

The Economics and Child Development Science of Intergenerational Trauma

Maya Escueta

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Abstract

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This dissertation utilizes insights from economics and child development science to examine how trauma transmits across generations from mother to child. The first chapter consists of a literature review in which I survey the existing literature across multiple disciplines on maternal trauma and the early childhood home environment. Specifically, I investigate psychosocial pathways through which maternal trauma may affect maternal capacities and investment decisions, particularly through a mother's behavioral responses to trauma, and its consequential effects on the early childhood home environment for children. I identify methodological challenges to estimating the effects of maternal trauma on the early childhood home environment, and discuss policy implications and possible avenues for future research.

In my second chapter, I take an intergenerational perspective and review research across disciplines to demonstrate that childhood trauma should be conceptualized as an intergenerational phenomenon that plays a role in the dynamics of inequality. In doing so, I develop a conceptual framework for studying how a mother's childhood trauma affects her future capacities as a mother and the early developmental outcomes of the next generation. To understand how traumatic environments affect early childhood development, scholars previously have concentrated on two processes: (1) how early adversity and potentially traumatic experiences affect the immediate cognitive and socio-emotional development of children, and (2) the extent to which caregivers, and mothers in particular, can buffer against the potentially detrimental effects of these early experiences. These frameworks acknowledge the importance of environmental influences on both processes, parenting practices and early childhood development. However, they largely ignore the intergenerational dynamics of traumatic experiences, and the consequences of the mother's own previous traumas on the early childhood home environment she shapes for her children. I focus

on the mother as the primary caregiver in the early years of a child's development, and examine behavioral mechanisms, and specifically parenting, as a potential pathway for the intergenerational transmission of a mother's childhood trauma. I conclude by discussing future avenues for research and implications for public policy.

Finally, in my third chapter, I present empirical evidence on the intergenerational effects of childhood trauma using the specific case of a mother's childhood exposure to armed conflict in Sub-Saharan Africa. A mother's nurturing care is a critical input to early development, particularly for children at elevated risk of early adversity. Little is known, however, about how a mother's own childhood adversity affects her ability to provide such nurturing care. In this chapter, I use geo-located data on armed conflicts in three countries in Sub-Saharan Africa combined with geo-located household level data on parenting practices and early childhood development to estimate the intergenerational effects of a mother's childhood exposure to armed conflict on her parenting practices and the early developmental outcomes of her children. Difference-in-differences estimates use identifying variation in geographic differences in exposure to conflict across sub-national regions and temporal variation across maternal birth cohorts. I find that mothers exposed to conflict in their early childhood are more likely to use abusive disciplinary practices. They are also less likely to stimulate their children through educational activities, material investments, or sending their children to early childhood education centers. These mothers are also more likely to experience intimate partner violence, and engage in early marriage and early sex, which may be mechanisms by which a mother's childhood exposure to conflict affects her future maternal capacities and investments, and the early developmental outcomes of her children.

Together, these essays advance our conceptual understanding of the potential long run and intergenerational effects of childhood trauma, and provide causal evidence on aspects of its intergenerational consequences in a specific context in Sub-Saharan Africa.

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Preface

Understanding the consequences of early adversity and its overlap with childhood trauma has been a central topic for child development research and policy. Current research and policy highlight the importance of parents, and particularly mothers, in buffering children against early adversity through nurturing and responsive caregiving. This dissertation, which has three independent chapters, aims to advance our conceptual and empirical understanding of the intergenerational dynamics of potentially traumatic childhood experiences by examining what happens when the mother herself has experienced trauma, and its potential effects on next generation outcomes.

The first two chapters broadly investigate maternal trauma and the early childhood home environment, and its subsequent effects on the early developmental outcomes of the next generation. These chapters lay the groundwork for the methodological and conceptual challenges addressed through the empirical case presented in the third chapter, and highlight additional topics of inquiry for future research focused on the intergenerational consequences of maternal trauma.

The first chapter broadly investigates maternal trauma that may occur at any point in the mother's life, and specifically synthesizes previous literature focusing on maternal trauma that occurs during the child's early years. Investigations from this first chapter highlight a distinct methodological challenge that arises when estimating the effects of maternal trauma on a child's early development. If a trauma strikes a household such that a mother and child experience the same trauma at the same time, it is difficult to disentangle the indirect effect of the trauma through the mother from the direct effect of the environmental trauma on the child. This challenge points to the methodological and conceptual benefits of focusing on the intergenerational effects of a

mother's childhood trauma, both because it will help disentangle effects of maternal and child trauma, and it will help to conceptualize and test for its potential cumulative and long run effects.

The second chapter aims to provide a generalized framework for conceptualizing potential pathways through which a mother's childhood trauma may affect next generation outcomes, its overlap with conditions of poverty, and its role in the intergenerational dynamics of inequality. This chapter integrates insights from the medical and clinical psychology fields to extend our disciplinary thinking about what constitutes childhood trauma and what we need to consider when studying childhood trauma and its consequences. The conceptual framework developed in this chapter lays out potential pathways for the intergenerational transmission of trauma from mother to child and emphasizes the potential for a cascade effect of traumatic experiences with far reaching and intergenerational consequences. This framework also highlights the importance of environments, and the vulnerability of families in poverty and particularly of women, who are both more likely to experience traumatic events during childhood, and who also likely have less resources to cope with the lasting and cascade effects of traumatic experiences over their life course.

The third chapter builds on the conceptual framework presented in the second chapter by testing specific causal links in this more generalized framework using the empirical case of a mother's childhood exposure to armed conflict in Sub-Saharan Africa and its effects on her parenting practices. While there are many different types of traumatic experiences that may occur in childhood, this case constitutes an example of a potential complex trauma, in which childhood exposure to arguably exogenous violent events occurs within a context of ongoing civil war and high levels of income poverty.

Taken together, these chapters highlight the importance of utilizing an intergenerational framework when studying childhood trauma, provide causal evidence on specific aspects of this framework, and lay the groundwork for future investigations of the intergenerational consequences of a mother's childhood trauma.

Chapter 1: Maternal trauma and the early childhood home environment

1.1 Introduction

Researchers across multiple disciplines agree that a child's early life experiences have important consequences for early development and later life outcomes. Given that a child's early years constitute sensitive and critical periods of development (Knudsen, 2004), parents are the most important early investors to the human capital accumulation process. Parenting decisions determine the quality of the early childhood home environment and shape the foundation for the lifetime development of skills before children enter formal schooling (Francesconi and Heckman, 2016). This is particularly important under contexts of extreme poverty and adversity, where parents are more likely to underinvest when children need additional support the most.

Parents shape the quality of the early home environment with their investment decisions through a number of channels, including physical, cognitive and emotional investments. Mothers, in particular, play a key role through their nurturing care and investments, as they are often the primary caregiver during the child's earliest years. For example, mothers are expected to provide nutrition, health, and material resources to fulfill basic necessities, to care for and nurture their children, to provide a safe home environment, and to cognitively and emotionally stimulate their children through responsive caregiving and engagement in educational activities (Black et al., 2017). However, if negative shocks disrupt a mother's ability to invest in their children during these early years, this might have immediate consequences for the quality of the early childhood home environment and long-lasting consequences for child development (Almond, 2006; Brito and Noble, 2014; Brooks-Gunn and Duncan, 1997; Maccini and Yang, 2009).

The environmental risks of poverty and adversity might directly affect maternal investments through a variety of channels. These include the material resources available to the family, the health and cognitive capacity of parents and family members to work or to provide other supports to children (Mani et al., 2013), or through the psychological effects that might affect decision-making around investments (Haushofer and Fehr, 2014). Since families in poverty face an elevated risk of exposure to multiple traumas, literature is increasingly focusing on poverty's effects on the psycho-social well-being of families. Moreover, given the importance of mothers and caretakers in the early years of a child's development, a key concern is the trauma that mothers themselves may face while raising children in extreme poverty.

If a mother experiences trauma, she may respond in a variety of ways that may disrupt the home environment and her child's development through her diminished physical, emotional and/or cognitive capacities. While not exhaustive, the table below outlines examples of various ways that mothers are expected to invest in their children over the stages of child development from pre-natal to age 8, and the potential ways in which trauma may disrupt these investments and the subsequent development of children.

Table 1.1: Developmental stages, expected maternal investments and potential effects of maternal trauma on child development

Developmental Stage	Maternal investments (Health, Cognitive, Emotional)	Potential effects of trauma (Physical or emotional assaults to the mother)
In utero	Nutrition Safe environment	Low birth weight Poor health outcomes at birth
Infant (0-12 months)	Nutrition Talk, read, sing Touch, cuddle, play	Irregular breastfeeding Delayed speaking and motor development Detachment, lack of emotional bonding
Toddler (1-2 years)	Provide nutrition and regular sleep Read, encourage, play Give instructions, provide discipline	Malnutrition Delayed language and motor skills Delayed development of self-control
Pre-schoolers (3-5 years)	Nutrition and regular sleep Read, play with, guide in problem solving Encourage, discipline Educate on safe choices, set limits	Poor health outcomes Inability to follow directions Inability to problem-solve Lack of self-control
Children (6-8 years)	Nutrition and regular sleep Play, read, encourage, Support in problem solving Show affection and recognition, teach patience	Malnutrition, lack of sleep Lags in literacy, numeracy Lags in ability to problem-solve Lags in social development

Notes: This table identifies the developmental stages, expected maternal investments and potential effects of maternal trauma on early childhood development. Content was inspired by guidance on positive parenting from <https://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/preschoolers.html>.

There are a few potential mechanisms by which a mother’s exposure to traumatic life events might influence her maternal capacities and subsequently, the early childhood home environment. First, exposure to trauma may reduce the physical or cognitive capacities of the mother, which may in turn impede her ability to work. This may affect the nutritional investments she can make in her children, or the number of material resources she can bring into the home, or the time she invests in spending with her children. Second, there may be non-cognitive pathways through which maternal trauma may affect a mother’s willingness and ability to invest in her children. Trauma may reduce a mother’s attunement to her child’s physical, emotional and cognitive needs, which may reduce her capacity to provide nurturing care and support, to engage with and educate her children through speech, touch or play, or to show basic affection and recognition. Alternatively, mental instability may affect her capacity to work or provide for her family in other ways. Third, there are a number of behavioral and biological responses that a mother may have as a result of trauma, such as depression, PTSD, or engagement in substance abuse. These responses may act as

mediators or moderators of the various pathways described above.

Understanding the relationship between maternal trauma, maternal capacities and her subsequent early investments decisions in children is essential for a few reasons. First, if a mother's exposure to trauma decreases her maternal capacities, and if her child also experiences trauma, she will be less able to buffer her child from the deleterious effects of early adversity. Second, if a mother's exposure to trauma decreases her capacities, then this may have consequences for the early material, time or emotional investments she makes in her children. In tandem, these effects may have disproportionate consequences for children growing up in risky environments.

Still, surprisingly little work has investigated the effects of maternal trauma on the early childhood home environment, and its subsequent effects on a mother's capacities and investments and the human capital accumulation of her children during their early years. This literature review investigates what the research to date in economics and other disciplines, such as developmental psychology and neuroscience, can tell us about how mothers respond to potentially traumatic life events when raising children under adversity, and how this might affect the early childhood home environment. Specifically, this review investigates the toll that maternal trauma may take on a mother's psychosocial well-being, the behavioral responses that a mother may have, and its consequential effects on the early childhood home environment and early development of her children. While a related strand of literature focuses on maternal trauma (physical and psychosocial) that occurs while the child is in utero, this literature review will focus specifically on maternal trauma that might affect the early childhood home environment.

This literature review proceeds as follows: Section II provides a broad overview of the descriptive and theoretical literature on the relationship between parental psycho-social well-being and underinvestment in conditions of adversity; Section III develops a conceptual framework for the potential pathways from maternal exposure to traumatic life events to maternal capacities and investments; Section IV presents the literature to date on two specific mechanisms exhibiting the effects of maternal trauma on maternal investments and early childhood development, Section V

posits alternative mechanisms substantiated by theory and empirics in literature other than economics, and Section VI concludes.

1.2 Psycho-social Well-being and Parental Investments: The Role of Stress Under Adversity

This section summarizes how multiple disciplines modelled parental investments, and the potential role of stress under adversity in making investment decisions. It will first consider how research on child development across disciplines has viewed the role of parenting in environments of adversity, and then focuses on how two different economic models, (1) the capacity formation model (Cunha and Heckman, 2007), and (2) scarcity in behavioral economics (Mullainathan and Shafir, 2013), predict poverty's potential effects on the psycho-social well-being of parents, and why this is important for explaining decisions that might lead to under-investment in children.

A multi-disciplinary perspective

Across multiple disciplines, the literature in economics, developmental psychology, and neuroscience is strikingly consistent in its acknowledgment of the importance of caretakers in buffering young children against the potentially harmful effects of early adversity (Currie and Almond, 2011; Brito and Noble, 2014; Luby et al., 2013; Yeung et al., 2002). While these studies vary in their methodological approaches, spanning review papers and theoretical, descriptive and causal work, all point to the potential for caregivers to dampen potentially deleterious effects and promote resilience. Moreover, the timing of these remediations matter, because of sensitive and critical periods of development (Cunha and Heckman, 2007; Knudsen, 2004). This is particularly important for children growing up in poverty, who face multiple social and environmental risks (Evans et al., 2013; Sameroff et al., 1993). Under such circumstances, parents play an important role as protectors against these risky environments (Brooks-Gunn and Duncan, 1997; Evans and Kim, 2013; Barocas et al., 1985; Burchinal et al., 2008).

While the parent is traditionally thought to buffer or protect children from exposure to risks in adverse environments, there is also the potential for parents to mediate or accelerate the detrimental effects of poverty and adversity (Brito and Noble, 2014; Luby et al., 2013). Parents may act as a mediator for early adversity through a variety of channels, which can result in long term consequences for later life outcomes. Previous research has posited that parenting may play a role in the intergenerational persistence of inequality through mild forms of neglect, such as underinvestment that results from a mother's beliefs about the potential returns (Kalil, 2015). Economic stress may also increase the likelihood of child maltreatment (Brooks-Gunn et al., 2013), which in turn may have more immediate consequences on education, and more lasting impacts on later life outcomes. Such child neglect and maltreatment can have lasting economic consequences, such as increasing the likelihood of achieving lower levels of education, employment and earnings as an adult (Currie and Spatz Widom, 2010), and increasing the propensity to commit crimes (Currie and Tekin, 2006).

Similar findings in neuroscience support the idea that the combination of stress and sub-optimal parenting during childhood can have detrimental effects on child development. For example, a neuroscience study investigating the negative associations of poverty with a child's early brain development (pre-schoolers 3 to 6 years of age) found that the relationship between poverty (as measured by income-to-needs ratio) and hippocampal volume was mediated by caregiving support or hostility and the child's exposure to stressful life events (Brito and Noble, 2014; Luby et al., 2013). Such studies often investigate the role of traumatic life events or early adversity for children, but rarely consider whether exposure to traumatic life events for the caregiver or parent predicts their parenting practices or investment choices. Additionally, the specific mechanisms by which such parenting beliefs and behaviors arise remains under-studied.

Some theoretical models in developmental psychology, however, have modeled the factors that predict parenting practices. For example, the Family Stress Model (FSM) posits that economic disadvantage has an adverse effect on parents' emotions, behaviors and relationships, which in turn

affects their parenting abilities and strategies (Conger and Conger, 2008, 2002; Neppl et al., 2016). These models suggest a role for the psycho-social well-being of the parent in predicting parenting strategies. Still, the developmental psychology and neuroscience literature to date is mainly associational, with no real empirical causal evidence of the potential mechanisms for parenting behaviors.

Two models in economics

Early models of human capital accumulation have little explanation for the role of psycho-social well-being in parental investments, mainly because this was not a key focus. These models envision parents as rational decision-makers (Becker, 1962) in which human capital accumulation is conceived of as a two-period model, and parental investments come primarily in the form of financial bequests (Becker and Tomes, 1976). The earliest conceptual investigation of the relationship between low levels of parental resources, investments and child outcomes is Bruce Weinberg's model of parental income, child rearing practices and child outcomes (Weinberg, 2001). However, these early models of human capital accumulation provide an insufficient picture of the role that stress and psycho-social well-being may play in influencing parental investments under adversity.

Similarly, the link between the economics of mental health and human development is understudied. The economics of mental health has largely been investigated by enumerating the costs and benefits of identifying and treating mental health illnesses in society (Layard, 2017). This work highlights the prevalence of mental health, citing that mental health accounts for close to half of all illnesses in rich countries globally, and nearly half of disability benefits in many countries. In these analyses, mental health concerns are a cost to society, for which there is a payout for treating mental health by increasing the employment rate among those with mental health issues and increasing the national output. While this literature highlights the social costs of mental health in the form of public health costs and social costs such as crime (Layard, 2017), it does not address how mental health might disrupt the family environment or the human development process.

However, two models in economics that have evolved more recently, the capacity formation model (Cunha and Heckman, 2007) and behavioral economics (Mullainathan and Shafir, 2013), may provide more guidance for understanding the role of mental health and psycho-social well-being in parenting.

Model 1: Capacity Formation

Over time, models of human capital accumulation have evolved to incorporate insights from the child development literature. The capacity formation model integrates multiple time periods in child development in which parental capabilities and investments have differential impacts on child development at different stages of the life cycle (Cunha and Heckman, 2008). Childhood is conceived as multi-period and capacities are multiple in nature, and skill development over the life-cycle is then dependent primarily on parental investments and family environments (Cunha and Heckman, 2008; Knudsen et al., 2006). These models demonstrate that early adversity has persistent detrimental effects over the life-cycle (Aizer and Cunha, 2012; Almond, 2006; Currie and Almond, 2011; Almond et al., 2018; Camacho, 2008; Maccini and Yang, 2009), and early life shocks have a higher likelihood of inducing long term damage among children in poorer families (Currie and Hyson, 1999). Children growing up in poverty experience a double penalty because they are likely to experience shocks that are larger and more frequent, and simultaneously baseline parental investments in these children are likely to be lower (Currie and Almond, 2011). Parents can play a role in buffering children against the potentially detrimental effects by remediating against negative shocks (Almlund et al., 2011; Currie and Almond, 2011; Knudsen, 2004); however, parents may choose to reinforce negative shocks, by investing less in children who experience early adversity and placing investments elsewhere (for example, in another sibling or other household resources).

A key question remains: how and when might parents under-invest in their children when faced with adversity? The literature on whether parents compensate or reinforce children in response to shocks remains mixed (Attanasio et al., 2017; Yi et al., 2015); however, there is some

empirical evidence that parents are more likely to reinforce negative shocks (i.e. underinvest in their children) when they themselves are experiencing situations of adversity, and therefore may be more limited in their capacity and willingness to invest in their children (Currie and Almond, 2011; Fan and Porter, 2020; Yi et al., 2015). There are a few mechanisms by which families in poverty may systematically under-invest in their children. Parents may respond to their own beliefs about the returns to their investment, either due to imperfect information about the future (Cunha et al., 2013) or about the capacities of their children (Attanasio et al., 2019; Fan and Porter, 2020; Yi et al., 2015). However, a parent's psychological state may also affect their beliefs about the future. For example, previous literature has found that locus of control, which is the extent to which a person believes their actions affect their outcomes, can affect one's own educational decisions about their own human capital accumulation (DeLeire and Coleman, 2003). The intergenerational transmission of locus of control from parent to child can differentially affect one's beliefs about the returns to education (Ross, 2018), thereby contributing to underinvestment. Parents with lower levels of internal locus of control, are less likely to believe that their educational investments will affect their children's later life outcomes, which may in turn lead to lower levels of investment. A parent's locus of control may partially form a parent's subjective beliefs about educational investment, and specifically maternal attitudes toward parenting style and time investments (Lekfuangfu et al., 2017). This may be a self-reinforcing cycle of investment and outcomes, as some literature also suggests that father's interest in their children's educational attainment predicts greater lifelong internal locus of control among children, particularly for female and socio-economically disadvantaged children (Elkins and Schurer, 2018).

The key insight from the capacity formation model is that poverty and adversity permanently reduce human capital through a variety of channels of under-investment, including parental under-investment after children have already experienced negative shocks. A parent's own psychological or emotional state may determine two inputs to the model (1) the initial capacities they endow to their children, and (2) their capacity to make future investments.

Model 2: Behavioral Economics

The capacity formation model still subscribes to the traditional view of economists, which models parents as problem-solvers or decision-makers in the household, who decide how much to invest in a child in order to optimize well-being in the household (Becker and Tomes, 1976). Under this conception, parental under-investment is a rational response to under-estimating the returns to their investments; however, there is some evidence that even when disadvantaged parents underestimate the return to their investments, they still estimate a substantial positive return (Cunha et al., 2013). So why then do they still underinvest?

Psychologists, neuroscientists and child development specialists have also found this conception of investments as a rational decision-making process unsatisfactory and have expanded the role of parents in child development particularly for children growing up with adversity. Given that new neuroscientific evidence links early adversity and nurturing care with brain development and function throughout the life course (Black et al., 2017), the emotional investments and attentiveness of mothers to children during the early years are as important as the nutritional or material investments that mothers can make.

A more recent strand of economics, behavioral economics provides some insight into how the disruption of trauma may incite irrational responses by limiting cognitive bandwidth, and short circuiting the decision-making process. Thus, in this conception, trauma disrupts parental investments in ways that are in fact irrational, rendering the process of parental investments an irrational response to environmental stress.

