I do not know

Water Scarcity is a binary variable equal to 1 if they selected 3, 4, or 5 and 0 otherwise.

**Social Support Index**

For each of the following statements, tell me how you feel about the support you have right now. If you do not have the person mentioned in the question in your life currently, please state N/A.

I have good friends who support me
5. Always
4. Most of the time
3. Some of the time
2. Rarely
1. Never

My family is always there for me
5. Always
4. Most of the time
3. Some of the time
2. Rarely
1. Never

My spouse/partner helps me a lot
5. Always
4. Most of the time

3. Some of the time
2. Rarely
1. Never

There is conflict with my spouse/ partner
5. Always
4. Most of the time
3. Some of the time
2. Rarely
1. Never

I feel controlled by my spouse/partner
5. Always
4. Most of the time
3. Some of the time
2. Rarely
1. Never

I feel loved by my spouse/partner
5. Always
4. Most of the time
3. Some of the time
2. Rarely
1. Never

# Appendix C: Decision Forms for Incentivized Games

Figure A5: Activity 1 - Puzzle Number 1

Date of meeting: _____

Participant Badge ID: _____ Time of meeting: _____

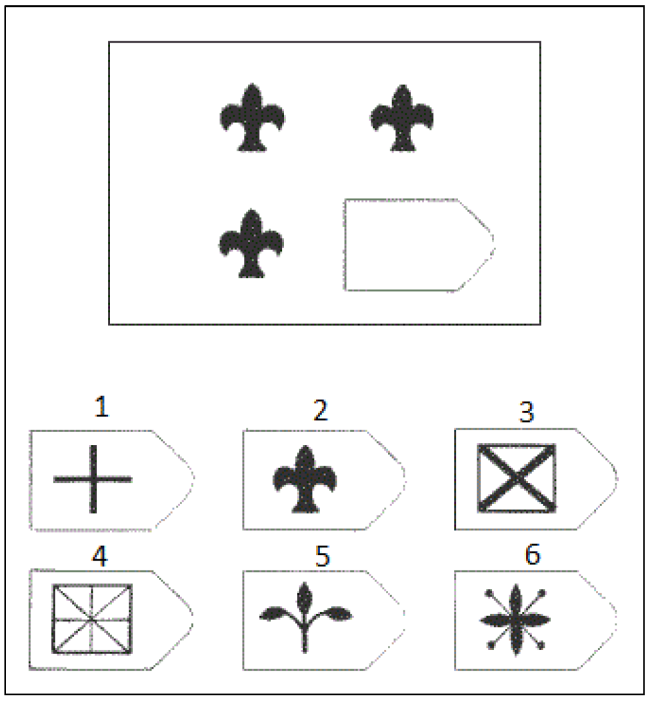
**ACTIVITY 1 – Booklet 1**
**Page 1**

You have 1 minutes to correctly solve the picture below.

You will be paid 5,000 Shilling for each puzzle you solve correctly.
Cross your arms on your chest when you are done.

Circle the answer that you think is correct.

**Puzzle 1**




**For enumerator:** Mark this choice as correct or incorrect by circling one of the options below

**Correct** **Incorrect**

Figure A6: Activity 1 - Hard vs. Easy Choice

| | |
|---|---|
| | Date of meeting: |
| Participant Badge ID: | Time of meeting: |
| N. Easy: | N. Hard: |
| N. Correct Easy: | N. Correct Hard: |

**ACTIVITY 1. Puzzles**

**Stage 2**

Circle which Booklet you want to attempt for each puzzle.

Circle the option "Easy," which has one circle next to it, if you want to try the Easy puzzle.

Circle the option "Hard," which has three circles next to it, if you want to try the Hard puzzle.