In this model, parents are in fact not rational decision-makers (Becker, 1993), but rather behave as boundedly rational, wherein they do not perfectly respond to their environments (Simon, 1996). The context of poverty can drain and strain cognitive resources such that parents experience cognitive biases and limited cognition (Gennetian and Shafir, 2015; Mullainathan and Shafir, 2013). It has been posited that limited cognitive function may be a mechanism for the persistence of inequality and the existence of poverty traps (Dean et al., 2019). Poverty may affect

cognitive function through constantly being forced to make trade-offs with limited resources (Mullainathan and Shafir, 2013), through the psychological effects of stress, which may induce depressions (Haushofer and Fehr, 2014), or through the physical effects of material deprivations, such as malnutrition (Dean et al., 2019). The burdens faced by families in poverty may reduce cognitive function through two main components, cognitive capacity and executive control (Schilbach et al., 2016). Limited attention, self-control, short-term stresses of poverty on executive control (Valcke, 2001), and emotional responses (Rick and Loewenstein, 2008) can contribute to poor decision-making. These cognitive biases result in sub-optimal decision-making (Haushofer and Fehr, 2014; Schilbach et al., 2016), and one of the ways in which parents may make sub-optimal decisions from such cognitive biases is by underinvesting in their children.

Given the potential psychological stresses of poverty, which may influence not only the physical well-being of parents, but also their emotional well-being, it is important to understand what factors contribute to psychological stress for parents. One key factor is the heightened risk that families face in being exposed to traumatic life events, and the toll that this may take on mothers.

1.3 Maternal Trauma - A Conceptual Framework

While these economic models provide some insight into the role of maternal trauma in molding the early childhood home environment, other disciplines such as psychologists, psychiatrists and epidemiologists may provide additional insights. Exposure to traumatic life events may disrupt the emotional well-being of the mother, which may diminish maternal capacities and lead to underinvestment through biological or behavioral responses to the trauma. This section draws from insights in the psychology, social work, and epidemiology literature to lay out the various types of trauma that mothers may typically experience under conditions of poverty, describes a model that enumerates the various factors potentially affecting how mothers respond to traumatic life events, and posits mechanisms by which the trauma a mother experiences may affect her maternal capacities and investments.

Types of Trauma

Recent literature in psychology and epidemiology have begun to capture the wide variation in the types of traumas that a person might experience, and document the prevalence and scope of these traumas on both child and adult populations (Klest, 2012; Magruder et al., 2017; Saunders and Adams, 2014). Mothers may be exposed to various types of traumas when living in poverty. In this section, I describe a taxonomy of potentially traumatic events that categorizes the various types of trauma that may differentially affect mothers. I divide traumas into *Big T* and *little t* events (Voit, 2003). I then consider which of these may present themselves as single events to the victim versus multiple events.

- **Big T:** are the events most commonly associated with post-traumatic stress disorder. DSM-5 describes a PTSD trauma as any situation where one's life or bodily integrity is threatened.¹ Witnesses of Big T events or people who live in close proximity to people who experienced them are also vulnerable to experiencing PTSD.²
- **Little t:** are events that exceed our capacity to cope and cause a disruption in emotional functioning. These are not life or bodily threatening, but may be described as ego-threatening. These typically may not lead to PTSD, but a person can develop distress and decreased quality of life, and may develop an avoidance response.³

The table below lists out the types of *Big T* and *little t* traumas to which families in risky environments might face, and categorized them by traumas that occur at the household and community level, and that might present as single or multiple traumas.

¹<https://www.psychologytoday.com/us/blog/trauma-and-hope/201703/different-types-trauma-small-t-versus-large-t>

²<https://journeypureriver.com/big-t-little-t-trauma/>

³<https://www.psychologytoday.com/us/blog/trauma-and-hope/201703/different-types-trauma-small-t-versus-large-t>

Table 1.2: Taxonomy of potentially traumatic events

Community Level		Individual/Household Level	
Single Event	Multiple Events	Single Event	Multiple Events
Big T Natural disaster Catastrophic event (Spanish influenza, Chernobyl etc.)	War/ conflict (if multiple battles occur) Neighborhood violence Political injustice/ human rights violations	Accidents causing physical injury Death in the family	Life threatening illness or injury Captivity
	Terrorism (e.g. 911, landmines)	Domestic violence Sexual violence or abuse/ rape	
Little t Recession or economic shock	Racial/ group tensions Microaggressions (race, gender, disability sexuality, classism School level emotional or physical bullying	Divorce Legal trouble Abrupt or extended relocation / move Parent incarcerated	Conflict in the household Developmental trauma : parents that are not attuned Having a mentally ill or emotionally abusive parent Parent with drug abuse problem
		Financial shocks, health expenses, weddings, need to buy large assets Infidelity	

Notes: Traumatic events may be experienced directly by the mother, or she may witness a person close to her experience a traumatic event, hear about it, or see it in the news.

The Causes and Consequences of Trauma

Given the multiple risks that families in poverty face, it is important to understand the causes and consequences of exposure to traumatic life events, and specifically, how this might affect a mother's capacities and investment decisions.

Factors that influence the likelihood of a mother's exposure to traumatic life events

Both individual and community level factors predict a person's risk of experiencing a potentially traumatic life event. Once a person has experienced one trauma, she is at heightened risk of re-exposure, which can include experiencing the same trauma multiple times, or increased exposure to a wide multitude of other potentially traumatic life events. A key factor in exposure to trauma and the likelihood of re-exposure is community level poverty. One study examining how community level poverty interacts with individual trauma histories and predicts future exposure to potentially traumatic events documented a variety of factors that predict the likelihood of initial and later life exposure to trauma (Klest, 2012). This study documented a stronger relationship between childhood trauma and later re-exposure in communities with higher poverty rates. For example, women with a history of childhood abuse are around 1.4 to 3.7 times more likely to be sexually assaulted in adulthood, and a majority of women (around 59%) who have experienced either childhood or adult sexual assaults have experienced both (Cloitre and Rosenberg, 2006).

While high poverty neighborhoods are a risk factor for experiencing adult victimization, community poverty may also be indicative of other unstable factors in the environment, such as poor infrastructure, higher likelihood of neighborhood or community violence, and poor governance, all which may increase the likelihood of exposure to initial traumas and re-victimization (Magruder et al., 2017). Additionally, other characteristics of the victim besides socio-economic status, such as gender or levels of education, or whether a racial minority, may also play a role in the likelihood of victimization (Magruder et al., 2017).

Factors that influence the recovery process

Once a person experiences a traumatic event, there are a variety of factors that interact with the exposure to trauma to effect likelihood of re-exposure, or of receiving support from the surrounding community, which in turn might affect the recovery process for trauma victims.

Post-traumatic symptoms of trauma may moderate the relationship between childhood trauma and re-exposure. For example, many studies have found that dissociative tendencies predict re-exposure, perhaps due to lack of awareness of risk (Scoglio et al., 2021). Studies have also found that individuals who experienced childhood trauma are more likely to be living in poverty during adulthood, and to be unemployed (Zielinski, 2009), both which increase the risk of additional traumas in adulthood.

Other childhood factors may also affect a person's recovery in the aftermath of trauma. A key factor often referenced is the relationship a person has with their caregiver at a young age (Van der Kolk, 2014) (Van der Kolk, 2014), as well as characteristics of the trauma itself, such as whether it is a Big T, little t, to what degree it is stigmatized in the community, and whether it is a complex trauma, with repeated exposure or an isolated event (Herman, 2015).

Behavioral and biological responses to trauma

Traumatic syndromes are complex disorders that affect the biological, psychological and social functioning of victims (Herman, 1998). It has been argued that key consequences of psychological trauma are disempowerment and disconnection from others. As such, it is suggested that treatment responses, and support systems necessary for recovery, are likely to be more effective when they address all aspects of the victim's response to the trauma, and when they focus on empowerment of the survivor and restoration of relationships (Herman, 1998).

There are a number of potential behavioral responses to trauma that are likely to affect mothers who experience trauma, either as a singular condition or a complex response. These include drug or substance abuse, hyper-vigilance and bodily reaction to perceived threat, post-traumatic

stress disorder, catatonia, depression (Herman, 2015), and avoidance (Klest, 2012). Several studies of trauma victims also highlight the importance of social support systems in the aftermath of trauma, that can provide both economic and psychosocial supports whether that is coming from the community or the family. Certain types of traumas may also be stigmatized by communities, such as sexual violence or rape, which in turn affects the kinds of supports that she receives. When the victim is already devalued by the community or society, the trauma takes place in a socially validated reality (Herman, 2015).

Outcomes

The factors affecting the recovery process and the behavioral responses all have consequences for the investment decisions that a mother might make in the aftermath of her own trauma. Ultimately, maternal investments in the material resources, time, and emotional responses to her children may be affected by a mother's exposure to trauma, which in turn will have consequences for the early developmental outcomes of her children in their physical, cognitive and socio-emotional development.

Identifying Relationships

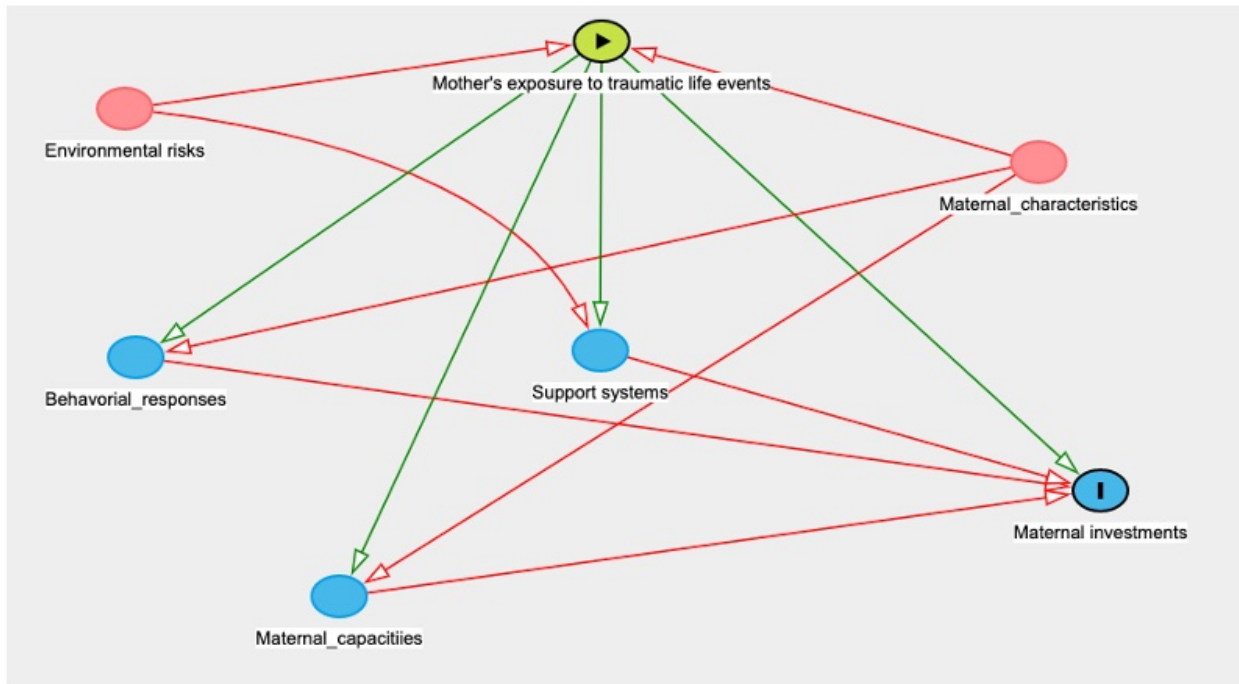
The factors described above help to establish an ecosystem for trauma: the enabling factors that increase the likelihood of experiencing a traumatic event, the factors that predict resilience in a trauma victim, and the potential effects of maternal trauma on maternal capacities and investments, and the subsequent early developmental outcomes of their children.

Using Directed Acyclic Graphs, the diagram below puts forth a model for the effect of maternal exposure to traumatic life events on her investments in her children.

I define the **exposure variable**, or the *treatment* as maternal exposure to traumatic life events, which can be of *Big T* or *little t* events.

- **Predictors of trauma:** are the factors that influence the likelihood of exposure to traumatic life events, such as community poverty rates, previous trauma history, and a host of other

Figure 1.1: Maternal exposure to trauma, maternal capacities and investments



Notes: This figure uses a Directed Acyclic Graph (DAG) to demonstrate potential relationships between predictors, moderators, mediators and outcomes of maternal trauma.

environmental factors. The environmental factors of poverty, and some maternal characteristics, such as level of education, socio-economic status, and being a woman, increase the likelihood that a mother living in poverty will be exposed to traumatic life events.

- **Moderators** are the factors that interact with the exposure to trauma to effect likelihood of re-victimization, or of receiving support from the community. These may include dissociative tendencies, post-traumatic stress, coping skills and resilience, the type of trauma experienced and whether it is a complex or repeated trauma. The type of trauma and the characteristics of the person experiencing the trauma will affect how she is viewed and treated by the community around her, which in turn affects the kinds of supports that she receives.
- **Mediators** are some of the behavioral mechanisms through which part of the effect of exposure to trauma on maternal capacities and investments comes. These may commonly be seen as drug or substance abuse, hyper-sexual behavior, or even fertility and family formation choices.

- **Outcomes** are the maternal capacities that develop as a result of the trauma and the differential choices around child investments, such as the material, time or emotional resources that mothers provide to their children, or the early developmental outcomes of the child.

Summary of Capacity Formation, Behavioral Economics and the Conceptual Framework for Trauma

All three of these models, capacity formation, behavioral economics and the conceptual framework for trauma, are all pointing to the same overarching concept: trauma can short circuit a mother's ability to make decisions, either because recovering from trauma exhausts mental resources needed to make decisions, because trauma changes her reference point so that she perceives previously benign stimuli as threatening, or because trauma triggers a biological or behavioral response to the stress that disrupts decision-making processes. Regardless of the reasoning, one insight that can be drawn from these models thus far is that the disruption that trauma has on parental investments and economic decision-making is likely an irrational process. Whereas more traditional conceptions of capacity formation and human capital accumulation would see parental under-investment as a rational decision, insights from behavioral economics and psychology around the psychosocial effects of trauma suggest that trauma disrupts a rational decision-making process.

The key consequence of trauma identified in the literature thus far is that exposure to traumatic life events generates biological and behavioral responses that impede a parents' economic decision-making, which in turn impedes their ability to care for their children. Understanding the potential mechanisms by which such responses may detrimentally affect human capital accumulation, and which types of parental responses generate detrimental outcomes for children are important for identifying potential interventions at the family or child level to dampen the potentially deleterious effects of maternal trauma.

1.4 What We Know about the Role of Maternal Trauma in Parental Investments and Human Capital Accumulation

This section summarizes the empirical literature to date on two specific mechanisms by which a mother's exposure to traumatic life events may affect her investments decisions in the early developmental outcomes of her children: through maternal depression and through child abuse and neglect. Using the conceptual frameworks described above, when applicable, as a theoretical lens to identify potential mechanisms, this section summarizes the empirical work to date examining these specific links. While the conceptual framework from Section III suggests a wide range of possible traumas and behavioral responses that mothers might experience in environments of adversity, only a few specific pathways have been rigorously investigated in the economics literature, in part due to methodological challenges. This section will summarize what we know about these few specific pathways, and also address the methodological challenges of estimating the causal effects of maternal trauma on the early childhood home environment.

Methodological challenges to estimating the effects of maternal trauma on child outcomes

Once the child is born and enters into early childhood, there are a host of potential environmental inputs and behavioral responses that might mediate the effects of a shock on the child's long term outcomes (Currie and Almond, 2011). While focusing on the early childhood environment enables some inquiry into distinguishing between shocks such as malnutrition from those such as child abuse (Currie and Almond, 2011), there are nevertheless at least two central challenges to recovering credible causal estimates of the effect of maternal trauma on the human capital accumulation of the child:

1. First, if there is a traumatic shock to a household that affects both the mother and the child simultaneously, it is difficult to isolate the direct effects of the traumatic event on the child from the indirect effects through the mother. For example, in a case such as domestic vio-

lence in the home, there is a direct effect on the child from either experiencing physical abuse or witnessing abuse of others in the household, and there is a potential behavioral response of the mother who may underinvest or even mistreat the child both as a result of her own trauma and/or in response to the child's experiences and potentially diminished capacities. For example, one of the strongest risk factors in the United States for child maltreatment is intimate partner violence in the home.⁴ This may be through direct abuse of the child by the household aggressor, or through the mother's behavioral response to her own trauma, making it difficult to disentangle the effect of the trauma the mother is experiencing on her investments and the child's subsequent developmental outcomes.

2. Second, trauma associated with poverty is often correlated with many other factors in adverse environments that also drive changes in early childhood and later life outcomes. Parental responses to early childhood shocks may be a result of either parental preferences or parental constraints (Duque et al., 2018), and the constraints parents face are often larger and more severe under conditions of poverty. For example, parents may have limited financial resources, limited emotional capacity for support, or themselves may be more prone to illness or injury. The environmental factors enabling these responses may themselves be driving outcomes in human capital accumulation, separate from the mother's behavioral responses to the trauma she experiences. These may also be pathways through which maternal trauma may perpetuate the intergenerational transmission of inequality that are important to disentangle and understand.

Given these challenges, previous causal literature on maternal trauma has mainly focused on maternal trauma experienced either through physical or psychosocial assaults to the mother while the child is in utero (Aizer and Cunha, 2012; Black et al., 2007; Camacho, 2008; Persson and Rossin-Slater, 2016). These studies have primarily investigated how maternal trauma affects child health outcomes at birth, and can more easily isolate the effects of the trauma through the mother because there is a pure 'biological effect' for the child that can be convincingly recovered. Behav-

⁴<https://www.acf.hhs.gov/sites/default/files/documents/cb/cm2019.pdf>

ioral responses to the shock are limited, since the child's environment is the mother's womb. The advantage of this literature is that it does a better job of isolating the indirect effects of trauma to the mother on child outcomes, but is limited in how reliable the causal estimates are for understanding mechanisms after the child is born due to behavioral responses that may be compensating or reinforcing (Black et al., 2007). It should be noted that these same limitations exist when aiming to identify the causal effect of maternal trauma on early childhood outcomes. This review will not focus on the in utero literature, mainly because it only lends reliable causal estimates for the child's birth outcomes, and instead will focus on the literature addressing the early childhood environment to further explore why this is theoretically important for child development, to take stock of the empirical work that does exist to date, and to identify challenges in estimating causality.

Maternal trauma may influence the home environment in a variety of different ways. However, given the methodological challenges, there are a narrow set of questions that has been investigated in the economics literature to date. This section will focus on two specific mechanisms that have been addressed in the economics literature: (1) maternal depression proxied by substance abuse and (2) child abuse and neglect, along with the subsequent effects of interventions such as foster care that remove the child from potentially toxic home environments.

It should be noted that each of these mechanisms is a biological or behavioral response to trauma that mothers might experience when in environments of poverty/ adversity, and these studies do not consider the direct effect of the maternal trauma itself (as is the case in the in utero literature). While maternal depression may be a biological response to experiencing trauma, child abuse and neglect may be a behavioral response to experiencing trauma or undergoing major resource constraints associated with living in poverty.

Maternal depression

Some literature, though scarce, has documented the persistent correlation of maternal depression or grief with maternal investments. This has important implications for human capital accumulation during the early years because the stability of the home and maternal mental health

are important inputs to the capacity formation process for children in their early childhood. Two studies have used the National Longitudinal Survey of Youth and its child supplement to investigate the effects of maternal substance abuse as a proxy for maternal depression on the home environment and a child's cognitive and behavioral outcomes. Maternal substance abuse may affect child development either by reducing the quality of parental inputs, or reducing the amount of time a mother spends with her child. This in turn may theoretically reduce both behavioral and cognitive outcomes for children. The first study investigating this question looked solely at the effect of maternal alcohol, marijuana and cocaine use on children's behavioral problems, and found that maternal illicit drug use is positively associated with behavioral problems in their children (Chatterji and Markowitz, 2001). A later study, Frank and Meara (2009), built on this work using the same data to investigate the effect of maternal drug use on the maternal supply of emotional and cognitive stimulation, and its subsequent effects on child behavioral, cognitive and educational outcomes. The study found that higher instances of substance abuse decrease the supply of maternal emotional stimulation and increase behavioral problems among children, though they found no evidence of effects on cognitive stimulation and cognitive test scores (Frank and Meara, 2009). Taken together, these studies suggest that maternal depression may influence that development of children through emotional investments and behavioral outcomes, with little evidence that this affects cognitive stimulation and development. One other study using data from the ECLS-K investigated similar questions in a U.S. context, finding that maternal depression is associated with reductions in child's socio-emotional outcomes, and small reductions in test scores (Dahlen, 2016).

It is easier to find (or generate) plausibly exogenous variation in treatments for depression rather than in maternal depression itself. For example, a randomized control trial of a 7 year follow up on a cognitive behavioral therapy intervention to reduce postpartum depression for mothers in Pakistan investigated the effect of alleviating maternal depression on maternal investments and early developmental outcomes for children (Baranov et al., 2020). The study found that the intervention increased a mother's time and financial investments in her children, but had no discernible effects on child cognitive and socio-emotional development at age seven. These results suggest that

the depression that was alleviated by the intervention acted as a barrier or constraint to maternal investments during early childhood, but perhaps either not enough to influence child development outcomes, or any effects faded out by age seven (Baranov et al., 2020).

Overall, the evidence consistently shows that maternal depression influences the mother's parenting through emotional stimulation or time and investments, with some evidence that it may also reduce a child's emotional development. However, these studies were also conducted in varying contexts with differing study designs, all of which grappled with endogeneity concerns, with the exception of Baranov et al (2020), so the mixed results may also be due either to different local average treatment effects, or due to issues with study design.

Child abuse and foster care

Mothers may have both biological and/or behavioral responses to trauma. Maternal depression and substance abuse may be a biological response to maternal trauma that may influence a mother's willingness and capacity to invest in her children; however, child abuse is also a potential behavioral response to maternal trauma.

Effects of exposure to child abuse on child and adult outcomes

Some literature to date has investigated effects of child abuse during the early years on educational and later life outcomes. The few studies have found that abused children are less likely to be employed in adulthood, more likely to have lower earnings and fewer assets in adulthood (Currie and Spatz Widom, 2010), and have a greater propensity to commit adult crime (Currie and Tekin, 2006).

Policy intervention, foster care and alternative responses

Given that child abuse is correlated with negative later life outcomes, policy responses are focused on alleviating the abuse by either removing children from the household or trying to preserve the family by intervening to decrease abuse in the home. The decision about how best to intervene is a decision that grapples with the trade-off between child protection and family preservation

(Doyle Jr and Aizer, 2018).

Studies that have looked at removing children from these situations have found mixed results. For example, one study found that children who are on the margin of being placed into foster care are two to three times more likely to enter the criminal justice system than a child who enters foster care, suggesting that removing children from abusive and neglectful homes has a positive effect on later life outcomes for children (Doyle Jr, 2008). This study used the random assignment of families to child protection investigators and estimated effects using an instrumental variables approach, so findings are a local average treatment effect for children just on the margin of being assigned to foster care. However, another study using similar methods only found effects of removing children from abusive and neglectful homes on test scores for young girls under age 8, with no distinguishable effects for older girls or for boys (Bald et al., 2019). Similarly, other studies have found little or even negative effects of foster care placement on outcomes such as externalizing behavior (Wildeman and Waldfogel, 2014), or juvenile incarceration rates (Jonson-Reid and Barth, 2000). Another paper that looked at the effects of incarcerating parents, another potential mechanism for improving a child's home environment by removing a parent, found that children whose parents were on the margin of incarceration in Colombia increased education levels by 0.6 when their parents were incarcerated, relative to those children whose parents did not end up being incarcerated (Arteaga, 2018). These differences in findings may be due to differing contexts, differences in the scope of the estimated treatment effects (local versus average treatment effects for varying populations), or certain methods being more robust than others.

These studies rest on the assumption that the best way to address child abuse is to remove children from an abusive home environment. However, given the literature thus far has found mixed results, an open question remains around the best way to address these types of suboptimal parenting and home environments.

An alternative policy response may be to try to prevent abuse from arising in the first place, rather than removing children from the environment once abuse has already occurred. However,

less is understood about these interventions that may decrease the detrimental effects of abuse in the household. Only a few rigorous studies have found programs that reduce abuse and neglect. These interventions include family-based services such as cognitive behavioral therapy or home visiting programs where service providers can help parents better manage raising their children given the multitude of stresses they face when under-resourced. One example is a postpartum care program evaluated using a randomized controlled trial was shown to reduce child maltreatment and improve cognitive development (Doyle Jr and Aizer, 2018).

Factors that give rise to child abuse

It should be noted that the literature thus far has done very little investigation of the factors that give rise to child abuse and neglect. Only a few studies have investigated this, with some work looking at enabling environments around child abuse. For example, some studies have looked at associations between financial distress and maternal spanking (Brooks-Gunn et al., 2013). In a more in depth analysis, Doyle & Aizer (2018) investigate the economics of child protection by focusing on the causes and consequences of child maltreatment in homes with intimate partner violence. In their review, Aizer and Doyle report on the prevalence of child abuse and neglect, and of intimate partner violence in the United States, and the potentially large externalities of the long term social consequences of child abuse, such as the cost of homelessness, disability or incarceration (Doyle Jr and Aizer, 2018).

It is reasonable to hypothesize that exposure to traumatic life events may be one factor increasing the likelihood that a mother will abuse or neglect her children during the early years, as is the lack of material resources that is a consequence of living in poverty.

Despite the limited empirical work in this area, the capacity formation and behavioral economics model can also provide some theoretical insights. In traditional models within economics, child abuse was considered to be an exception to typical altruism that was expected to exist among families (Becker, 1993). However, these more recent conceptions of human capital accumulation may provide better insights for how and why child abuse may occur. Aizer and Doyle (2018) dis-

cuss the main risk factors predicting abuse and neglect, two of which are drug and alcohol abuse and the presence of a caregiver with a history of intimate partner violence. Some family formation factors such as the presence in the home of a man who is not the child's father is also another risk factor, and parental criminal justice involvement (Doyle Jr and Aizer, 2018).

Doyle and Currie (2018) use more recent economics models, such as behavioral economics, to understand the factors that predict intimate partner violence and to conceive of potential interventions to reduce it. Similar conceptions of these models in economics can be used to understand maternal trauma more broadly, the factors that predict exposure to traumatic life events, and the potential behavioral responses to trauma that may have implications for parenting and the early childhood home environment. Behavioral economics models suggest that there are two tiers of thinking in decision-making processes “fast, instinctive, and emotional, and slow, deliberate and logical” and these may affect the early childhood environment and investment decisions. Aizer and Doyle (2018), for example, suggest that if intimate partner violence stems from the first tier of thinking (fast, instinctive and emotional), then attempts to get aggressors to utilize the second tier of thinking (slow, deliberate and logical) may help to reduce the prevalence of intimate partner violence. Such lines of thought suggest that interventions such as cognitive behavioral therapy may be promising for reducing the prevalence of this kind of disruptive behavior in the home environment. There is some empirical evidence substantiating this for maternal trauma (Baranov et al., 2020; Lantz et al., 2016). However, there is also competing evidence that parenting programs seeking to modify parenting behavior are often ineffective, particularly when targeting disadvantaged families (Lundahl et al., 2006).

The capacity formation model (Cunha and Heckman, 2008) also provides some insights into how a mother's exposure to traumatic life events may reduce her investments in her own children. The model suggests that there may be two reasons for underinvestment: parental preferences, or parental constraints (Duque et al., 2018). The consequences of exposure to trauma, such as maternal depression, substance abuse or health problems, may make it more difficult for a mother

to maintain a job consistently, which reduces her earnings capacity, and her ability to provide material support to her children in the home environment. In this sense, exposure to trauma places a material constraint on parenting decisions that in turn will influence decision-making around investments. Alternatively, a mother's exposure to trauma may shift her preferences about investing in her children. She may be more likely to either compensate or reinforce her child's own exposure to adversity in different ways than she otherwise would if she had not experienced trauma.

Similarly, in behavioral economics, poverty and exposure to trauma place strains on the cognitive resources of the mother, which temporarily affects decision-making around optimal investment decisions for her children. Such sub-optimal decision-making may explain why traumatized mothers turn to behaviors such as substance abuse or may be unable to take healthy actions to alleviate depression, which inhibits their ability to invest in their children materially and emotionally.

Still, little empirical work has been done around understanding the factors that give rise to maternal trauma, and the potential pathways by which maternal trauma might influence human capital accumulation within the early childhood home environment. While there is consistent evidence that various responses to maternal trauma, whether it be substance abuse or child abuse and neglect, have negative impacts on maternal capacities and investments, whether it be emotional or material investments, and that children exposed to mothers with substance abuse or who are abusive or neglectful are more likely to experience detrimental outcomes in the short and long run, the best way to alleviate these detrimental outcomes remains less understood.

It remains ambiguous how helpful it is to remove children from abusive early childhood environments given the uncertainty about the alternative options (foster care or care from other family members). Hence, understanding the factors that give rise to such environments is all the more important. If we can better understand the factors that give rise to these environments, we will have a better chance of attacking the root causes of the intergenerational transmission of trauma, and of developing interventions that increase the likelihood of enabling healthier early childhood environments for families at risk.

1.5 Traumatic Life Events and the Role of Maternal Trauma

Given that there is little understanding of how to prevent the consequences of maternal trauma on the early childhood environment, it is important to empirically investigate the potential mechanisms that might explain how a mother's exposure to traumatic life events could influence her maternal capacities and investments. While the literature in economics has mainly investigated biological responses such as maternal depression, or behavioral responses such as child maltreatment; psychiatrists and developmental psychologists also theorize that a mother's behavioral responses to her own trauma may affect her parenting during the early years of child development. Research in psychology and social work recognizes that the quality of early caregiving, and in particular, the attunement of the mother during the early years, is critical for mitigating potentially detrimental outcomes for children growing up in risky environments (National Scientific Council on the Developing Child, 2012). However, when the mother herself has experienced trauma, she is less likely to be attuned to her child's physical, emotional and cognitive needs (Van der Kolk, 2014). This suggests that maternal trauma, if not properly addressed, may be passed from mother to child through the mother's behavioral responses to her own trauma. This work also suggests that physical and bio-behavioral therapy of a different nature that aims to re-program physiological responses to previous traumas may help in removing the barriers that trauma induces (Van der Kolk, 2014).

This section will discuss two competing hypotheses for how a mother's behavioral responses to her own trauma may affect her investments in her children, and presents some empirical evidence within and outside of economics on these potential mechanisms.

Both the capacity formation model and the behavioral economics predict that when both mother and child experience the same traumatic life event, mothers will likely underinvest in their children due to shocks to their own capacities and/ or due to cognitive biases or elevated stress. This generates a prediction that maternal trauma will lead to lower maternal capacities and underinvestment in the early development of her children.

There is some empirical documentation of this phenomenon in the psychology and social work literature. Mothers who experienced interpersonal trauma were more likely to have authoritarian parenting styles, including verbal hostility, physical coercion and low nurturance, which predicted more prevalent toddler symptoms of affective, hyperactive and oppositional defiant disorders (Goff and Schwerdtfeger, 2013). There is also evidence in behavioral economics that traumatic experiences in poverty, such as exposure to violence, can alter individuals' behavior and deplete their ability to make economic decisions (Moya, 2018), which may extend to other decision-making in the household, including parenting.

However, an alternative hypothesis is that mothers may compensate for negative shocks experienced by their children under situations of heightened adversity experienced simultaneously by the mother and child. For example, a study following households after the Indian Ocean tsunami in Indonesia found that mothers and other family members are more likely to provide economic and psychosocial supports when daughters lost their father (Cas et al., 2014). Another study in the United States found that single mothers in broken homes are more likely to invest in their daughters than sons, which may be due to a better emotional connection (Bertrand and Pan, 2013).

An open question that remains is what factors or circumstances enable compensatory behavior under traumatic events and adversity. The literature on parental behavioral responses to early life shocks remains mixed, with some evidence that parents act as net equalizers when a child is less endowed, and competing evidence that parents sometimes make investment decisions based on efficiency rather than equity, thus investing less in children with lower initial endowments. For example, some evidence suggests that mothers who are more resourced (with higher levels of material resources and more education) are more likely to compensate, and in larger amounts, for early adversity experienced by their children in the form of cognitive (Attanasio et al., 2017; Fan and Porter, 2020) or health shocks (Attanasio et al., 2017; Yi et al., 2015). Alternative evidence suggests that parents invest less in children with mental health conditions, but invest equally in children when one of them has a physical health condition (Rosales-Rueda, 2014). Taken together,

this research suggests that parents may have differential responses to varying types of shocks (or developmental consequences of shocks), and that certain factors, such as socio-economic status or education, may enable compensatory behavior. It may then be that providing resource-poor or less-educated mothers with additional supports, such as material resources may help these mothers find the emotional strength, necessary physical resources and time to invest more in her children.

1.6 Discussion and Conclusion

This review takes stock of the literature to date on the effects of maternal trauma during early childhood on the home environment, maternal investments and the early developmental outcomes of children. It does so by considering insights from two economic models (1) the capacity formation model, and (2) behavioral economics, as well as developing a conceptual framework based on insights from psychology, epidemiology and social work. In this section, I summarize and draw lessons from the empirical research to date, identify gaps that may remain unexplored in our understanding of the causes and consequences of maternal trauma on the early childhood environment, and posit the policy implications that we can derive from the current body of literature.

The literature thus far is clear that early life shocks are detrimental for the human capital accumulation of children, and the effects are likely to be long lasting into adulthood (Almond, 2006; Currie and Almond, 2011; Almond et al., 2018; Maccini and Yang, 2009). Parents play an important role in remediating against such shocks when children grow up in risky environments, but when the parents are experiencing heightened stress due to the risks they themselves face, this stress may reduce their psychosocial well-being and increases the likelihood of underinvestment at a time when and in an environment in which children need investment the most. This makes it all the more important to understand how maternal trauma may affect a mother's maternal capacities and investments, and its effects on the developmental outcomes of her children.

Theoretical models and empirical research suggest several pathways by which maternal trauma might affect maternal investments, but many of these potential pathways remain less understood

empirically. For example, theory suggests that mothers who experience trauma are at heightened risk of re-victimization, for which there is correlational, but little causal evidence (Cloitre and Rosenberg, 2006). We also know that factors related to re-victimization, such as intimate partner violence, increase the likelihood of child abuse and neglect within a household (Doyle Jr and Aizer, 2018), but we do not necessarily understand why, nor do we understand the best ways to decrease the likelihood of intimate partner violence for families that are most at risk. We know that behavioral and biological response to trauma, such as substance abuse and depression, reduce maternal investments in their children, which is correlated with lags in behavioral and cognitive developmental outcomes for the children (Baranov et al., 2020; Frank and Meara, 2009). However, we do not necessarily understand the best way to reduce these symptoms in the aftermath of trauma, or even which specific traumas give rise to these responses.

Some promising interventions, such as cognitive behavioral therapy, have been shown effective in reducing specific kinds of maternal depression, such as postpartum depression (Baranov et al., 2020); however, we do not know whether these effects translate to other kinds of depression or other behavioral responses to trauma.

Moreover, there are a host of factors that contribute to the risks of mothers and families experiencing trauma, and reducing or increasing the likelihood of resilience in its aftermath. There is less empirical research dedicated to understanding the factors that interact with trauma to impede the development of maternal capacities and investments once the trauma is experienced, and whether the type of trauma, or number of traumas matters for how a mother responds. There is also a need to better understand the potential channels by which a mother's exposure to trauma can reduce early childhood development, the potential interventions that can alleviate the effects of early childhood shocks, and how a mother's exposure to trauma might interact with these interventions. For example, some studies suggest that policies that increase material supports for children at risk, either through conditional cash transfer or increased child care support, can increase child outcomes through the presence of material support (Aizer and McLanahan, 2006; Almond et al.,

2018). However, we know less about whether providing material resources for families experiencing intimate partner violence or other types of household level traumas might act as a buffer to reduce child abuse and neglect, or whether other types of interventions might be more effective.

Several open questions remain for future research. First, what are the factors that enable a mother's resilience in the aftermath of trauma? We know that families with more material resources are more likely to have compensatory responses after experiencing a household shock (Yi et al., 2015), and that material resources can also act as buffers for children who have experienced early adversity (Almond et al., 2018)). However, little is known about whether interventions that provide material support might reduce child abuse and neglect in households at risk. Additionally, what other types of household and community level supports might moderate the effects of the various types of traumas to which mothers living in poverty are exposed?

There are also open questions around what mechanisms might affect a mother's behavioral responses to trauma. For example, are there interventions that can reduce stress and cognitive load in the aftermath of trauma that might improve decision-making around child investments? Does a mother's exposure to one *little t* trauma in the household, or *Big T* traumas in the community, increase the risk of additional traumas, such as likelihood of divorce, likelihood of additional mental or physical health shocks, or likelihood of experiencing assault, harassment, or intimate partner violence? How might the accumulation of these additional traumas or consequences affect maternal labor supply?

Finally, there are questions around the right types of interventions, both to reduce the risk that mothers experience multiple traumas, and to intervene to improve the early childhood home environment once trauma has been introduced. Are family-based interventions and therapies to moderate behavioral responses to trauma the most effective approach, or are there key touch points earlier in the process that are malleable to interventions that reduce the risk of experiencing trauma in the first place? Such insights can help to improve the well-being of mothers who are raising children facing multiple risks, and can help increase the likelihood that the early childhood home

environment provides children with the best chance of achieving their potential in the face of heightened adversity.

Chapter 2: Poverty, childhood trauma and next generation outcomes

2.1 Introduction

Traumatized children growing up in poverty are arguably one of society's most vulnerable populations. They are at elevated risk of re-victimization (Klest, 2012), and the potential accumulation of multiple traumas renders them more likely to experience emotional and social difficulties (Barocas et al., 1985; Evans and Kim, 2013), a loss of safety and security, and a propensity to underinvest in themselves and the world around them (Herman, 2015).

Childhood trauma is more common than most people think. In the U.S. alone, more than two-thirds of children report experiencing at least one traumatic event by age 16.¹ These risks are disproportionately higher for children growing up under conditions of poverty. For example, children growing up in low-income families in the U.S. are five times more likely to be reported as experiencing child abuse and neglect than those in high-income families.² Globally, this phenomenon is wide-reaching and varied. It is estimated that up to 1 billion children ages 2-17 years experienced physical, sexual, or emotional violence or neglect in the past year worldwide.³ The prevalence and consequences of childhood trauma suggests that we need to better understand the long term and intergenerational effects of these formative experiences.

Previous scholarly theories examining how childhood trauma affects childhood development have concentrated on two processes: (1) how early adversity and potentially traumatic experiences affect the immediate cognitive and socio-emotional development of children, and (2) the extent to

¹<https://www.samhsa.gov/child-trauma/understanding-child-trauma>

²<https://www.cdc.gov/violenceprevention/childabuseandneglect/fastfact.html>

³<https://www.who.int/news-room/fact-sheets/detail/violence-against-children>

which caregivers, and mothers in particular, can buffer against the potentially detrimental effects of these early experiences. While these previous theories focus on the contemporaneous consequences of environmental traumas, frequently exacerbated by conditions of poverty, they often fall short of investigating intergenerational dynamics.

In this chapter, I review research across multiple disciplines to demonstrate that childhood trauma should be conceptualized as an intergenerational phenomenon that plays a role in the dynamics of inequality, particularly through its effects on women and mothers. When investigating such dynamics, a mother's history of childhood trauma is important to consider because (1) women are more likely to report histories of childhood trauma than men (Van der Kolk, 2007), and (2) women are overwhelmingly the primary caregivers during the early years of a child's development, particularly among the most vulnerable populations, for whom trauma is more likely (Bowen and Murshid, 2016; Klest, 2012). In my review, I propose a conceptual model that investigates potential (hypothesized) channels by which a mother's childhood trauma, contextualized by conditions of poverty or material deprivation, affects her adult capacities and outcomes, and subsequently, the early childhood home environment that shapes the childhood circumstances of her own children. I focus on the mother as the primary caregiver in the early years of a child's development, and examine behavioral mechanisms, and specifically parenting, as a potential pathway for the intergenerational transmission of a mother's childhood trauma on the early developmental outcomes of her own children.

Throughout the review, I use the term trauma broadly to refer to any experience that might evoke a traumatic response in an individual. Childhood trauma is broadly defined as an experience that is distressful or emotionally disturbing, often evoking a lasting mental and physical response.⁴ These potentially traumatic events may include a wide range of experiences, from psychological, physical or sexual abuse, neglect, community or individual violence, to natural disaster, serious accident or life-threatening illness. In investigating the role of trauma in the dynamics of inequality,

⁴<https://www.nimh.nih.gov/health/publications/helping-children-and-adolescents-cope-with-disasters-and-other-traumatic-events/pub1>

I also consider how environments, particularly conditions of poverty, determine the likelihood and frequency with which an individual may be exposed to potentially traumatic experiences, and the resources and supports available to recover from traumatic experiences. Current scholarly conceptions of child development acknowledge that a complex set of inter-connected ecological systems, from immediate household and family dynamics to broader community-level cultural values and norms, both guide a child's development (Bronfenbrenner, 1995) and also shape parents' capacity to provide the nurturing care and investments that children need during their early years.

This chapter proceeds as follows. First, I define what makes an experience traumatic, the various types of traumatic experiences, and what constitutes childhood trauma. Then, I review previous theories that describe two processes: (1) how early adversity and exposure to potentially traumatic events affect child development and later life outcomes; and (2) how environments with increased risk of violence, material deprivation or instability, or other poverty related traumas affect parenting practices and the early childhood home environment. Next, I synthesize these theories to examine the intergenerational consequences of a mother's childhood trauma. I focus on behavioral mechanisms for how childhood trauma may influence next generation outcomes with a specific attention to parenting practices and the early childhood home environment. Finally, I conclude by discussing future avenues for research and implications for public policy.

2.2 Background: What is trauma, what constitutes childhood trauma and who experiences it?

In this section, I outline how trauma is typically defined and the key dimensions of trauma as discussed in the medical and clinical psychology fields. I then turn to how childhood trauma and early adversity specifically are discussed in the early childhood literature across economics, developmental psychology and neuroscience. Finally, I explore who experiences childhood trauma and its interactions with growing up in poverty.

What is trauma?

Trauma is studied intensely in fields of psychopathology, psychiatry, clinical psychology or medicine. According to these fields, trauma is, in the simplest terms, a wound left on a person from a bad event (Van der Kolk, 2014; Maté et al., 2012). The medical definition of trauma is a physical or emotional injury.⁵ The response to this wound overwhelms the central nervous system and changes the way an individual remembers and reacts to experiences in his/her life.⁶ It is important to recognize that trauma is not the occurrence of a bad event itself, but rather is the wound that endures on the person as a result of a bad event, which can vary from person to person. Humans who experience psychological trauma, abuse and neglect have a neurobiological, emotional and behavioral response to that trauma. Combined insights from neurology, developmental psychopathology and interpersonal neurobiology have shown that trauma produces actual physiological changes in the person who experienced trauma, including a “recalibration of the brain’s alarm system, an increase in stress hormone activity, and alterations in the system that filters relevant information from irrelevant” (Van der Kolk, 2014 p. 2-3).

What makes an event traumatic?

From a clinical perspective, there are three defining features that characterize traumatic events: suddenness, lack of controllability and negative valence (Carlson and Dalenberg, 2000). While some potentially traumatic life events would be traumatizing for anyone experiencing them, most evoke a traumatic response in some but not others. A proposed framework for classifying such experiences focuses on the how a person perceives and experiences the potentially traumatic event (Carlson and Dalenberg, 2000).

- *Lack of controllability.* When a person experiences a stressful life event, his or her perception about how controllable the event is plays a role in whether it is traumatizing. From a

⁵<https://www.medicinenet.com/trauma/definition.htm>

⁶<https://www.psychotherapyworker.org/blog/details/311/video-when-is-it-trauma-bessel-van-der-kolk-explains>

clinical perspective, trauma victims often report concern over an inability to exert control during a traumatic experience (Carlson and Dalenberg, 2000). Recent empirical work has also documented associations between higher cortisol levels and measures reflecting greater unpredictability during traumatic experiences (Gunnar, 2020).