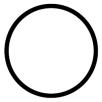
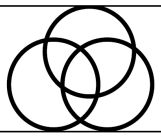
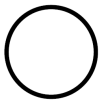
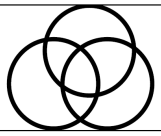
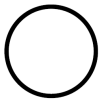
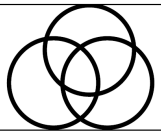
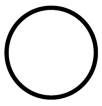
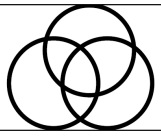
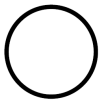
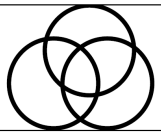
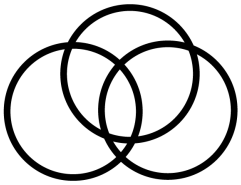
| | | | |
|---|---|---|---|
| **Puzzle 1** | | | |
| Easy |  | Hard |  |
| **Puzzle 2** | | | |
| Easy |  | Hard |  |
| **Puzzle 3** | | | |
| Easy |  | Hard |  |
| **Puzzle 4** | | | |
| Easy |  | Hard |  |
| **Puzzle 5** | | | |
| Easy |  | Hard |  |

Figure A7: Activity 1 - Example of Hard Task

Date of meeting: _____

Participant Badge ID: _____ Time of meeting:

**ACTIVITY 1 – Booklet 2 – HARD**

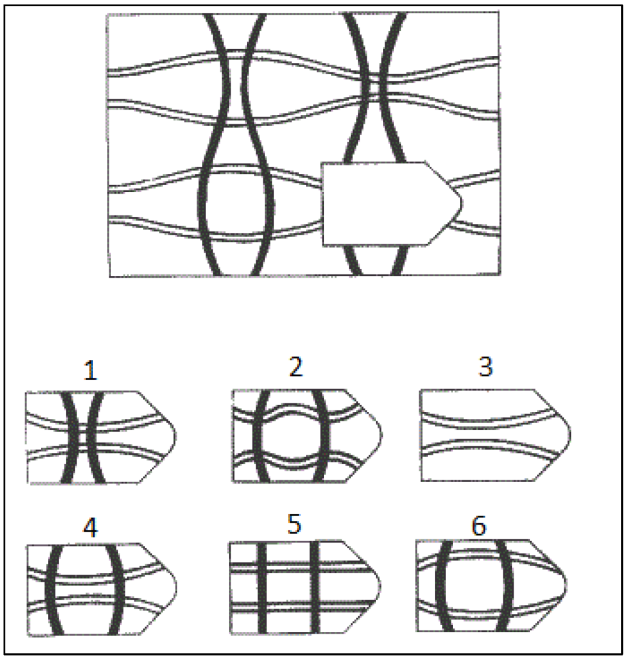


**Puzzle 2**

You have 2 minutes to correctly solve the picture below.

You will be paid 15,000 Shilling for each puzzle you solve correctly.
Cross your arms on your chest when you are done.

Circle the answer that you think is correct.




**For enumerator:** Mark this choice as correct or incorrect by circling one of the options below

**Correct** **Incorrect**

Figure A8: Activity 1 - Second Easy vs. Hard Choice

| | |
|---|---|
| | Date of meeting: |
| Participant Badge ID: | Time of meeting: |
| Chose: ☐ Easy ☐Hard | |

**ACTIVITY 1. Puzzles**

**Stage 3**

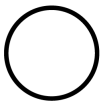
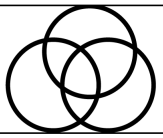
You will solve another puzzle at the end of the workshop, when you go to collect your earnings.

You will be able to practice on the puzzle task during the workshop, if you choose to do so.

Please indicate if, at the end of the workshop, you want to try to solve an easy puzzle or a difficult puzzle.

Circle the option "Easy," which has one circle next to it, if you want to try the Easy puzzle.

Circle the option "Hard," which has three circles next to it, if you want to try the Hard puzzle.

| **Puzzle at the end of the workshop** | | | |
|---|---|---|---|
| Easy |  | Hard |  |

Later, you will be able to complete some practice puzzles, if you wish to do so. You can either stay inside and practice or you can go outside and relax.

Please also choose if later you want to go outside and relax, or stay inside and work on the practice problems.

| **Choose:** | | | |
|---|---|---|---|
| Practice booklet |  | Go outside |  |

Figure A9: Competition Decision Form

Participant Badge ID: _____ Date of meeting: _____

Time of meeting: _____

**ACTIVITY 2. Ball Toss**

How do you want to be paid for this task?