- *Perception of the event as negative.* Traumatic events are also perceived as having a negative valence, which may occur if the event is physically or emotionally painful (Carlson and Dalenberg, 2000). Although physically painful events or events that threaten pain injury or death are often perceived as negative and potentially traumatic, whether an event is negative is often subjective.
- *Suddenness.* Events that occur suddenly are also more likely to be traumatic. The amount of time a person has between when they become aware of a negative uncontrollable event, and when it actually occurs determines whether they can prepare themselves physically or emotionally to protect from negative outcomes (Carlson and Dalenberg, 2000).

Types of potentially traumatic events

The nature of potentially traumatic experiences can also vary along a few key dimensions, which may determine whether and how the event triggers a traumatic response in a particular individual.

Big T versus little t traumas

Traumatic experiences can differ in size and scope. Clinical psychologists draw a distinction between *Big T* traumas, the larger acute traumas that result from events such as natural disaster, war or conflict, or terrorist attacks, often involving serious physical or emotional injury or life-threatening experiences. *Big T* traumas are typically those that are classified and listed in the DSM-5, and typically trigger a post-traumatic stress response (classified as PTSD).⁷ *Little t* traumas,

⁷<https://journeypureriver.com/big-t-little-t-trauma/>

which may not be as physically or life-threatening as *Big T* traumas, but can be highly distressful events that affect individuals emotionally, such as emotional abuse, bullying, or loss of a significant relationship. The series of environmental community or household level stressors that are typically associated with poverty (job loss, sickness in the home, eviction, homelessness, displacement, and even divorce) can also act as *little t* traumas. While there is still debate in the literature about how well categorizations in the DSM-5 capture all experiences that are traumatic (Pai et al., 2017), or are the best way to distinguish between *Big T* and *little t* traumas (Yehuda et al., 2015), this gives us a starting point for understanding the distinction between these two types of experiences. Both types of traumas can have detrimental consequences and different implications for how individual may respond and have opportunities for recovery.

Acute, chronic and complex trauma

Trauma can also be characterized as acute, chronic or complex.⁸ Large, acute, single events that evoke a traumatic response, such as a terrorist attack or natural disaster, will have different responses and possibilities for recovery relative to chronic trauma from recurring events that may be on smaller scale, but generate repeated and prolonged exposure to stressful events, such as ongoing sexual abuse, bullying or persistent material deprivation or hunger. Complex trauma can result from exposure to multiple traumatic events, whether of the *Big T* or *little t* nature. Some groups may even experience chronic trauma through persistent *little t* events with an acute *Big T* trauma occurring in the midst of an ongoing traumatic context.

Threat versus deprivation

The child development literature has long drawn a distinction between adverse childhood experiences that are a threat versus those that are a deprivation. This distinction has been formalized by McLaughlin and Sheridan (2014) in which they present a framework identifying threat and deprivation as two distinct dimensions of risk that underly the effects of early adversity (McLaughlin et al., 2014). The types of childhood trauma often addressed in the literature can fall into these dis-

⁸<https://www.medicalnewstoday.com/articles/trauma#:text=Acute>

tinct types of traumatic events that have different causes and consequences (both neurobiological and behavioral). For example, in the child maltreatment literature, physical abuse of a child would be categorized as a threat, whereas neglect, in which a child was not receiving adequate food or shelter, could be classified as a deprivation. These different types of traumatic experiences often have different underlying causes and can trigger potentially different immediate and persistent developmental consequences (see for example Andersen et al., 2008). Nevertheless, some scholars would argue that these distinctions may not be as clear as presented in these frameworks. For example, persistent neglect and the lack of caregiver support may be perceived as a threat to children rather than a deprivation (Tottenham, 2012).

It should be noted that not all traumatic experiences perfectly fit these categorizations. For example, as mentioned above, the distinction between whether an experience is a threat rather than a deprivation (Tottenham, 2012) may not be entirely clear. Additionally, traumatic experiences may not cleanly fit the common clinical definitions. Some traumatic experiences, particularly those of a chronic nature, may not have an onset that is sudden, but nevertheless is traumatic for an individual.

Implications for recovery

The immediate and persistent responses to potentially traumatic experiences will depend on the individual's opportunity for recovery. For example, a community that experiences a natural disaster such as a tsunami, and is flooded with emergency relief and services in the aftermath of the event, may have different recovery trajectories and persistence of post-traumatic responses than a community in the midst of a civil conflict or war zone that might be experiencing multiple battles over time, with no relief and time for recovery. The accumulation of *little t* traumas can be a particular issue for marginalized populations. For example, low-income families under constant threat of job loss, eviction, or health shocks, will also have different capacities and resources to recover. Many may be living under conditions in which there is not reprieve from multiple daily

stressors.

Cumulative effects of multiple traumas

No trauma happens in isolation and the likelihood of re-exposure to additional traumas is higher for those who experienced trauma in their childhood (Klest, 2012). Most traumas occur in a context in which the risk of additional traumatic events, whether exposure to violence, material deprivation, or other forms of instability such as job loss or eviction, is also high. Many trauma victims experience multiple traumas of various types and consequences over their lifetime, and the accumulation of these experiences has an effect on immediate and persistent symptoms of trauma. The cumulative risk literature and others in developmental psychology provide some useful insight into this by acknowledging that it is the number of risks to which a child is exposed that can determine the negative developmental consequences.

Trauma experienced in childhood

Trauma experienced during childhood has particular immediate and persistent developmental consequences, and is distinct from acute traumas that may occur for individuals in adulthood. The WHO defines childhood trauma and adversity as all forms of physical and emotional abuse, neglect or exploitation that result in actual or potential harm to a child (Rosenberg et al., 2006; World Health Organization and others, 1999). However, given the discussions and definitions of trauma that exist in the medical field, and the evolving understanding of what actually constitutes a traumatic experience, it is worth considering a wider or broader set of childhood experiences that might be traumatic, depending on the context under which they occur and how the experience is perceived by the child.

Current definitions of trauma in the early childhood literature

While the consequences of childhood trauma are addressed in various forms across developmental psychology, neuroscience and economics, there is no common definition of trauma across

these fields that is used in the early adversity literature. Rather, the literature often focuses on various forms of potentially traumatic life events or adverse experiences in isolation, such as child maltreatment, economic or health shocks (i.e job loss, sickness in the household, eviction etc), school shootings or terrorist attacks, or natural disasters. Indeed, in the field of economics, studies addressing the effects of trauma are more common in behavioral economics (Callen et al., 2014; Moya, 2018) or the literature focused on the technology of skill formation, which studies negative shocks or early adversity (Conti and Heckman, 2012; Heckman and Mosso, 2014; Currie and Almond, 2011; Almond et al., 2018), but none of these studies to my knowledge spend time defining trauma or the nature of its effects for the reader.

In developmental psychology, traumatic experiences are often measured or defined by the Adverse Childhood Experiences or cumulative risk index, which lists, categorizes, and counts the possible adverse experiences a child may experience in his/ her childhood (Barocas et al., 1985) (see for example Sameroff et al, 1987). Neurobiological research identifies toxic stress (Shonkoff et al., 2012), and integrates the biological responses to adversity through increased cortisol and other measures of stress.

The economics literature defines early adversity as a negative shock to human capital accumulation, building on the Cunha and Heckman capacity formation model (Cunha Heckman, 2008), and further developing what this means for child well-being (Conti and Heckman, 2012) or how early adversity has disproportionate developmental effects on disadvantaged children (Heckman and Mosso, 2014).

Developmental timing of trauma

Across these literatures, the evidence is clear that the timing of when a child experiences a traumatic event matters because of sensitive and critical periods of development (Knudsen, 2004). Various traumatic experiences can have differential neurobiological effects based on timing and also on other individual factors such as gender. For example, research on the neurobiological effects of abuse and neglect suggest that boys and girls have different sensitive periods for these

experiences. Females appear to have three sensitive periods for different types of abuse: around 6 years old for physical abuse, around 9-10 years old for emotional abuse, and around 15 years for parental verbal abuse. In contrast, there is evidence that males have a more restricted sensitive period, from 9-10 years of age, specifically for experiences of physical abuse (Andersen et al., 2008).

Who experiences childhood trauma?

The unequal distribution of trauma across populations

While trauma is widespread and can affect anyone, childhood trauma disproportionately affects children growing up in poverty or in other environments where exposure to violence, material deprivation or other forms of instability is much more likely (Bowen and Murshid, 2016; Klest, 2012). Children growing up in communities with high poverty rates are not only more likely to initially experience trauma because of their neighborhood and household environments, but are also more likely to experience multiple traumas in adulthood relative to others who experienced childhood trauma but grew up in higher income communities (Klest, 2012). Other structural inequalities can interact with the heightened vulnerabilities associated with economic disadvantage to disproportionately affect marginalized communities, who may be at risk due to race (Garo et al., 2018), gender, disability, sexuality or other characteristics (Bowen and Murshid, 2016).

Women in particular are especially vulnerable to experiencing childhood trauma. For example, epidemiological research has found that women are more likely to report histories of childhood trauma than men. Whereas men frequently report trauma as a result of war, natural disaster, accidents or assaults in adulthood, childhood abuse is the most frequent cause of traumatization in women. Between 17% and 33% of women report histories of sexual or physical abuse, and more than twice as many women report histories of childhood sexual abuse than of adult rape (Van der Kolk, 2007; Kessler et al., 1995).

There is also a tendency in research and policy to focus on the most extraordinary, highly vis-

ible types of potentially traumatic events, while overlooking the less obvious but highly significant forms of trauma (Saunders and Adams, 2014). Many of the forms of childhood trauma that may be associated with living in poverty occur in private circumstances and may not be observed by others. For example, interpersonal violence involving children have very low rates of official reports (Saunders and Adams, 2014). If such traumas are not observed, acknowledged or documented, this can have implications for how much support these populations receive and how well they can recover from these traumatic experiences.

2.3 Previous theories on childhood trauma, environmental factors and parenting

In this section, I summarize and synthesize literature across multiple disciplines to investigate the following questions:

1. What do previous theories tell us about how contemporaneous poverty related traumas and environments with increased risk of violence, material deprivation or instability affect child development and later life outcomes?
2. What do theories tell us about how environments with increased risk of violence, material deprivation, instability or other poverty related traumas affect parenting practices and the early childhood home environment?

Childhood circumstances, poverty related traumas and child developmental outcomes

The relationship between poverty, early adversity and child development has been widely explored in the developmental psychology literature, and has new and growing insights in neuroscience and economics.

Adverse Childhood Experiences and Cumulative Risk

The insights in developmental psychology mainly come from the literature on Adverse Childhood Experiences and cumulative risk, with some additional insights from the infantile stimulation

literature. The developmental psychology literature is clear that children living in poverty are at elevated risk of exposure to environmental factors and events that may be detrimental to their well-being. Over the last few decades, developmental psychologists have aimed at answering questions related to how various dimensions of poverty might influence child outcomes. From this investigation, a body of literature on models of risk emerged, which aim at understanding the associations between poverty related risks and child development outcomes.

One of the key models emerging from these investigations is the cumulative risk model, which posits that “it is the accumulation of risk, rather than the individual factors, that accounts for development delays seen in some young children” (Brooks-Gunn and Duncan, 1997). This model predicts that as exposure to multiple risk factors increases, so does the likelihood of detrimental developmental outcomes. A key insight of this model is that it is the number of risks, and their cumulative effects, rather than any one risk factor, that accounts for developmental delays in cognitive, socio-emotional and behavioral outcomes.

Similarly, the Adverse Childhood Experiences (ACEs) literature lists out a series of experiences a child may have in their childhood that are considered to be adverse, and counts how many each child has been exposed to, and examines associations between the number of these experiences and detrimental developmental outcomes. In this literature, cumulative effects from multiple risk factors have been shown to be more predictive of developmental delays in cognitive development among vulnerable children than any one risk alone (Barocas et al., 1985).

Methodological challenges to measuring cumulative risk and ACEs

In both cases, the cumulative risk and ACEs literature measure early adversity by identifying the various risks or adverse experiences that children may be exposed to early in life, and creating an index to enumerate these risks or experiences with a few dimensions or categories. Researchers then typically examine the relationship between a number on the index, or an ACEs score, and child outcomes. For example, a child’s ACEs score is calculated based on 10 yes or no questions that ask if a child ever had a certain type of experience in his or her childhood, such as being

verbally, physically, sexually or emotionally abused or neglected, or having a caretaker that was depressed, abused substances or was incarcerated.⁹ Much of the ACEs literature examines associations between a child's ACEs score and their cognitive or behavioral outcomes. The cumulative risk similarly creates an index of risks to which children may be exposed across various categories of risk, which are higher among children growing up in poverty. The risks children face in poverty can take on a variety of forms, including physical risks, psychosocial risks (often related to family risks), and social risks. For example, psychosocial risks might include exposure to factors such as violence, family turmoil, or child-family separation, while physical stressors might include crowding, noise, housing quality or other environmental factors (Evans, 2003). Additionally, increased likelihood of exposure to such risks can also lead to elevated or chronic stress. There is a certain level of chaos that is associated with these risks, whereby poor children often face less predictability and structure in their lives (Evans et al., 2007). Family risk factors may specifically include factors related to the mother (behavior, developmental beliefs, mental health, and educational attainment), family social support and size, or major stressful life events (Sameroff et al., 1993). Risks may also be categorized into eco-biological risks (which broadly include several of the risk domains already mentioned), such as specific or broad demographics, family psychosocial status, mother's depressive symptoms, and neighborhood quality.

Infantile stimulation

Child development specialists also draw insights from the infantile stimulation literature to better understand the likely effects of early adversity on development during childhood and over the life course. A recent synthesis of the infantile stimulation literature posits that the effects of early adversity may take on a U-shaped function: that too much or too little adversity has adverse effects, but that a moderate amount of adversity that is within the child's capacity to cope can have positive developmental outcomes. The predictability or controllability of the caregivers' behavior can also be a major contribution to the child's ability to cope in the aftermath of exposure to an adverse experience. Contextual factors play a role in the long term developmental effects of such

⁹<https://pinetreeinstitute.org/aces-test/>

risks: individual differences in vulnerability versus resilience can depend on factors such as (1) the severity of the adversity, (2) genetics and biological sensitivity to context, (3) sex/ gender differences, (4) parents and caregivers present as a buffer or conduit, and (6) the role of stigma and discrimination (Gunnar, 2020). Much of this work identifies the most devastating form of early-life stress as the failure of an adult caregiver to protect, nurture and provide for infants and children (Tottenham, 2020; Gunnar, 2020).

Neuroscience of adversity

Connected to this literature, there is increasing recognition that early adversity, particularly experienced in poverty, has consequences that shape the early brain development of children, and can have disruptive and long term consequences over the life course. Recent work on the relationship between poverty and brain development posit potential pathways through which poverty may affect a child's early brain development. This work finds that socio-economic status (SES) related disparities in structural brain development are associated with specific structural attributes, particularly in the hippocampus, amygdala and the prefrontal cortex (Brito and Noble, 2014). For example, disparities in maternal investments through the linguistic environment within the home is associated with development of the language supporting cortical regions of the brain (Kuhl, 2007). Alternatively, the experience of stress is associated with disparities in the function of the hippocampus, amygdala and prefrontal cortex (Brito and Noble, 2014). This work also complements ecobiodevelopmental frameworks that demonstrate how early adversity and environmental factors can interact with genetic predispositions to affect the developing brain and long-term health outcomes. This framework emphasizes the life-long effects of toxic stress from early adversity, including environmental factors that may be more likely under conditions of poverty, on cognitive, behavioral and psychosocial outcomes (Shonkoff et al., 2012; Blair and Raver, 2016).

Some literature in this field also aims to disentangle the differences in the types of traumas a child may experience, and diverging neuro-developmental consequences. For example, the neurological response to abuse and neglect can be opposing. This work not only presents evidence of

the enduring damage to the neural structure and brain functioning of child abuse victims, but also finds evidence of differences in structural changes for different types of maltreatment. Whereas the amygdala of children who experienced abuse are smaller, those who primarily experienced neglect typically have an enlarged amygdala, suggesting developmental differences and potentially varying behavioral responses to these early experiences (Teicher, 2002; Teicher and Samson, 2016).

Economics of capacity formation

Literature in economics also links conditions of poverty, childhood traumatic experiences, early development and later life outcomes. Increasingly, economists have found that early life influences can affect outcomes such as IQ, wages and even personality traits (Almond et al., 2018). These early life shocks can range anywhere from health shocks in utero or early life, material deprivation, or conflict in the household. Community level traumas such as natural disaster also affect the psychosocial health and economic outcomes of children and adults in the community, and these community level traumas are associated with decreases in educational attainment and labor market outcomes (Cas et al., 2014).

This literature recognizes that even relatively mild shocks in early life can have substantial long term consequences, but that these can differ by the child's circumstances, including their economic resources, individual characteristics and context for learning. The literature also acknowledges that we know relatively little about mechanisms for capacity formation in the interval between an early life shock and future outcomes (Almond et al., 2018). Theoretically unpacking these mechanisms and setting the stage for possible ways to empirically test potential channels for long term and intergenerational effects will help policymakers identify how and when it is possible to intervene to improve outcomes in early life, throughout the life course and across generations.

Given that early life shocks are more likely for disadvantaged families, intervening early in life to alter environmental influences may be a way of promoting economic equality (Currie and Almond, 2011). The question of the "missing middle" and how and when it is effective to intervene after early life shocks remains under debate (Almond et al., 2018). While this "missing

middle” typically refers to the time between early childhood and adulthood (i.e. adolescence or thereabouts), we can also think about the “missing middle” as covering processes and outcomes over the life course and also across generations, from a mother’s adolescence and adulthood to maternal capacities that determine the early childhood home environment for her own children. Understanding this “missing middle” for mothers who grew up in conditions of poverty, and were subject to the risks associated with economic instability, is important to understand because they are also at greater risk of having less resources to invest in their own children.

The Role of Early Environments and Childhood Circumstances

All of these early developmental processes are occurring within a larger ecosystem. The nature of these environments can determine the likelihood that a child experiences traumatic experiences in childhood.

Many theories in the child development literature point to the importance of environments and ecosystems for children. In particular, Bronfenbrenner’s Ecological Systems Theory presents an important framework for understanding the role of environmental circumstances for child development. This theory provides guidance for thinking about the importance of the ecosystem that a child grows up in, and the ways in which inter-related systems determine the possible set of experiences and support systems a child might have. In Bronfenbrenner’s model, the child is nested in a series of five interdependent environmental systems that determine a complex system of relationships affecting child development. The most proximal system to the child is the *microsystem*, with the family being one of the most important *microsystems* for the child. The other four systems are more distal, and can include school settings and broader cultural values, laws and customs (Bronfenbrenner, 1995; Bronfenbrenner and Morris, 1998). This model suggests that to study child development, we should not only look at the child and her immediate environment, but also at interactions within a larger environment as well. The influence of one system on a child’s development depends on its relationship with the other systems.

Poverty and parenting

In Bronfenbrenner's model, the family is perhaps the most important microsystem that determines a child's early circumstances. Parents determine the quality of the early childhood home environment, and they do so within a larger interconnected ecology of environmental systems. In this next section, I consider how environments with increased risk of violence, material deprivation, instability or other poverty related traumas might affect parenting practices and the early childhood home environment.

There are a number of environmental factors that increase the likelihood that a child might experience a potentially traumatic event. Many of these conditions are also more likely for economically disadvantaged or otherwise vulnerable families. Table 2.1 presents the different environmental systems in Bronfenbrenner's model, and the types of conditions occurring within each system that might increase the likelihood of trauma.

As the closest support system most proximal to the child, the family determines household dynamics that are formative for early childhood development. These dynamics are shaped by who is present in the household and the nature of their interactions. For economically disadvantaged families, certain family dynamics that are correlated with living in poverty are also correlated with higher likelihood of experiencing potentially traumatic events. For example, many correlates of poverty are also associated with child maltreatment, including single parent households, maternal depression and substance use, young maternal age, low education, parent mental health, and presence of non-biological caregivers in the household.¹⁰ Maternal depression and substance use are also correlated with risks of intimate partner violence, which increases the risk of child abuse and neglect (Doyle Jr and Aizer, 2018).

However, the risks associated with these household factors are not always clear cut. For example, while the presence of non-biological father figures, particularly when they are transient or

¹⁰<https://childandfamilyresearch.utexas.edu/evidence-base-child-maltreatment-risk-factors>

Table 2.1: Ecological systems and factors increasing probability of childhood trauma

Bronfenbrenner's ecological systems	Environmental factors increasing the probability of experiencing a potentially traumatic event
<i>Microsystem</i> (proximal to the child; relationships are bi-directional)	Presence of non-biological caregivers in the household Lack of presence of grandparents/ extended family Parental mental health conditions Lack of access to childcare/ additional support systems for care Conflict in the household School peers bullying Lack of nurturing teachers/ school environments
<i>Mesosystem</i> (where microsystems interact)	Relationship between parents and schools
<i>Exosystem</i> (formal and informal social structures affecting the microsystem)	Resource poor environment (growing up in a low income household, poor neighborhood or developing country) Lack of community support Job loss or unemployment Unstable housing Political instability Lack of community level infrastructure to ensure safety
<i>Macrosystem</i> (attitudes and ideologies of the culture)	Racism/ discrimination Caste systems Attitudes toward women/ single mothers
<i>Chronosystem</i> (environmental changes occurring over the lifecourse)	Areas vulnerable to natural disaster Historical or political change

Notes: This table identifies the ecosystems in Bronfenbrenner's ecological systems and hypothesizes possible environmental factors within each system that might increase the probability of childhood trauma.

multiple in nature, increases the risk of abuse, certain non-biological caregivers such as adoptive parents may act as buffers against potentially traumatic experiences in cases where children would otherwise be without caregiver support (Barone et al., 2017). Similarly, while single parent households are more common among economically disadvantaged households, and are a predictor of involvement from Child Protective Services, research has also found that single parent households are not a consistent risk factor for poor child outcomes across race and socio-economic status (Cross, 2020). The implications of this research is in line with with the socioeconomic stress hypothesis, which suggests that the absence of a parent may have less negative effects for vulnerable families already facing the multiple stressors of socioeconomic disadvantage. These findings are also in line with international evidence finding that the loss of a parent among community-based orphans does not independently predict poor child outcomes for vulnerable children exposed to a high number of potentially traumatic life events in childhood (Escueta et al., 2014). This suggests that the stressors of poverty or the potentially traumatic experiences to which vulnerable families are more likely exposed may be greater risks for detrimental outcomes than other household dynamics correlated with these circumstances.

Beyond the family and household, larger community factors such as county level job loss, housing instability, or political instability may increase risks for children experiencing traumatic events, particularly for economically disadvantaged households or communities that may have less resources to cope with daily stressors (Schenck-Fontaine et al., 2017; Marcal, 2018; Warren and Font, 2015). These community level factors may interact with household dynamics. For example, housing instability may influence child maltreatment specifically through maternal stress and through increasing the risk of neglect (Warren and Font, 2015). Similarly, racism and discrimination or the support that women and single mothers receive in their communities may be additional sources of trauma and exacerbate challenges of socioeconomic disadvantage. Women who themselves are victims of previous trauma may struggle to receive support from their communities in the recovery process (Herman, 2015). Many marginalized groups, particularly low-income families of color, are disproportionately affected by poverty-related traumas, such as domestic violence

or substance use, because of deeply entrenched structural inequalities, including racism and discrimination (Egede and Walker, 2020). For example, families of color are more scrutinized by child welfare systems due to institutional biases (Arruabarrena et al., 2017), are more likely to be investigated by CPS, and these investigations are more likely to be substantiated (Kim et al., 2017).

Parents as protective

Across these literatures, parents play an important role in mitigating the potentially detrimental outcomes of early adversity or trauma through their investment decisions. However, there is also theoretical and empirical evidence that the environments that put children at risk also may affect parental decision-making around investments and parenting.

There are a number of theoretical models in developmental psychology, neuroscience and economics that provide insight into the possible consequences of poverty related traumas on parenting, with some empirical evidence substantiating these theories.

Family Stress Model

The family stress model posits that poverty and economic stress can affect the psychosocial well-being of parents, which can affect inter-parental relationships and parent-child interactions (Conger and Conger, 2008; Neppl et al., 2016). A number of factors, such as maternal social support, effective coping strategies, community and neighborhood support, are also associated with resilience and may explain heterogeneity in outcomes among families and individuals under economic stress. This model has been tested empirically, mainly in the developmental psychology literature, by testing various associations between socioeconomic status, family processes and individual development (Conger et al., 2010). Literature examining these relationships specifically around the Great Recession found a consistent relationship between a family's socioeconomic status and the life course development and interrelationships of family members. In line with other work across disciplines, these studies also find heterogeneity in responses to disparities in socio-economic status during childhood, adolescence, and adult outcomes based on individual differences (Conger et al., 2010). One study also investigated the intergenerational consequences of

economic hardship across three generations of rural Midwestern families, finding that economic hardship in adolescence was related to economic hardship in young adulthood, and this process was associated with developmental outcomes of children in the third generation. Though the study was associational, it also provides suggestive empirical evidence of a relationship between economic hardship, personal and social resources later in life, and increased risk of hardship for the next generation (Conger et al., 2012).

Poverty, maternal stress and cognitive stimulation

Recent work in neuroscience investigating the relationship between structural brain development and socio-economic disparities also recognizes the importance of the caretaker in remediating potentially detrimental outcomes from early adversity, and the role that poverty can play in subverting the potential for caregivers to act as protective in these adverse environments.

Two hypothesized mechanisms by which poverty affects parenting that the neuroscience literature highlights are (1) maternal stress from the hardships of poverty and (2) maternal investments that shape the linguistic environment during early childhood (Brito and Noble, 2014). These in turn can affect the socio-emotional and cognitive development of the child. This literature recognizes that socio-economic status can interfere with maternal investments through various mechanisms both because of the resources a mother has in a given environment, and her own capacities to stimulate and nurture the child.

Poverty and decision-making around parental investments

Similarly, theoretical frameworks in behavioral economics posit that poverty creates a mental tax on parents that diminish their cognitive capacity and impairs decision-making around parenting and household investments. This work provides a conceptual framework for understanding the psychology of decision-making in the context of poverty and highlights the psychological costs of the unstable circumstances that surround poverty. A key aspect of this framework is that constant focus and attention are required when living under conditions of poverty, and demonstrates how small and transitory financial hurdles can translate into long-lasting poverty traps (Gennetian and Shafir, 2015).

All of this is to say that poverty acts as a tax that either impairs decision-making around parenting because of the psychological costs that drain focus and attention, or that alternatively may cause parents to overweight the possibility of negative outcomes, and make extremely risk conservative choices as a result. For example, some studies document how early life exposure to economic instability, through the Great Depression, is linked to more conservative investing behaviors later in life (Malmendier and Nagel, 2011). There is also some empirical evidence of effects of traumatic experiences on economic decision-making. For example, there is very scant but important literature documenting the effects of exposure to violence on risk preferences and economic decision-making in a few contexts. One experiment conducted in Afghanistan investigated the relationship between exposure to violence and economic risk preferences. Exposure to violence appears to shape the risk preferences for certainty (termed as a Certainty Premium), and in particular find that the effects of fearful recollections, which are localized to individuals who were explicitly exposed to violence, trigger changes in risk and certainty preferences, and that these preferences are sensitive to priming triggers (Callen et al., 2014). Another study documented the effects of violence on risk attitudes in economic decisions in Colombia, finding that victims of more severe violence demonstrate higher levels of risk aversion when gains or ambiguous outcomes are considered (Moya, 2018).

These findings suggest that exposure to violence and the resulting psychological trauma can play a role in poverty dynamics through a behavioral channel. Additional work extends this framework to consider decision-making of parents under conditions of poverty, to explain how parents in low-income households might engage with social services available to them, to explain low utilization, inconsistent participation and low retention (Gennetian et al., 2016).

The intergenerational dynamics of scarcity

Trauma, if unresolved, may act as a constant mental tax that impairs executive function and decision-making. This is in line with the behavioral economics literature on scarcity, that posits that poverty impedes a person's ability to can recover from a mistake. Furthermore, many of the everyday traumas and stressors that are associated with living in poverty may exacerbate set-backs that are outside of an individual's or family's control. These conditions render families living in poverty both more likely to experience these set-backs because of the environments in which they live, and less likely to be able to recover from these set-backs, not only because they have less economics resources, but also because they are less likely to have the mental resources to cope with the everyday stressors of poverty.

The literature thus far considers the context of poverty-related traumas and how it impairs everyday decision-making, including decisions about parenting and investing in children. If we extend this notion to consider the role of multiple exposures to traumatic events across one's life course, this suggests that it is not just the contemporaneous stressors experienced by parents and families today that matter, but one's entire history and the accumulation of traumas over a lifetime and across generations interacting with the stressors of today that can affect current decision-making processes.

Economic instability and child maltreatment

While parents can act as protectors that buffer children against adversity and childhood trauma in risky unstable environments, the trauma a child experiences may also be a direct result of parenting.

There is a growing body of causal literature establishing the link between income and child maltreatment (Raissian and Bullinger, 2017; Berger et al., 2017). These studies also suggest that who is affected by economic instability, community level conditions, and other household level dynamics can matter for determining the effects that economic instability may have both on whether child maltreatment occurs and its consequences for child development. For example, one study in California found that child maltreatment increased with female employment while decreasing with male employment, suggesting that gender differences in unemployment trends and which caregiver spends time at home can play a role in the likelihood of maltreatment (Lindo et al., 2018). County level job losses in North Carolina have been found to affect the severity of maltreatment reports (though not the frequency of child maltreatment reporting), with effects concentrated in economically disadvantaged communities (Schenck-Fontaine et al., 2017).

Child maltreatment can have lasting consequences over the life course. Children who experience maltreatment in their childhood are more likely to have lower levels of education, less assets and a greater likelihood of unemployment (Currie and Spatz Widom, 2010) and of engaging in crime (Currie and Tekin, 2006) in their adulthood. These detrimental outcomes are often more severe for children who experienced multiple instances of maltreatment. There are also established associations between child maltreatment and adolescent and later life suicidality (Brezo et al., 2008; Mina and Gallop, 1998), with those abused by their immediate family at highest risk of suicidality in young adulthood (Brezo et al., 2008). A body of literature establishes associations between economic downturn and suicidality (Noh, 2010; Leveau and Granados, 2021) and a causal link looking specifically at economic downturn or instability and adolescent suicidality, particularly for adolescent girls and non-Hispanic Blacks (Gassman-Pines et al., 2014).

On Resilience and Hidden Talents

These findings point to the inter-related nature of parenting, child development outcomes, and the environment in which both processes are taking place. The evidence furthermore indicates that the most vulnerable children, particularly those growing up in poverty and who belong to

marginalized populations, are at increased risk of experiencing trauma and its detrimental effects.

Nevertheless, it is important to also recognize the factors that promote resilience in the aftermath of trauma, and that some mothers who experience childhood trauma may adapt and in fact be more protective as mothers, or develop capacities to thrive in challenging environments. There is a wide literature on risk and resilience models that investigates the pathways to either maladaptive or positive adaptive functioning in the aftermath of early adversity. These pathways are a complex matrix of the individual's biological and psychological organization, current experiences, active choices, social context, timing of adverse events and experiences, and the developmental history of the individual (Cicchetti and Tucker, 1994).

This literature recognizes that factors such as age of exposure and the set of relationships children form in the aftermath of trauma may play a role in the child's ability to cope and recover from traumatic experiences. For example, some clinical work has found that maltreated children are much less likely to form secure attachments with caregivers if they experience maltreatment before the age of six (Andersen et al., 2008). Children who form healthy friendships with adults, caregivers, mentors or peers in childhood and adolescence (Sattler and Font, 2018), who display an internal locus of control (Kronborg et al., 2017) or demonstrate a stronger sense of belonging (Ye et al., 2021) are more likely to be classified as resilient.

Influential work on biological sensitivity to context also hypothesizes that there is a curvilinear or U-shaped relationship to early exposures to adversity, with highly-reactivity phenotypes more likely in either highly stressful or highly protected social environments (Boyce and Ellis, 2005). This suggests that a moderate level of early adversity, i.e challenge that is not so overwhelming that a child would not have the resources to overcome and thrive, best positions children to develop capacities for resilience. Whether a child is able to successfully adapt is a function of a variety of factors, including genetics, and the specific physical, economic and socio-emotional conditions of the child's environment (Boyce and Ellis, 2005). Empirical work measuring relationships between stress reactivity, environmental adversity and adaptive outcomes has also substantiated this concept

of stress reactivity as biological sensitivity to context (Obradović et al., 2010).

Resiliency is typically measured through various domains of functioning, such as successful employment, no homelessness, high school graduation, social activity, no psychiatric disorder, no substance abuse, or no self-reported violence (Ye et al., 2021). However, there is also new work characterizing or capturing the adaptive nature of individuals who have experienced great adversity, but whose adaptive capacities are more suited for non-normative or challenging circumstances, rather than normative environments. This work proposes a *hidden talents* framework in which children growing up in challenging circumstances may develop enhanced skills for coping specifically in high-adversity contexts that may be unrecognized in resilience models that define success and adaptive skills by traditional measures under normative environments (Ellis et al., 2020).

These hidden talents may be especially useful in communities of intergenerational economic disadvantage, where adaptive coping under high-adversity environments may be particularly helpful. The hidden talents framework references empirical evidence of adaptive responses to early-life stress that may promote survival in unpredictable and threatening environments. For example, higher anxiety levels among children with a history of institutionalization have been found to be associated with decision-making strategies that are more suited to harsh, unpredictable environments (Ellis et al., 2020). This may also relate to emerging literature on child maltreatment suggesting that under-resourced or economically disadvantaged families may make choices that are intended to be protective for their children, but are interpreted as neglectful by conventional community norms or institutional frameworks (Merritt, 2020).

While it is important to recognize the adaptive capacities that children growing up in harsh unpredictable environments may develop to promote survival, and to document the factors that promote resilience, the consistent evidence of heterogeneous effects of early adversity also point to different pathways for risk and resilience that can have intergenerational consequences. There is still much work to be done to understand these intergenerational dynamics.

Traumatized children as the parents of the next generation

The long-term effects of childhood trauma point to the potential consequences for parenting. For example, if a mother is a victim of abuse or neglect in her own childhood, she is at increased risk of unemployment or being on welfare, of experiencing depression or suicidality (Conron et al., 2009; Dixon et al., 2005; Brezo et al., 2008) and having fewer financial, mental and psychosocial resources in adulthood to cope with the stresses of living in poverty (Currie and Spatz Widom, 2010). This in turn can have effects on the early childhood home environment that she shapes for her own children, and may be a source of increased risk of trauma. Alternatively, there may also be factors that promote her resilience and recovery in the aftermath of early adversity.

Establishing a more coherent framework for conceptualizing potential trajectories from a mother's childhood experiences to the early childhood home environment she shapes for her own children may help identify avenues for intervening to promote resilience and dampen the effects of maternal trauma on next generation outcomes.

2.4 An intergenerational framework for childhood trauma and its consequences

In this section, I investigate hypothesized mechanisms by which a mother's childhood trauma affects her individual development or capacity formation, and subsequently, the early childhood home environment that shapes the childhood circumstances of the next generation.

In doing so, I posit two insights. First, I argue that poverty can be viewed as a traumatic context, and that economically disadvantaged families are not only coping with the daily stressors of their current context, exacerbated by the conditions of poverty, but are also carrying the accumulation of traumas over time and across generations. If gone unaddressed, the accumulation of traumas can act as a poverty trap explaining behavioral responses and decision-making affecting outcomes across generations. Second, I present a coherent framework that demonstrates how contemporaneous environments have the potential to shape the childhood circumstances of future

generations through the mother's responses to her own childhood circumstances.

Poverty as a traumatic context

The family stress model and the socioeconomic stress hypothesis support the idea that the daily stressors of poverty can be impactful on family dynamics and child investments. The behavioral economics literature to date also argues that poverty has psychological consequences that can lead to economic behaviors perpetuating poverty traps (Gennetian et al., 2016). These include stress and negative affective states that can contribute to limited attention and risk-averse decision-making, which can have feedback loops sustaining conditions of poverty. This framework has also been applied to decision-making around parenting, which can explain sub-optimal choices in the take-up of or retention in social services or programs available to disadvantaged families (Gennetian et al., 2016). This theory relies on an assumption that the stresses of poverty act as a mental tax that deplete the cognitive capacity of individuals living in poverty. Taking a behavioral economics perspective can provide insight into the constraints and opportunities that context presents in the lives of the poor.

When taking an intergenerational perspective, it is likely that poverty not only presents a series of contemporaneous stressors experienced by parents and families today, but that the entire history or accumulation of poverty-related traumas over a lifetime and across generations interacting with the immediate poverty-related stressors of today can affect decision-making around parenting and family dynamics today. This is relevant when considering how and when to intervene, and the types of social supports and interventions from which vulnerable populations could benefit.

Though there has been little empirical work on the intergenerational effects of poverty related traumas on economic decision-making, the behavioral economics literature points to the lasting consequences of traumatic experiences, if unaddressed, through psychosocial and behavioral channels. Additionally, this work demonstrates the importance of understanding the context in which traumas occur, and the ways in which such contexts allow for, or do not allow for recovery

in the aftermath of trauma. Poverty is a context that likely does not allow for or give space for recovery, leaving children growing up in poverty who have experienced childhood traumas even more susceptible to persistent symptoms and adverse outcomes, particularly if they also experience additional stressors and traumatic experiences once they reach adulthood. Their childhood circumstances will most certainly shape their capacities (cognitively, emotionally, and materially) to cope with the daily stressors of poverty when they themselves are shaping environments for their own children and making investment decisions as parents.

An intergenerational framework

In this section, I lay out a framework for conceptualizing the hypothesized mechanisms by which a mother's childhood trauma affects her own skill formation or individual development, the environment she is surrounded by in adulthood, and the early childhood home environment of the next generation. I do so by considering the environmental factors that increase the likelihood of trauma, the possible behavioral and biological responses to trauma, the factors that affect the trajectory of these responses (individual, household and community level), and the subsequent life-course and next generation outcomes that may be consequences of these possible trajectories.

I begin by considering what types of experiences might be traumatic, and why. Different environments can lend themselves to higher probabilities of different potentially traumatic life events occurring. The environments and ecosystem in which a child grows up can affect the likelihood a child experiences potentially traumatic experiences, the way the child perceives the event, the support systems she has to recover from the trauma, and her subsequent behavioral responses. This in turn can affect later life outcomes, and the early childhood home environment she shapes for her own children. Table 2. 2 lays out these various factors and its implications for children growing up in resource poor environments or poverty.

Table 2.2: From potentially traumatic childhood experiences to next generation outcomes

What are potentially traumatic experiences	Ecological factors that influence recovery	Responses to trauma	Adult Outcomes	Next generation context and outcomes
<p><i>What makes an experience traumatic</i></p> <p>Suddenness</p> <p>Negative valence</p> <p>Lack of controllability</p>	<p><i>Additional risks</i></p> <p>Exposure to violence (household, neighborhood, community, war, conflict)</p> <p>Material deprivation</p> <p>Housing instability/eviction</p>	<p><i>Behavioral</i></p> <p>Avoidance</p> <p>Re-experiencing</p> <p><i>Biological</i></p> <p>Dysregulation of stress system</p> <p>Epigenetics</p>	<p><i>Clinical conditions</i></p> <p>Mental health</p> <p>Substance use</p> <p>Suicidality</p> <p>Symptoms of PTSD</p>	<p><i>Parenting practices that may be affected by trauma</i></p> <p>Maternal stimulation (read, talk, play)</p> <p>Guidance and discipline</p> <p>Investing in formal early learning</p>
<p><i>Types of traumatic experiences</i></p> <p>Threat versus deprivation</p> <p>Little t versus Big T trauma</p> <p>Acute, chronic or complex trauma</p> <p><i>Timing of traumatic experiences</i></p> <p>What age did the event occur?</p> <p>Did the event occur during a sensitive or critical period of development?</p>	<p><i>Support systems</i></p> <p>Family or community support (financial, child care)</p> <p>Social services programming</p>	<p><i>Common immediate and persistent responses to trauma</i></p> <p>Depression</p> <p>Aggression</p> <p>Substance use</p> <p>Physical illness</p> <p>Low self-esteem</p> <p>Identity confusion</p> <p>Difficulties in interpersonal relationships</p> <p>Guilt and shame</p>	<p><i>Adult capacities that may be affected by trauma</i></p> <p>Executive function</p> <p>Cognitive capacities</p> <p>Emotional regulation</p> <p><i>Economic Outcomes</i></p> <p>Labor market outcomes</p> <p>Family formation decisions</p> <p>Fertility decisions</p>	<p><i>Child development outcomes</i></p> <p>Cognitive development</p> <p>Socio-emotional development</p> <p>Child health</p>

Notes: This table identifies the various aspects of exposure to trauma that should be considered when investigating pathways from childhood trauma to next generation outcomes.

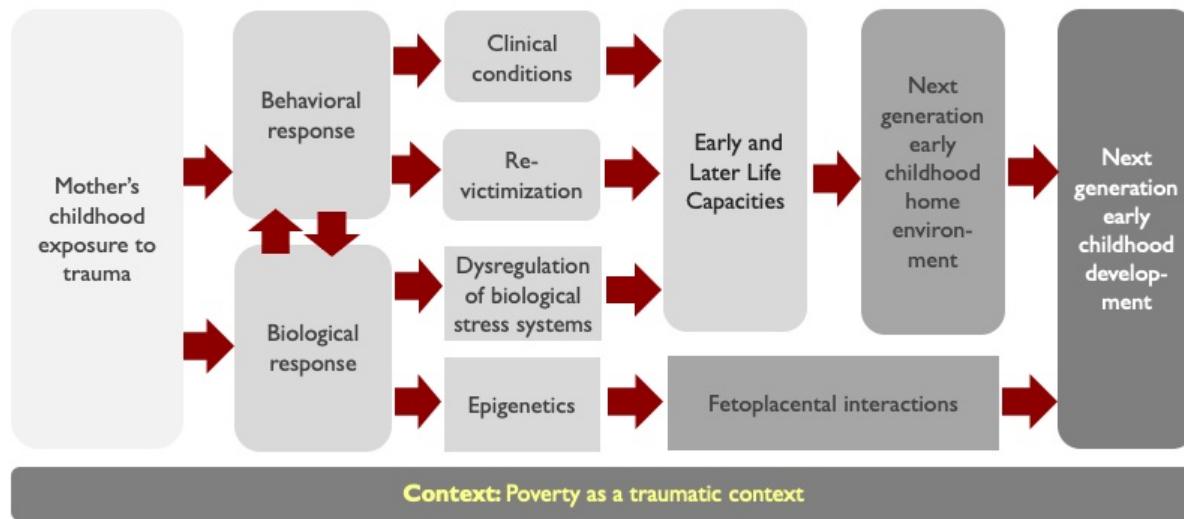
When a child is exposed to a potentially traumatic life event, there are a series of developmental and later life consequences that depend on (1) the type and severity of the trauma, (2) how the child perceives the event, and (3) the support systems the child has available to recover in the aftermath of the event.

Consequences of trauma

Once a traumatic event has occurred, there are a chain of potential common responses, starting with immediate responses in the aftermath of a traumatic event, common persistent symptoms over time, and the consequences for a person's outcomes over their life course as a result of these responses.

Figure 2.1 maps out general pathways for these developmental and later life consequences. While this chapter focuses on the behavioral responses to the trauma and the subsequent potential pathways, it acknowledges that there is also an important set of biological responses that are an important pathway for the transmission of trauma across generations through epigenetics and other neurobiological responses to trauma.

Figure 2.1: Maternal childhood trauma and next generation outcomes



Notes: This figure demonstrates a theory of change for how a mother's childhood exposure traumatic events may influence next generation outcomes through various pathways.