Circle which Option you would like to choose.

| **Option 1** | **Option 2** |
|---|---|
| 5,000 Shilling per success | 15,000 Shilling per success only if I succeed more than another participant choosing this option |

Now, please indicate if you want to do the task in this room or in the other room

☐ **Here** ☐ **Other room**

Figure A10: Lottery Decision Form

Participant Badge ID: _____ Date of meeting: _____

Time of meeting: _____

**ACTIVITY 3. Coin Toss**

Choose which Option you would like to try. Only choose ONE Option! Fold the ticket you would like to play.

At the end of this meeting, when you come to collect your money, you will flip a coin to determine what you win. We will look at the option you chose on this form, and if the coin lands on Head, you win the amount under head for the option you chose. If the coin lands on Tails, you win the amount under Tails for the option you chose. *[cut the line between lotteries so that subjects can fold the lottery ticket they want to play]*

| | | |
|---|---|---|
| **TICKET 1:** | **HEAD**  **35,000** | **TAILS**  **35,000** |
| **TICKET 2:** | **HEAD**  **30,000** | **TAILS**  **45,000** |
| **TICKET 3:** | **HEAD**  **25,000** | **TAILS**  **55,000** |
| **TICKET 4:** | **HEAD**  **20,000** | **TAILS**  **65,000** |
| **TICKET 5:** | **HEAD**  **15,000** | **TAILS**  **75,000** |
| **TICKET 6:** | **HEAD**  **5,000** | **TAILS**  **95,000** |

Figure A11: Allocation Form - to FA

_____ Date of meeting: _____

Participant Badge ID: _____ Time of meeting: _____

**ACTIVITY 4 – WA**

The recipient is Woman who was formerly abducted by the Lord's Resistance Army. Please decide on your form if you want to give 0, 10,000, 20,000, 30,000 or 40,000 to this woman.

Once you have made your decision by circling your choice on the form, please turn the page on your form and cross your arms on your chest. [Note: *the order in which these are read depends on the meeting*]:

| | **WOMAN ABDUCTED** | **YOU** |
|---|---|---|
| Choice 1: | |  |
| Choice 2: |  |  |
| Choice 3: |  |  |
| Choice 4: |  |  |
| Choice 5: |  | |

Figure A12: Allocation Form - to NA

Date of meeting: _____

Participant Badge ID: _____ Time of meeting: _____

**ACTIVITY 4 – WNA**

Recipient is Woman who was not abducted by the Lord's Resistance Army. Please decide on your form if you want to give 0, 10,000, 20,000, 30,000 or 40,000 to this woman.

Once you have made your decision by circling your choice on the form, please turn the page on your form and cross your arms on your chest.

[Note: *the order in which these are read depends on the meeting*]:

| | **WOMAN NOT ABDUCTED** | **YOU** |
|---|---|---|
| **Choice 1:** | |  |
| **Choice 2:** |  |  |
| **Choice 3:** |  |  |
| **Choice 4:** |  |  |
| **Choice 5:** |  | |

Figure A13: Allocation Form - to Woman in Village

Date of meeting: _____

Participant Badge ID: _____ Time of meeting: _____

**ACTIVITY 4 - WSV**

Recipient is Woman living in your village. Please decide on your form if you want to give 0, 10,000, 20,000, 30,000 or 40,000 to this woman.
Once you have made your decision by circling your choice on the form, please turn the page on your form and cross your arms on your chest.

[Note: *the order in which these are read depends on the meeting*]:

| | **WOMAN FROM VILLAGE** | **YOU** |
|---|---|---|
| **Choice 1:** | |  |
| **Choice 2:** |  |  |
| **Choice 3:** |  |  |
| **Choice 4:** |  |  |
| **Choice 5:** |  | |

Figure A14: Allocation Form - to Man in Village

Date of meeting: _____

Participant Badge ID: _____ Time of meeting: _____

**ACTIVITY 4 – MSV**

Recipient is man living in your village. Please decide on your form if you want to give 0, 10,000, 20,000, 30,000 or 40,000 to this man.
Once you have made your decision by circling your choice on the form, please turn the page on your form and cross your arms on your chest.

[Note: *the order in which these are read depends on the meeting*]:

| | **MAN FROM VILLAGE** | **YOU** |
|---|---|---|
| **Choice 1:** | |  |
| **Choice 2:** |  |  |
| **Choice 3:** |  |  |
| **Choice 4:** |  |  |
| **Choice 5:** |  | |