Biological responses

There is a strand of literature documenting the role of epigenetics and other biological responses in the intergenerational transmission of trauma. Epigenetics refers to potentially heritable changes in the genome that can be induced by environmental events. Sex-specific effects and the timing of parental exposure to trauma may have implications of its intergenerational consequences. While this analysis will not go into depth on these biological mechanisms, it is important to recognize that these avenues exist and are additional pathways by which maternal trauma may be transmitted across generations. Trauma can transmit from parent to child through epigenetic mechanisms either through the offspring's early environmental exposures, such as postnatal maternal care or in utero exposure through maternal stress, or through preconception trauma in parents that may affect the germline, and thus impact fetoplacental interactions (Meaney and Yehuda, 2018). This second channel is relevant for maternal childhood trauma, in which genetic markers that exist in the mother from her early life trauma are passed biologically on to the child. Though the literature on these intergenerational effects in humans remains nascent, there is some evidence

that biological markers for suicidality or depression can be differentially activated by adverse early childhood experiences (Turecki et al., 2012). Similarly, epigenetics is a possible explanation for the presentation of PTSD symptoms in the children of Holocaust survivors who themselves did not experience traumatic events.

Besides epigenetics and the genetic markers that trauma may leave on its victims, there are also a number of neurobiological responses that may also affect maternal capacity formation and adult outcomes. Childhood trauma can disrupt the regulation of the biological stress-response system and can also manifest in other forms of physical illness (De Bellis and Zisk, 2014). There is still much room for new multi-generational studies that provide a better understanding of these mechanisms and the way in which individual, cultural and social factors permeate biological processes.

Behavioral responses

In addition to these set of biological responses, there are a whole host of behavioral responses that may happen in the aftermath of childhood trauma. When a child experiences trauma, the most common immediate responses include either engaging in avoidance or re-experiencing of the trauma. These responses are laid out as criteria for PTSD in the DSM-5, in which re-experiencing, or intrusion symptoms, may include unwanted memories, nightmares, flashbacks, or emotional or physical reactivity. Dissociative experiences such as dis-personalization or derealization may also help the trauma victim continue to function by distorting her experience of herself or the world around her. Detaching cognitively or emotionally may be adaptive strategies that allow the trauma victim to avoid further injury or to mitigate feelings of fear or helplessness (Carlson and Dalenberg, 2000).

Clinical conditions

A series of clinical conditions may manifest as persistent symptoms of trauma over the life course including: depression, aggression, substance abuse, physical illness, impaired self-esteem, problems with identity, challenges with interpersonal relationships, and experiencing guilt and

shame (Carlson and Dalenberg, 2000). All of these symptoms may affect the way the mother invests in herself and the world around her, and can have developmental consequences in both the short term and long term.

Re-victimization or re-exposure

If a mother has experienced a traumatic event in her childhood, the interaction of persistent symptoms such as dissociative behavior, and living in conditions in which she is already at heightened risk of experiencing trauma, may place the mother at increased risk of re-victimization or re-exposure to multiple traumas over her lifetime.

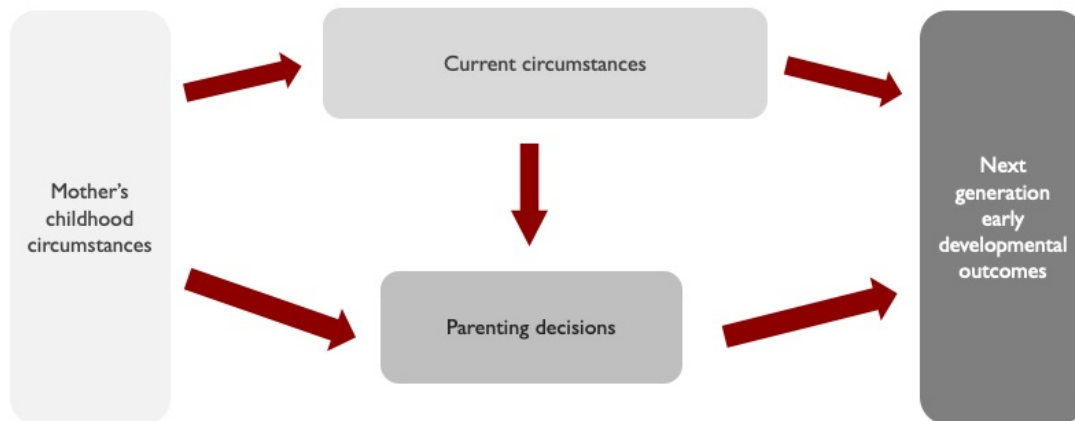
The epidemiology literature has documented that children who experience trauma in their childhood are more likely to experience multiple traumas over their lifetime (Klest, 2012). The accumulation of stressors and potentially traumatic experiences over a lifetime is likely to leave a mother with a set of clinical conditions and a changed set of coping strategies for future stressors. This can affect her later life outcomes, including labor market outcomes, family formation decisions which may affect the household dynamics and early childhood home environment that she shapes for her own children. Hence, poor mental health and emotional dysregulation may affect next generation outcomes specifically through parenting practices, but these set of processes may also play a role in shaping the entire ecosystem that determines next generation childhood circumstances. The interaction of the current environment and clinical conditions of the parent can interact to affect parenting and may act as a double penalty for children of the next generation, and may act as a mechanism of a poverty trap.

Context as a barrier

All of these factors can interact with the environmental context and the surrounding ecosystem to determine the childhood circumstances of the next generation, and affect the way a mother makes decisions about household investments and parenting. Figure 2.2 demonstrates the relationship between a mother's childhood circumstances, her current circumstances, her capacities as a parent, and the subsequent early developmental outcomes of her children. This acknowledges

that parenting decisions are highly influenced by existing circumstances, and that prior circumstances are likely to shape one's current capacities to cope with current circumstances, particularly harsh or challenging context.

Figure 2.2: Childhood and current circumstances, parenting, and next generation outcomes



Notes: This figure demonstrates the relationship between a mother's childhood circumstances, her current circumstances, her parenting practices and the developmental outcomes of her children.

How childhood and current contexts affects parental decision-making

To consider how a mother's childhood and current circumstance affect her parenting decisions, a behavioral economics offers a framework for understanding the gap between what is expected and what is actually achieved when it comes to parental engagement (Gennetian et al., 2016). Some work in behavioral economics is beginning to envision a more inter-disciplinary framework for understanding parental investments by first starting with defining the capacities and resources required for positive parenting. These behaviors may include resources and capacities such as working memory, emotional regulation, grit, humor, structural support, financial resources, healthy adult relationships, balanced mental health and cushion for recovery when things go wrong (Brown et al., 2020).

There is documentation in the literature that childhood trauma can affect these important maternal capacities. Relative to a mother who did not experience severe childhood trauma, a mother

who experienced trauma in their childhood, if unaddressed, is more likely to have impaired working memory, poor mental health, potentially unhealthy adult relationships, less financial resources, and diminished capacity to regulate emotions, and all of which may affect the cushion for recovery that a mother has available for when things go wrong. If she is also living in poverty in her adulthood, then she is faced with additional challenges, which may include un- or underemployment, unpredictable working hours, unreliable social assistance, little wage growth, limited family support, hardly any formal saving and patchwork childcare, no stable partner, and little to no social support.¹¹

For mothers living in poverty, the developmental consequences of her childhood circumstances may interact with the challenges of her current circumstances, leaving her with a series of barriers to provide nurturing and productive investments in her children.

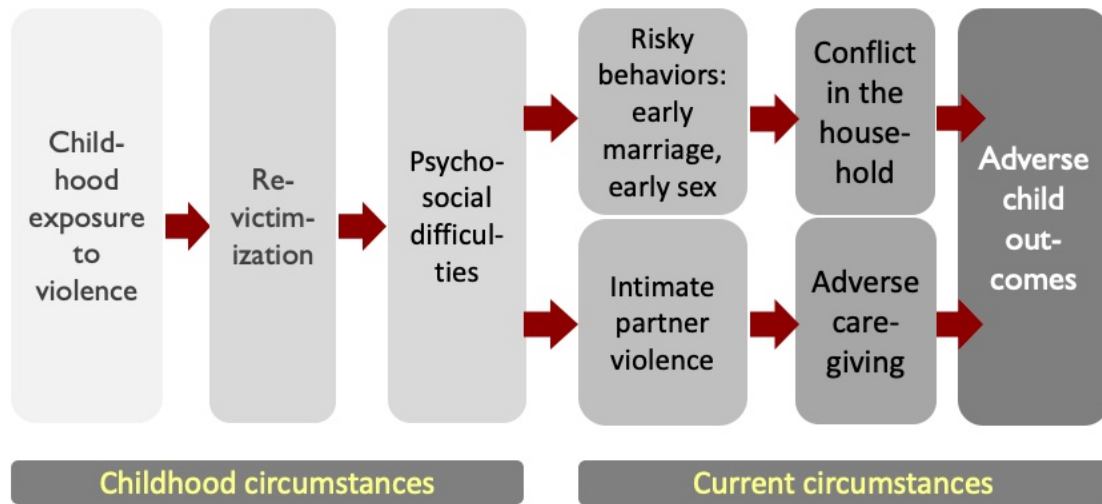
Example: Childhood exposure to violence

There is a lot of variation in the immediate and persistent effects of traumatic experiences depending on many factors: the type and timing of the trauma, the individual's perception of the event, the resources available to support recovery, and the many other environmental factors that determine additional risks of trauma and other outcomes over the life course. To contextualize this framework to a specific case, I give the example of childhood exposure to violence as one type of childhood trauma, and present a possible individual trajectory from maternal childhood exposure to violence to next generation outcomes.

If a mother is exposed to violence in her childhood, for example by witnessing intimate partner violence in her household, then she may protect herself by dissociating, which affects the way she invests in herself and the world around her. Her environment, and in turn her response to her environment, may make her more likely to experience multiple traumas over her life course, and the potential accumulation of traumatic experiences may leave her with psychosocial difficulties and a higher likelihood of depressive symptoms, anxiety and even suicidality. This in turn may affect

¹¹For an explanation of this framework, see Lisa Gennetian's Curry Research Lecture at <https://www.youtube.com/watch?v=w6Q0z15gw0s>

Figure 2.3: Childhood exposure to violence and next generation outcomes



Notes: This figure demonstrates a potential pathway from a mother's childhood exposure to violence, her parenting practices and next generation outcomes.

her later life outcomes, and manifest itself in risky behaviors such as early marriage, early sex, and she may be more likely to select a partner that is emotionally, physically or sexually violent. These dynamics may increase conflict in the household, which affect the mother's capacity to provide nurturing care to her own children by providing guidance, discipline, reading to or playing with the child. If a mother underinvests in her child, this may manifest in the child's early developmental outcomes through cognitive or socio-emotional development or health outcomes, leaving the child with the same developmental difficulties she herself experienced in her own childhood. While this example provides just one possible individual trajectory in the aftermath of a childhood traumatic experience, it demonstrates the possible chain of events that may occur in the wake of a single instance of trauma.

It should also be noted that the causal chains laid out in this framework may not be as linear as presented here. It is likely that there are feedback mechanisms between the environments and various aspects of maternal capacities and investments. Additionally, there may be some direct effects from earlier life outcomes, such as direct pathways from a mother's psycho-social difficulties to conflict in the household or her caregiving practices, independent of her family formation

decisions or other risky behaviors she may engage in.

2.5 Conclusions and Implications

This chapter surveys the multi-disciplinary literature on childhood trauma, early adversity and the role of poverty in shaping potentially traumatic experiences for vulnerable children. Across multiple disciplines, the literature is clear that child development and capacity formation over the life course is dependent on individual characteristics and the environments in which children grow up, including the complex and inter-related ecosystem of supports with which children interact. These ecosystems can determine the extent to which children are exposed to traumatic experiences, and can affect how mothers, perhaps the most integral support system during the early years, invest in their children. This chapter brings together these separate insights and integrates knowledge from the medical and clinical psychology fields documenting the immediate and persistent effects of trauma. In doing so, it proposes an interdisciplinary framework for understanding the potential consequences of a mother's childhood trauma by hypothesizing potential pathways by which childhood traumatic experiences are likely to interact with adult circumstances to affect maternal investments and next generation outcomes.

From this framework, a few policy and research implications arise. First, understanding the potential pathways for the consequences of childhood trauma can provide insight into the nature, and potential shortcomings, of the current design of support services and interventions for disadvantaged mothers. While there are some effective interventions to support mothers experiencing certain types of adversity, such as depression, substance use or other poverty related stressors during the early years of her child's development, current designs tend to focus on one-step interventions such as motivational interventions or cognitive behavioral therapy (Baranov et al., 2020; Stormshak et al., 2020) that focus on overcoming a single binding constraint to decision-making around parenting. While these interventions can be effective in improving parenting practices and early childhood development in some contexts, the theory and design of these studies often do not

consider that families in poverty and harsh environments are often battling multiple constraints, including the developmental consequences of their own childhood circumstances. Interventions that aim to address these potential traumas early on or that provide multiple services to families facing a cascade of stressors and constraints may be more effective in fully addressing dynamics that perpetuate structural inequalities for marginalized populations.

Second, given the limited empirical evidence investigating the causal mechanisms underlying the intergenerational consequences of childhood trauma, there is a need for identifying measures and study designs that can help us better understand and test the mechanisms underlying this “missing middle” from the immediate consequences of childhood trauma to its intergenerational consequences through parenting practices and next generation outcomes. I list a few features of data and study design that can help us move toward a better understanding of these dynamics:

1. Data linking mothers and children that captures information about the childhood circumstances of the mother, the current circumstances of the household, and the early developmental outcomes of the children.
2. Data that documents and enables us to describe child perceptions and immediate and persistent behavioral responses to different types of potentially traumatic experiences.
3. Clear identification and testing of adult capacities and outcomes that capture effects of childhood trauma, and that may mediate the effects of childhood trauma on future parenting behaviors through their effects on family dynamics or economic circumstances. These may include family formation and fertility decisions, education and labor market outcomes.

A few key challenges arise in testing these causal mechanisms. First, in order to understand how a mother’s childhood experiences interact with current adult circumstances, and test these multiple interactive causal effects, one needs “lightening to strike twice” (Almond and Mazumder, 2013). That is, the best study designs would identify cohorts for which there is exogenous variation both in traumatic experiences during childhood and in adult circumstances (either additional stressors or support services). It is very rare to find one exogenous shock from a traumatic event, and

to have two or more over time and across generations occurring in the same cohort or population is challenging to find. Nevertheless, one way to use this framework to advance knowledge on these dynamics is to concentrate on empirically testing a series of possible causal chains (when feasible) such as:

- How do the effects of childhood trauma interact with other poverty related traumas to affect maternal engagement and nurturing care? Do different types of traumatic experiences have different effects, and do these effects vary by group and by context? In contexts of extreme adversity, in which there may be multiple traumatic exposures, is there evidence of non-linear effects of cumulative exposure to trauma?
- How does childhood exposure to violence or other forms of trauma affect decisions around family formation, which may in turn affect family dynamics? For example, do these experiences affect decisions around who to marry and when to marry? Do these choices affect family dynamics and processes that shape the early childhood home environment?
- Are mothers who experienced violence in their childhood more likely to experience intimate partner violence in their adult life? Do the interaction of these experiences influence how a mother provides nurturing care to her children?
- What factors promote resilience for women who experienced traumatic childhood events?

Social policies aiming to support vulnerable children intend to alleviate constraints that place vulnerable children at a disadvantage, yet these policies may fall short of addressing key underlying causes that perpetuate poverty and inequality if they fail to recognize the cumulative and intergenerational effects of trauma. Moving towards a better understanding of the causal chain of consequences for childhood trauma can help policymakers better conceptualize and design the timing and nature of interventions that help mothers who experiences trauma recover and cope with the challenging circumstances in their adult lives, and shape different childhood circumstances for their own children.

Chapter 3: The effect of a mother's childhood exposure to armed conflict

3.1 Introduction

What are the intergenerational consequences of childhood adversity? Children growing up in poverty are at elevated risk of early adversity that can disrupt their developmental process and hinder early development and later life outcomes (Nelson III and Gabard-Durnam, 2020; Almond, 2006; Maccini and Yang, 2009). These risks are compounded if children experience multiple traumatic life events during their most sensitive and critical years of development (Knudsen, 2004; Heckman, 2007). As such, developmental outcomes for children at risk depend on the extent to which adverse experiences can be compensated by future parental investments (Knudsen, 2004; Almlund et al., 2011; Duque, 2017). Mothers in particular play an important role in buffering against early adversity through nurturing, responsive, and attentive caregiving (Britto et al., 2016). However, when the mother herself has experienced trauma, she is less likely to be attuned to her child's physical, emotional and cognitive needs (Van der Kolk, 2014), posing an additional risk to children in danger of experiencing early adversity. This suggests that maternal trauma, if not properly addressed, may be passed from mother to child through the mother's behavioral responses to her own trauma (Van der Kolk, 2014).

In this chapter, I investigate the intergenerational transmission of trauma for families in particularly vulnerable situations by examining one particular case: a mother's childhood exposure to armed conflict. Specifically, I study how a mother's childhood exposure to armed conflict affects her future maternal capacities and investments. I also estimate how this impacts the early developmental outcomes of her children, potentially mediated by maternal investments. My empirical

setting is Uganda, Burundi and Chad. These contexts are characterized by high levels of income poverty and numerous cases of armed conflict.

Previous literature on maternal trauma and the early childhood home environment suggests that a mother's behavioral responses to trauma may decrease maternal emotional stimulation and the socio-emotional development of the child (Frank and Meara, 2009). Additionally, there is evidence that parenting may play a role in the intergenerational persistence of inequality, through underinvestment due to a mother's beliefs about the potential returns (Kalil, 2015), or through child maltreatment under conditions of economic stress (Brooks-Gunn et al., 2013). However, the specific mechanisms by which such beliefs and behaviors arise remains understudied. A better understanding of these mechanisms can help shape policy responses to mitigate maternal underinvestment, child maltreatment, and the persistence of inequalities that may result from such behaviors.

Many theoretical and empirical papers have studied the intergenerational persistence of inequality, more so in the United States than in developing country contexts. The literature to date documents the persistence of inequalities through factors such as parental education (Oreopoulos et al., 2006), maternal health (Aizer and Currie, 2014) or parental job loss (Ananat et al., 2008). Such investigations traditionally show detrimental outcomes persisting from parent to child through years of education or health at birth (proxied by birth weight). Understanding the intergenerational dynamics of inequality may help identify potential protective factors such as economic or health support services (Aizer and Currie, 2014). However, there is also evidence that factors such as parental job loss can perpetuate intergenerational inequality through worse adolescent mental health (Ananat et al., 2017), suggesting effects may also work through a psychosocial channel. Far less is known about the mechanisms by which maternal trauma, particularly through an acute childhood trauma, may contribute to the persistence of inequality through parenting practices and family dynamics, and consequently, what protective factors may dampen its intergenerational effects.

There are two main challenges to estimating the effects of a mother's exposure to armed conflict on the early childhood home environment. First, the likelihood of armed conflict occurring in a given area is endogenous to factors that might also drive changes in a mother's development and affect her future maternal investments, such as political factors affecting scarcity or regional levels of education. Second, examining the effects of an acute maternal trauma on the early childhood home environment faces a distinct methodological challenge. If an acute trauma strikes at the household or community level such that a mother and child both experience the same trauma at the same time, then it is difficult to disentangle the indirect effect of the trauma experienced by the mother from the direct effect of the environmental trauma on the child.

To address these challenges, my research design uses a differences-in-differences identification strategy to exploit geographic variation in conflict intensity within and across sub-national regions, and temporal variation in exposure to conflict events across birth cohorts. The use of geospatial analysis allows me to identify multiple "measured conflict zones" within sub-national regions so that I can compare otherwise identical groups that were born in the same region, but have different levels of exposure to armed conflict either due to geographic differences (living inside or outside of a "measured conflict zone") or due to differences in their birth year. By examining the effect of an acute trauma experienced by the mother in her childhood, and hence is not simultaneously experienced by her child, I am able to isolate the effect of the maternal trauma from other environmental traumas her children face. Using this design, I test the effect of mothers exposed to armed conflict anytime during her childhood (0 to 15 years of age) and specifically during her early childhood (0-8 years of age) on her future parenting practices, such as maternal engagement and child discipline, and the early developmental outcomes of her children. I also examine potential mechanisms driving the effect of maternal childhood trauma on maternal capacities and investments such as family formation, fertility decisions, education and labor market outcomes, and re-victimization of the mother through intimate partner violence.

I find that mothers exposed to armed conflict during childhood are more likely to use abusive

disciplinary practices with their children, particularly if exposed during early childhood. Mothers exposed to armed conflict during early childhood (0-8 years old) are also less likely to engage in the educational activities of their children, less likely to provide material investments, and less likely to send her children to an early childhood education center. Finally, there is marginal evidence that children of mothers exposed to armed conflict during her childhood are more likely to lag behind in their literacy and numeracy skills.

I also explore potential mechanisms for these effects, such as the effect of a mother's childhood exposure to armed conflict on maternal capacities, fertility decisions and re-victimization vis-a-vis intimate partner violence, which has been found to increase the prevalence of child abuse and neglect within a household (Doyle Jr and Aizer, 2018). Mothers exposed to conflict in early childhood (0-8 years old) are more likely to be illiterate and to experience the death of a son, and are more likely to engage in early marriage and early sex. They are also more likely to experience emotional and sexual intimate partner violence, a potential mechanism for increased abusive disciplinary practices.

This chapter contributes to three strands of literature. First, it contributes to the literature on maternal trauma and the early childhood home environment by causally identifying the intergenerational effect of an acute maternal childhood trauma, such as exposure to armed conflict, on the quality of the early childhood home environment. To the best of my knowledge, it is the first to do so. Previous research has explored the chronic stressors of poverty and its associations with the quality of the early childhood environment (Yoshikawa et al., 2012; Brooks-Gunn and Duncan, 1997), but little is known about the potential for acute stressors to detrimentally affect maternal investments and child outcomes in the early childhood home environment (Cuartas et al., 2018). Additionally, previous economic research focuses on the effects of behavioral responses to potential traumas such as depression or substance abuse on the early childhood home environment (Frank and Meara, 2009; Baranov et al., 2020), but few have focused on exogenous variation to the trauma itself in particularly vulnerable populations in a developing country context (Camacho,

2008; Cuartas et al., 2018).

Second, this chapter contributes to the literature on armed conflict and family dynamics. It is the first study to my knowledge to identify the causal effects of armed conflict on parenting practices. The literature to date that exists on armed conflict and parenting is largely associational, and mixed (Betancourt et al., 2014, 2015; Malcolm et al., 2017; Alleyne-Green et al., 2019). While the literature is consistent that armed conflict is associated with psychosocial difficulties and symptoms of trauma for caregivers (Murphy et al., 2017), the direction of caregivers' behavioral responses to trauma, and the causal pathways to parenting practices remain unclear.

Finally, it contributes to the literature on the intergenerational dynamics of war. While previous literature documents the intergenerational effects of war on education and health outcomes in children (Akresh et al., 2017), little is known about how this translates or works through parenting practices and other family dynamics, including how maternal capacities develop after experiencing childhood trauma. In doing so, this chapter also explores the potential pathways, including emotional investments through nurturing care, by which the intergenerational transmission of inequality persists through the mother, and the specific mechanisms by which a mother might fail to invest in her children in the aftermath of her own trauma.

This chapter proceeds as follows: Section 2 describes a conceptual framework and surveys the existing literature on maternal trauma and the early childhood environment, and exposure to armed conflict. Section 3 provides background and context for armed conflicts in Uganda, Burundi and Chad. Section 4 describes the data and empirical methods. Section 5 describes the results and interpretation and additional analyses and robustness checks. Section 6 concludes.

3.2 Conceptual Framework

In order to better understand the pathways by which a mother's childhood adversity may affect her future parenting decisions, I outline a conceptual framework that describes these potential

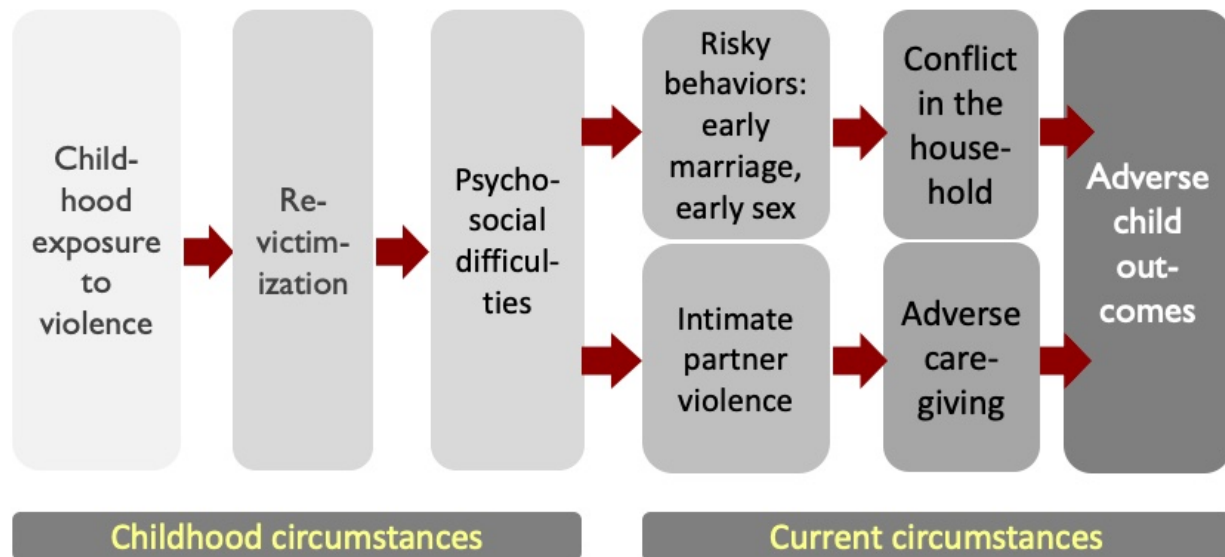
mechanisms, while also summarizing the literature on maternal trauma, the early childhood home environment, and specifically the literature on exposure to armed conflict and parenting.

There is widespread inter-disciplinary agreement across economics, developmental psychology, and neuroscience about the importance of caretakers in remediating the detrimental effects of early adversity (Brito and Noble, 2014; Currie and Almond, 2011; Yeung et al., 2002). This is particularly important for children growing up in poverty, who face multiple social and environmental risks (Barocas et al., 1985). Mothers¹ are the most important early investors because their investment decisions determine the quality of the early childhood home environment and establish a foundation for a child's lifetime skill development before entering formal schooling (Cunha and Heckman, 2008; Black et al., 2016; Francesconi and Heckman, 2016).

In environments of adversity, it is important for mothers to buffer against potentially traumatic life events through nurturing, responsive, and stimulating caregiving that creates a stable and predictable environment, and meets a child's health, nutritional and emotional needs (Britto et al., 2016). Traumatic experiences in childhood may disrupt a mother's ability to provide this responsive care through a variety of channels. Using the case of childhood exposure to violence, Figure 3.1 demonstrates the potential pathways by which a mother's childhood trauma might disrupt her future maternal capacities and investments, and affect her child's early development.

¹This analysis focuses on childhood trauma of the mother because mothers are most often the caretakers for children in developing country contexts, and there is evidence that intergenerational effects of conflict persist through the mother but not the father (Akresh et al., 2017)

Figure 3.1: Childhood exposure to violence, maternal capacities and early childhood outcomes



Notes: This figure demonstrates a theory of change for how a mother’s childhood exposure to conflict might influence her early development and later life capacities, which in turn may affect how she invests in the early childhood home environment of her children.

One channel by which maternal trauma may affect early childhood development is through its psychosocial effects on the mother. If a mother experiences early adversity, she is not only at risk of detrimental cognitive and socio-emotional outcomes in her early childhood (Barocas et al., 1985), but is also at elevated risk of re-exposure to additional traumas over the course of her lifetime (Klest, 2012). The potential exposure to multiple traumas over her lifetime may manifest in a number of mental health conditions, such as catatonia, depression, PTSD, hyper-vigilance or avoidance, all of which may reduce her emotional, physical and cognitive capacities as she advances through life. If a mother’s capacities are reduced in the aftermath of trauma, this may affect her decision-making around when she marries, the type of partner she marries, and how and when she has children. These decisions may ultimately affect the household and family dynamics that shape the quality of the early childhood home environment for her children, and the nurturing care she provides that is fundamental to early brain development and brain function over her own child’s lifetime (Black et al., 2017).

While there is some descriptive evidence documenting associations between maternal trauma and parenting practices during early childhood (Schwerdtfeger and Goff, 2007), few studies have identified the causal effect of maternal trauma on maternal investments and the early childhood home environment. A key methodological challenge is that it is difficult to disentangle the direct effects of an environmental trauma on a child from the indirect effects through the mother. As such, the causal literature to date focuses either on shocks to the mother in utero (Persson and Rossin-Slater, 2016; Camacho, 2008; Black et al., 2016), or maternal responses to potentially traumatic environments such as substance abuse or depression (Frank and Meara, 2009; Baranov et al., 2020). Few studies have focused on the direct effects of maternal exposure to trauma on the early childhood home environment for families living in extreme poverty (Cuartas et al., 2018), and none to my knowledge have investigated the intergenerational consequences of a mother's early adversity.

3.3 Armed Conflict as a Traumatic Context

Armed conflict in Sub-Saharan Africa poses a unique setting to investigate the consequences of exposure to trauma for mothers and children because of its wide and devastating scope. At least 28 countries in Sub-Saharan Africa were affected by conflict from 1980-2000 alone, with a population of over one billion civilians vulnerable to its physical, economic, and psycho-social effects (Luckham et al., 2001).

While the relationship between caregiver well-being and the quality of child-caregiver relationships is well established, this is less studied in the specific context of war (Murphy et al., 2017). Instead, previous studies investigating the effects of armed conflict often focus on macro-level indicators, such as national educational expenditures or enrollment (Thyne, 2006; Shields and Paulson, 2015). However, recent research posits that conflict tends to be a local phenomenon, and its causal effects should be studied at the local level (Buhaug and Rød, 2006). While one study has examined the effects of exposure to armed conflict locally on household level perceptions of

domestic violence (La Mattina et al., 2017), none to my knowledge have investigated the causal effects of armed conflict on parenting practices at the local level.

The literature to date that exists on armed conflict and parenting practices is largely associational, and mixed. Most studies show that exposure to war is associated with increased anxiety and depression and other acute symptoms of trauma among caregivers (Betancourt et al., 2014, 2015); however, the relationship between war, caregiver trauma, and parenting is not clear cut. While one study shows exposure to conflict increases abusive parenting practices in Iraq (Malcolm et al., 2017), another shows traumatized caregivers are more likely to be protective towards their children and are less likely to engage in physical discipline in Sierra Leone (Alleyne-Green et al., 2019). Given both studies are associational, there may be other environmental factors in the context of war that also are driving changes in parenting practices, and the causal mechanisms remain less understood. No study to my knowledge has investigated the causal effects of childhood exposure to armed conflict at the local level on maternal capacities and investments, and its intergenerational effects on early childhood development.

3.3.1 Armed Conflict in Uganda, Burundi and Chad

This chapter focuses on the armed conflicts occurring in Uganda, Burundi and Chad in the time period from 1989-2010.

While armed conflict and civil war have been ongoing in Uganda since the 1970's, the conflicts from 1989-2010 mainly constitute battles occurring across Uganda in relation to the Lord's Resistance Army (LRA) insurgency. The LRA insurgency is an ongoing guerrilla campaign waged by the LRA, a movement led by Joseph Kony to overthrow the Ugandan government and establish a theocratic state based on the Acholi tradition. This conflict is one of the longest running globally, and has been declared a humanitarian crisis due to the widespread human rights violations such as mutilation, torture, slavery and rape, abduction of civilians, use of child soldiers, and a number of massacres.

The main conflicts between 1989 and 2010 in Burundi occurred during the Burundian Civil War, which lasted from 1993 to 2005. The civil war was the result of long standing ethnic divisions between Hutu and Tutsi ethnic groups in Burundi, which erupted after Burundi had its first multi-party national election in June 1993. The main killings, an estimated 50,000 to 100,000 people, occurred over the course of one year in 1993, with continued conflicts and swings of power over the next 10 years. One of the major atrocities cited during this conflict was the use of child soldiers, which were used by both sides of the conflict.

The main conflicts between 1989 and 2010 in Chad occurred during the Chadian Civil War, which ran from 2005-2010. Since its independence, Chad had a long standing conflict between Arab-Muslims of the north and Sub-Saharan Christians of the south. A series of major battles occurred between 2005 and 2009, and agreement for the restoration of harmony between Chad and the Sudan was signed in the beginning of 2010, marking the end of the five year war. Use of child soldiers was documented to both by village level self-defense forces and Sudanese rebels.

3.3.2 Geographic distribution of conflicts

Figure 3.2 shows the geographic distribution of conflict-events in Uganda, Burundi and Chad that are documented in the UCDP/ PRIO data from 1989-2010. As an example of the geographic spread of these conflicts, there were 1662 armed conflicts across Uganda during this time period, with civilian mortality rates ranging from 0 to 400 deaths. There are many possible dimensions to exposure to conflict that might influence its psychosocial effects. In this chapter, I focus on mortality rates as one dimension of conflict intensity, and identify the 164 conflicts occurring in Uganda, Burundi and Chad from 1989-2010 with over 50 deaths. Each map below shows the geographic distribution of the conflicts with deaths over 50 relative to each country's administrative boundaries (districts or provinces), as well as the distribution of household survey clusters relative to these conflict-year events.

3.4 Research Design

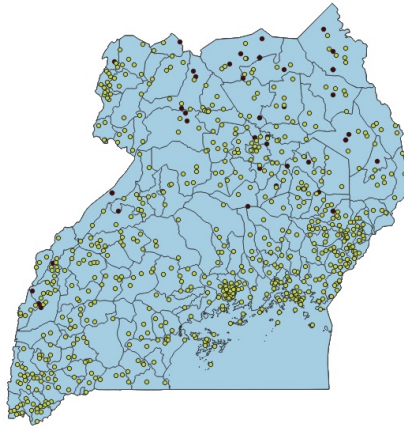
The goal of this chapter is to address the following questions: What is the effect of a mother's childhood exposure to armed conflict on her future maternal capacities and investments? Does the age at which the mother is exposed matter? What is the effect of a mother's childhood exposure to armed conflict on the early developmental outcomes of her children?

There are a number of pathways by which childhood exposure to armed conflict may affect a mother's future capacities and investments, and the potential effects are ambiguous. For example, exposure to conflict may influence family formation or fertility choices by affecting the age at first child, age at marriage, or the quality of the father a mother chooses to marry. There is some evidence that mothers exposed to war have children earlier (Akresh et al., 2017), and that younger caregivers are more prone to child maltreatment (Malcolm et al., 2017); however, war may also be a disruptive influence delaying marriage or childbirth. Exposure to conflict may also reduce educational attainment, which may in turn reduce a mother's desire to spend time on educational activities, or her labor market outcomes, thus reducing overall resources in the household. There is also evidence that maternal trauma is associated with authoritarian parenting styles in the range of child maltreatment (Schwerdtfeger and Goff, 2007). However, there is alternative evidence that mothers may become more protective after community level traumas, particularly of their daughters (Bertrand and Pan, 2013; Cas et al., 2014), suggesting potential heterogeneous responses to traumatic contexts.

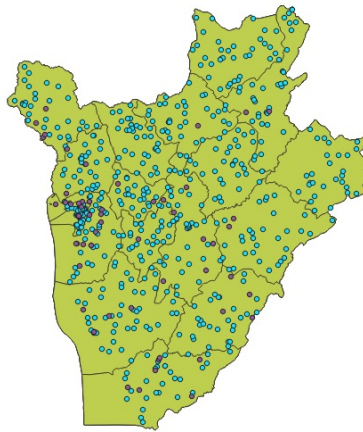
3.4.1 Data and Sample

To answer these questions, I merge geo-coded data on the time and location of armed conflicts in Uganda, Burundi and Chad from 1989-2010 with geo-coded household level data on mothers and children in the region with information on maternal capacities and investments, and child development. The geo-coded data on armed conflict comes from the Uppsala Conflict Data Program

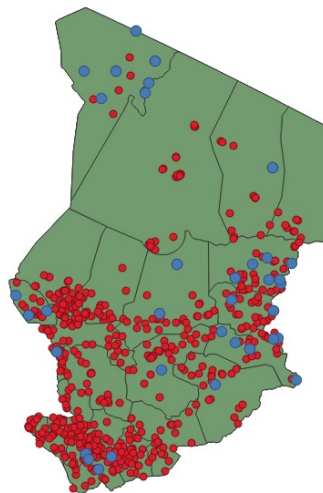
Figure 3.2: Location of conflict events and households in Uganda, Burundi and Chad from 1989-2010



(a) Conflict Events and Households in Uganda



(b) Conflict Events and Households in Burundi



(c) Conflict Events and Households in Chad

Notes: Data comes from the Uppsala Conflict Data Program (UCDP/ PRIO) and the Demographic and Health Surveys (DHS). This figure shows the geo-located conflict events with deaths over 50 in each country from the UCDP/ PRIO data, and their proximity to the survey clusters of households in the DHS data.

(UCDP)/ International Peace Research Institute (PRIO). The household level information on mothers and children under 5 years of age comes from the Demographic and Health Surveys (DHS), which contains geo-coded data on maternal capacities and investments, and child development, as well as alternative mechanisms explaining maternal capacities and investments, such as family formation and fertility decisions, maternal education and employment outcomes, and intimate partner violence.

To measure exposure to conflict, I use the Georeferenced Event Dataset (GED) Global version 19.1 data source from the Uppsala Conflict Data Program (UCDP)/ International Peace Research Institute (PRIO), which contains geo-coded data on all the armed conflicts globally from 1989-2010. This chapter uses these data from Uganda, Burundi and Chad. This data source defines an armed conflict as: "a contested incompatibility that concerns government and/ or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths" (Harbom et al., 2006). The unit of observation is a conflict-year event, which is comprised of localized battles, or a series of battles, that occurred within a given year.² The geo-coded version of the data provides information on the latitude and longitude of the conflict year-event, which captures the mid-point of all battles associated with a conflict-event. Detailed descriptions of the dataset are available in Adhvaryu et al. (2014).

To identify a "measured conflict zone" for each conflict-year event, I merge the geo-coded data on DHS survey clusters with the geo-coded data on each conflict-year event from the UCDP/PRIO data, and I measure the geodesic distance from the longitude and latitude of the conflict-year event to the longitude and latitude of each survey cluster in the household dataset (DHS).³ Survey clusters that are within a 15 mile radius of the epicenter of the conflict-year event are coded as within the measured conflict zone for that conflict, and clusters further than 15 miles are coded as outside

²Although the UCDP/ PRIO data classifies conflict-events by type (i.e. state based conflict, non-state conflict, and one-sided violence), I do not distinguish between conflict-event types in this analysis since I am interested in how exposure to armed conflict in general affects maternal capacities and investments.

³Longitude and latitude of survey clusters in the DHS data are randomly displaced for anonymity. The displacement is randomly carried out so that urban clusters contain a minimum of 0 and a maximum of 2 kilometers of error. Rural clusters contain a minimum of 0 and a maximum of 5 kilometers of positional error with a further 1% of the rural clusters displaced a minimum of 0 and a maximum of 10 kilometers.

the measured conflict zone.⁴ I include all conflict-year events with over 50 deaths.⁵ I then merge the data on exposure to conflict with the individual household level information on mothers and children at the level of each survey cluster in DHS.

Individual data on maternal capacities, investments and early childhood outcomes come from wave VII of the Demographic and Health Surveys (DHS) in Uganda, Burundi and Chad (the 2016 survey round in Uganda and Burundi, and the 2014 survey round in Chad). DHS is a set of nationally representative household surveys that provide a wide range of data in areas of population, health and nutrition.⁶ Eligible women in the household were asked questions related to the child discipline, maternal stimulation and the early developmental outcomes of eligible children in their household, as well as information about their marriage and fertility decisions, and economic capacities. Women in eligible households were also asked questions related to their experiences with intimate partner violence.

My primary outcomes of interest are the variables on child discipline, maternal stimulation, and the early childhood development index (ECDI).

Child discipline measures include 11 disciplinary measures, such as whether the parent uses corporal or verbal punishment (shaking, yelling, slapping, beating) or re-directive practices, such as giving the child something else to do. These can either be coded as a binary variable (i.e. whether the mother reports using that practice within the last month), or grouped into “constructive” and “abusive” practices. For this analysis, I code “Took away privileges,” “Explained wrong behavior” and “Gave something else to do” as constructive, and I code all other items, which may be considered either verbally or physically abusive (see Table 3.1) as abusive practices. I construct a summary score for constructive (ranging from 0-3) and abusive (ranging from 0 -8) disciplinary practices that a mother reports using over the last month.

⁴The precision with which the geographic location can be pinpointed ranges by conflict-event (exact, within a 25 km radius, at the admin 2 level, at the admin 1 level, the only spatial reference is a linear feature (road or river), and at the country level).

⁵Shape files for Uganda, Burundi and Chad and sub-national regions within each country were obtained at the GADM website: <https://gadm.org/index.html>

⁶For more details on DHS, see <https://dhsprogram.com/What-We-Do/Survey-Types/DHS.cfm>

Maternal stimulation measures include material investments such as number of books or types of toys in the home, the time parents spend engaging with their children in educational activities, and whether the child attends an early childhood education center. For engagement in educational activities, I construct a summary score (ranging from 0 - 6) on the number of activities a mother reports engaging in over the last three days.

Measures of early childhood development outcomes come from the Early Childhood Development Index (ECDI), which includes measures of learning, physical development and socio-emotional development.

The final sample is comprised of 25,047 mother-child dyads of children ages 2 to 5 years of age. Mothers are eligible women in the household between the ages of 15 and 49 with children. In this sample, 86% of mothers have their highest level of education at the primary level or below. 37% of the sample have mothers who were ever exposed to conflict between the ages of 0 and 15, and the average cumulative maternal childhood exposure to conflict is 1.67.

Tables 3.1 and 3.2 provide descriptive statistics on the prevalence of child discipline practices and maternal stimulation by mothers in Uganda, Burundi and Chad at the time of the survey.

Table 3.1 shows the proportion of mothers who reported using a child discipline practice within the last month. The most common constructive practice that mothers reported using is explaining wrong behavior (reported by 78% of mothers). 44% of mothers reported hitting their child with a belt, hairbrush or hard implement in the last month. Beating a child up over and over is the least commonly used practice (reported by 6% of mothers).

Table 3.2 provides descriptives on the proportion of mothers who reported engaging in various educational activities with their children. Only 60% of mothers report engaging in at least one activity with their children. Thirty to 39% of mothers report engaging in activities such as singing songs, taking children outside, or playing or drawing with their children. Less than 20% of mothers report reading to their children, and 44% of mothers report leaving their child unattended.

Table 3.1: Proportion of mothers who reported using each child discipline practice in the last month

<i>Child Discipline Practice</i>	
Took away privileges	0.37
Explained wrong behavior	0.77
Shook him/ her	0.28
Shouted, yelled, screamed	0.71
Gave something else to do	0.35
Spanked, hit or slapped (him/ her) on the bottom with bare hand	0.51
Hit with belt, hairbrush, stick or other hard object	0.27
Called dumb, lazy or another name	0.31
Hit/ slapped on the face, head or ears	0.12
Hit/ slapped on hand, arm or leg	0.31
Beat up, hit over and over as hard as one could	0.04
Obs	24610

Notes: Data comes from DHS Round 7 in Uganda, Burundi and Chad, and shows the proportion of mothers with children ages 2 to 5 that reported engaging in each child disciplinary practice over the last month.

Table 3.2: Proportion of mothers who reported using each maternal stimulation practice in the last month

<i>Maternal Stimulation practice</i>	
Mother reads books or looks at picture books	0.10
Mother told stories	0.37
Mother sings songs	0.38
Mother took outside	0.38
Mother played with	0.24
Mother drew with	0.26
Mother engages in at least one activity	0.67
Mother engages in at least 4 activities	0.17
Number of activities mother engaged in	1.72
Left with inadequate supervision in the last week	0.57
Plays with homemade toys	0.51
Plays with toys from a shop	0.18
Plays with household objects	0.70
Obs	16749

Notes: Data comes from DHS Round 7 in Uganda, Burundi and Chad, and shows the proportion of mothers with children ages 2 to 5 that reported engaging in various educational activities with their children or providing certain material resources.

3.4.2 Cumulative maternal childhood exposure to conflict-year events

Table 3.3 shows summary statistics for exposure to treatment, defined as a mother’s cumulative childhood exposure to conflict-year events from ages 0-8 or ages 0-15.

In the full sample, a mother’s cumulative exposure to conflict-year events between ages 0 and 8 ranges from 0 to 21, and exposure to conflict-year events between ages 0 to 15 ranges from 0 to 26. Out of the three countries, Burundi has the widest range of exposure. Figure 3.3 shows the

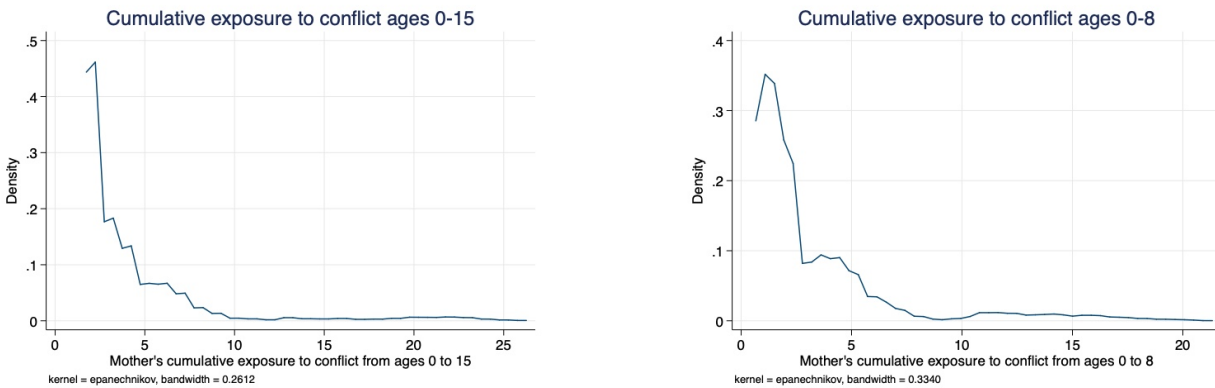
distribution of treatment for mothers that were ever exposed to conflict in their childhood. These figures demonstrate that the largest proportion of mothers who were ever exposed were exposed to between 1 and 5 conflict-year events, and a small portion of the sample had cumulative exposure greater than 5.

Table 3.3: Cumulative maternal childhood exposure to conflict year events

	Mean	SD	Min	Max
<i>Exposure to treatment 0-15</i>				
Full Sample	1.71	3.493	0.00	26.00
Uganda	0.74	1.385	0.00	11.00
Burundi	4.41	5.247	0.00	26.00
Chad	0.49	1.189	0.00	6.00
<i>Exposure to treatment 0-8</i>				
Full Sample	0.39	1.579	0.00	21.00
Uganda	0.11	0.509	0.00	7.00
Burundi	1.15	2.694	0.00	21.00
Chad	0.06	0.385	0.00	4.00

Notes: Data comes from DHS Round 7 in Uganda, Burundi and Chad and the Uppsala Conflict Program, and shows the cumulative childhood exposure of mothers with children ages 2 to 5 to conflict-year events. Treatment is defined as cumulative childhood exposure to conflict-year events, which are comprised of localized battles, or a series of battles, that occurred within a given year.

Figure 3.3: Distribution of cumulative exposure to conflict-year events for mothers who were ever exposed



Notes: Data comes from the Uppsala Conflict Data Program (UCDP/ PRIO) and the Demographic and Health Surveys (DHS). Kernel density plots for cumulative exposure to conflict-year events for the sample of treated mothers.

3.4.3 Empirical Strategy

There are two key challenges to identifying the causal effect of a mother's childhood exposure to armed conflict on her future parenting practices and the early developmental outcomes of her children. First, the likelihood of armed conflict occurring in a given area is endogenous to factors (such as political factors affecting scarcity or regional levels of education) that might also drive changes in a mother's capacity formation and so affect her future parental investments. For example, the likelihood of civil war may be correlated with political decisions that affect resource scarcity in a region, or regional levels of education, which may influence how a mother parents her children in the future. Second, if both mother and child experience the same conflict, it is difficult to disentangle the direct effect of the trauma on the child from the indirect effect through the mother. Isolating maternal trauma that occurred in the mother's childhood can help to overcome this latter challenge.

To identify the causal effect of a mother's childhood exposure to armed conflict on her future maternal capacities and investments, I exploit geographic variation in conflict intensity across sub-national regions and temporal variation in exposure to conflict events across birth cohorts that is plausibly random, using the following difference-in-differences research design ⁷:

$$Y_{ikrt} = \alpha + \beta_a \text{Conflict}_{rka} + \delta_k + \gamma_r + \theta' X_i + \epsilon_{irkt} \quad (3.1)$$

where Y_{ikrt} is an outcome (maternal investments or child learning) for an individual child i whose mother was born in year k and was living in region r at time of the survey t . Conflict_{rka} is a mother's cumulative exposure to conflict in region r when mothers born in year k are of age a . δ_k is a year-of-birth fixed effect which accounts for unobservable shocks affecting individual children with mothers born in the same year. γ_r a district fixed effect, controlling for unobservable factors

⁷This specification builds on La Mattina et al. (2017) and improves upon the definition of treatment by defining geographic treatment within conflict zones of a 15 mile radius from the epicenter of each conflict, rather than within larger subnational regions such as districts or states. This allows comparison between mothers born in the same year who are inside the conflict zone, and mothers who are outside the conflict zone but in the same subnational region.

common to all individual mothers living in the same district. Each conflict-year event started and ended within a year period. To investigate sensitive periods of exposure, I examine exposure in early childhood (0 to 8 years of age), and cumulative exposure during the entire childhood (0 to 15 years of age). X_i is a vector of child characteristics age and gender.

β_a is the difference-in differences estimator under the assumption that trends in maternal investments and child development across birth cohorts in the absence of conflict would have followed the same trends in regions that were affected and were not affected by the conflict.

It should be noted that, because I identify conflict zones by conflicts with over 50 deaths, it is likely that many areas coded as comparison areas have been exposed to smaller conflicts. Hence, these larger conflict-events are occurring against the backdrop of ongoing civil war and smaller conflict-events. As such, the treatment effect I am isolating is the additional affect of cumulative exposure to the acute trauma of close proximity to a large conflict-year event above and beyond chronic trauma associated with the environmental effects of war. This is notable for two reasons. One, the nature of the trauma has ecological implications for affecting the immediate environment and community surrounding the mother. The variation in exposure is at the community level rather than individual level, so not only is the mother affected by these conflict-year events, and these effects may vary by her age of exposure, but it is likely that the ecosystem of supports surrounding the mother in the aftermath of her exposure will also be affected. Two, the specific nature of treatment (i.e. cumulative exposure to conflict-year events) may be one of a complex trauma, in which an individual is exposed to multiple acute traumas in the midst of potential ongoing chronic trauma. The nature of this treatment is distinctly different from acute traumas that happen in isolation (such as witnessing a school shooting or being in a car accident), or chronic trauma such as the ongoing daily stressors of material deprivation.

The biggest threat to identification for this research design is endogenous migration. If differential migration occurs in response to the conflict, some households may move from conflict zones to comparison areas or out of the sample due to factors that may also drive differences in maternal

capacities or investments, and the early developmental outcomes of children. This would bias estimation, and the direction of the bias would depend on the factors driving migration. If resilient and better-resourced households are more likely to migrate, this would likely bias toward finding an effect if these treated households differentially move out of the treatment areas and are coded as “never exposed.” If vulnerability increases probability of migration and these more vulnerable households are under-represented in the treated sample, this would likely bias against finding an effect.

To address this concern, I identify which mothers within the sample never moved, and estimate the effects of maternal childhood exposure to conflict on maternal capacities and investments for this sample of ‘stayers.’ I also check whether those who are coded as treated are systematically different from those who are coded as never-exposed to see if the treated group is systematically more- or less-resourced than the comparison group. This provides information on whether those who are more likely to migrate are systematically different from those who did not migrate, and whether better-resourced households are over- or under-represented in the treated sample, which provides suggestive evidence regarding the direction of any potential bias due to endogenous migration.

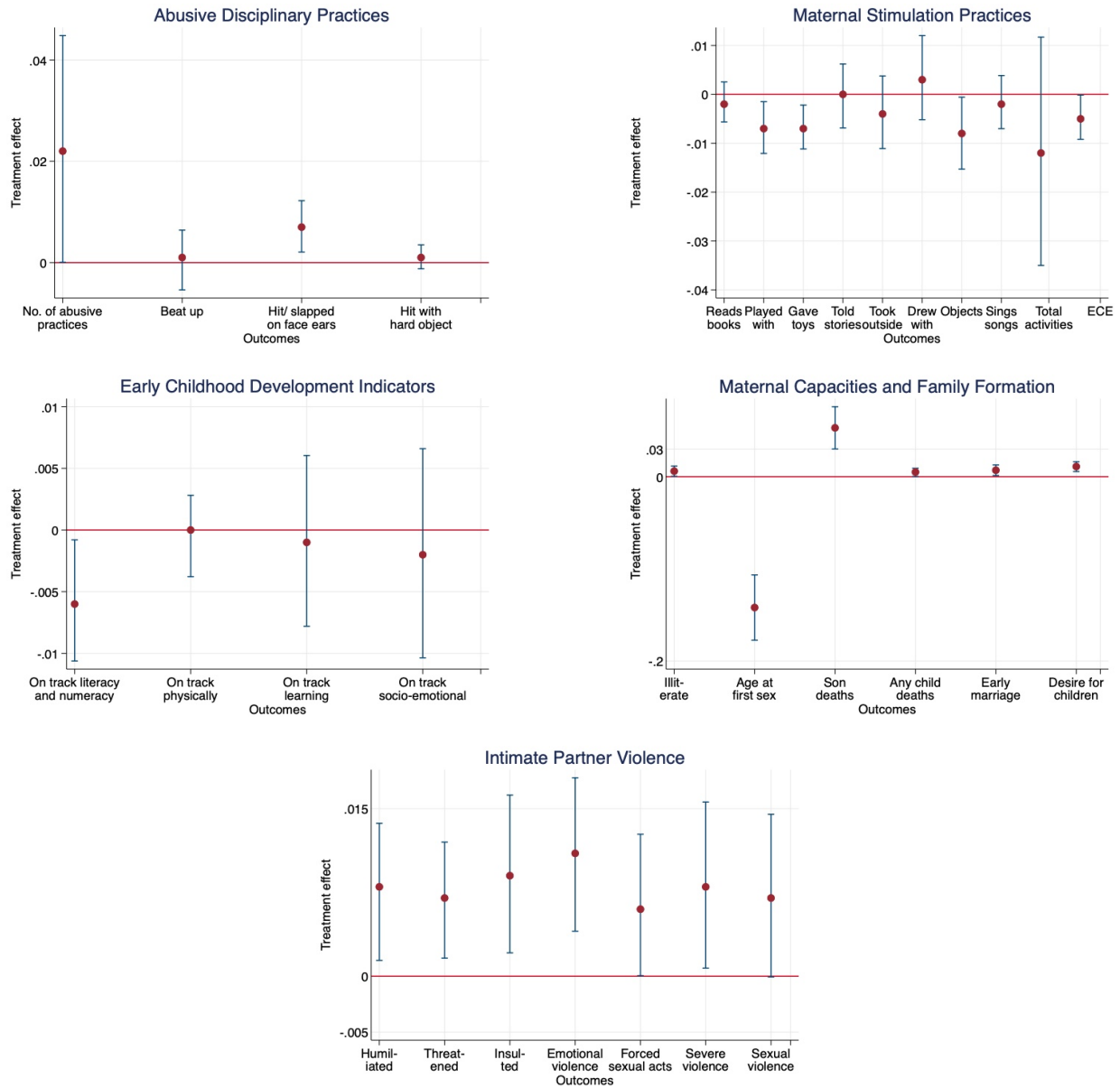
3.5 Results

In this section, I report the estimation results from the main specification (Equation 1) for the effect of a mother’s childhood exposure to armed conflict on three key outcomes of interest: child disciplinary practices, maternal stimulation, and early childhood outcomes as measured by the Early Childhood Development Index (ECDI). I also report estimation results for potential mechanisms for the effect of a mother’s childhood exposure to armed conflict, such as maternal capacities, family formation decisions, and likelihood of re-victimization through intimate partner violence. Estimation results are restricted to children ages 2 to 5 because the measures make most sense developmentally for this age range.

Overall, I find meaningful and statistically significant effects of a mother's childhood exposure to armed conflict on some abusive disciplinary practices, some maternal stimulation practices, and the early literacy and numeracy skills of her children. I also find meaningful and significant effects on some maternal capacities, such as illiteracy, on family formation and fertility decisions, such as early marriage, early sex and the desire for children, and on exposure to emotional and physical intimate partner violence, which may act as potential mechanisms for the effects of a mother's early childhood exposure to armed conflict on her future parenting practices and the early developmental outcomes of her children.

Figure 3.4 shows the treatment effects for a mother's cumulative childhood exposure to armed conflict between ages 0 and 8 with 95% confidence intervals for these key outcomes including, abusive disciplinary practices, maternal stimulation, early childhood development, and potential mechanisms such as maternal family formation decisions and exposure to intimate partner violence.

Figure 3.4: Causal estimates of maternal early childhood exposure to conflict



Notes: Data comes from the Uppsala Conflict Data Program (UCDP/ PRIO) and the Demographic and Health Surveys (DHS). This figure shows the treatment effect and 95% confidence intervals for the effect of a mother's early childhood exposure to conflict (ages 0 to 8) on her parenting practices, the early development of her children, and potential mechanisms such as family formation decisions and exposure to intimate partner violence.

3.5.1 Primary Results

Table 3.4 reports the estimation results for the effect of a mother's childhood exposure to armed conflict on the disciplinary practices she uses on her children. Column 1 reports the effect of a mother's childhood exposure to armed conflict during early childhood (between the ages of 0 and 8 years of age). Results show that cumulative childhood exposure to armed conflict from 0 to 8 years of age increases the number of abusive disciplinary practices reported, and this is significant at the 1% level. This is also consistent for the individual items "Shouted/ yelled/ screamed" and "Hit/slapped on the face, head, ears." Results are also marginally significant for mothers exposed to armed conflict during ages 0 to 15. They are more likely to report more abusive disciplinary practices (significant at the 1% level) and more likely to report hitting/ slapping on the face, head or ears and beating up or hitting over and over again as hard as one could (significant at the 5% level). These results are consistent with descriptive evidence that found that exposure to conflict in Iraq was associated with a higher likelihood of using abusive parenting practices (Malcolm et al., 2017), and casual evidence that maternal depression reduces mother's emotional investments in their children through more nurturing care (Frank and Meara, 2009; Baranov et al., 2020).

Table 3.5 reports the estimation results for the effect of a mother's childhood exposure to armed conflict on maternal stimulation through investments in the educational activities of her children. Table 3.2 on the descriptives for maternal stimulation indicate that only 20 to 40 % of mothers report using each of the individual stimulation practice for their children, and only 60 % of mothers engage in at least one educational activity. Results are negative for every item on the maternal stimulation index, though these results are only statistically significant at at the 5% level for mothers exposed in early childhood for the item "played with," and for mothers exposed any-time in their childhood for the items "read with" and "played with." Mothers exposed to conflict in early childhood are less likely to provide material investments in the home (toys from a shop or household objects), and less likely to send their child to an early childhood education center. There is no evidence that mothers exposed to armed conflict in their childhood are more likely to leave

Table 3.4: Estimated effects of mothers' childhood exposure to conflict on the discipline practices they use with their children

	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
<i>Child discipline</i>		
Number of constructive disciplinary practices reported	0.003 (0.007)	0.003 (0.005)
Number of abusive disciplinary practices reported	0.022 ** (0.011)	0.013 * (0.007)
Took away privileges	0.005 (0.004)	0.002 (0.002)
Explained wrong behavior	-0.001 (0.003)	-0.001 (0.002)
Gave something else to do	-0.001 (0.003)	0.002 (0.002)
Shouted, yelled, screamed	0.007 *** (0.002)	0.002 (0.002)
Hit/ slapped on the face, head or ears	0.007 *** (0.003)	0.003 ** (0.001)
Beat up, hit over and over as hard as one could	0.001 (0.001)	0.002 ** (0.001)
Hit with belt, hairbrush, stick or other hard object	0.001 (0.003)	0.001 (0.002)
Obs	23,790	23,790

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects (6) Additional missing values are as follows (in parentheses): "Took away privileges" (9), "Explained wrong behavior" (3), "Gave something else to do" (21), "Hit/ slapped on the face, head or ears" (8), "Beat up, hit over and over as hard as one could" (14), and "Hit with belt, hairbrush, stick or other hard object" (4).

their children unattended. This is consistent with evidence that household exposure to neighborhood violence reduces maternal stimulation in Colombia (Cuartas et al., 2018), and that reducing postpartum depression through a behavioral intervention increases maternal time and monetary investments in Pakistan (Baranov et al., 2020).

Table 3.5: Estimated effects of mothers' childhood exposure to conflict on the maternal stimulation practices they use with their children

	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
<i>Educational activities</i>		
Mother reads books or looks at picture books	-0.002 (0.002)	-0.003 ** (0.001)
Mother sings songs	-0.004 (0.004)	-0.001 (0.002)
Mother played with	-0.008 ** (0.004)	-0.006 ** (0.003)
Mother drew with	-0.002 (0.003)	-0.001 (0.002)
Mother engages in at least 4 activities	-0.005 (0.003)	-0.002 (0.002)
Number of activities mother engaged in	-0.012 (0.012)	-0.008 (0.009)
Obs	16,753	16,753
<i>Neglect and other educational investments</i>		
Left with inadequate supervision in the last week	-0.005 (0.003)	-0.000 (0.002)
Plays with toys from a shop	-0.005 ** (0.002)	0.001 (0.002)
Plays with household objects	-0.007 *** (0.003)	0.001 (0.002)
Child attends early childhood education center	-0.007 *** (0.002)	-0.003 (0.002)
Obs	24,627	24,627

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects (6) Additional missing values are as follows (in parentheses): "Mother reads books or looks at picture books" (5), "Mother told stories" (7), "Mother sings songs" (22), and "Mother drew with" (23).

Table 3.6 reports the effect of a mother's childhood exposure to armed conflict on the early developmental outcomes of her children. The children of mothers exposed to conflict in their early childhood are marginally less likely to be on track cognitively (e.g. in their basic literacy and numeracy skills), and these results are significant at the 5% level. It should be noted is that since all child outcomes are based on maternal report, there could be a confound that mothers who expe-

rienced trauma are more likely to perceive their children as not on track, i.e. maternal perception could be different, rather than the actual child skill. However, though results for the other items on the Early Childhood Development Index are negative, no other items are statistically significant. Notably, there is no evidence of an effect of a mother's childhood exposure to armed conflict on the socio-emotional development of her children. There are a few possible explanations for why we see a consistent effect on the early literacy and numeracy outcomes of children, but not on their socio-emotional development. To probe further, I look at effects on each individual item of the ECDI (see Appendix Table A.15), and I also look at descriptive statistics by age to see if there is a developmental effect that is not seen on average across all ages (see Appendix Table A.14). In both cases, we see clear and consistent evidence of an effect on children's early literacy and numeracy outcomes, and no consistent evidence of an effect on socio-emotional outcomes. It should be noted that children in the sample are consistently behind in their early learning development - only about 15-20% of children ages 2 through 4 can identify at least 10 letters in the alphabet and read at least 2 simple words. These outcomes improve by age 5, with about 30-40% of children able to recognize letters, words and numbers. We see the strongest effect for children at age 4 (see Appendix Table A.16), which is a developmentally appropriate time for any lack of maternal investment due to past trauma to show up.

For socio-emotional development, there is no clear evidence of an effect by item or by age. Though it may be the case that there is indeed no true effect of the mother's childhood exposure to conflict on the socio-emotional development of her children, one hypothesis is that the specific items that are used to measure whether a child is on track in their socio-emotional development in the ECDI are not sensitive to any developmental effects that may occur in response to the types of differential investments a mother exposed to conflict in her childhood may be displaying. The ECDI asks mothers to report whether their child gets along with other children, kicks, bites or hits other children, and is easily distracted. Most mothers are reporting that their children are able to get along with other children, so this may not be a dimension along which we see differences.

Table 3.6: Estimated effects of mothers' childhood exposure to conflict on the early developmental outcomes of their children

	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
<i>Early Childhood Outcomes</i>		
Child is on track - literacy and numeracy	-0.006 ** (0.003)	-0.003 ** (0.002)
Child is on track - physical	-0.001 (0.002)	0.000 (0.001)
Child is on track - learning	-0.001 (0.004)	-0.002 (0.002)
Child is on track - socio-emotional	-0.002 (0.004)	-0.003 (0.003)
Obs	16,714	16,714

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

While children are kicking or biting other children, this may be normal with siblings at this age. Additionally, being easily distracted can be developmentally appropriate for children in this age range.

It may be the case that we need other measures to detect any differences that may show up in children's development in response to maternal trauma. For example, we can look at other common or more comprehensive tools for measuring a child's early socio-emotional development to identify potential measures that may be useful.⁸ Other behaviors that may be more sensitive to the types of developmental effects we may expect to see may be behaviors such as the child's ability to self-soothe, whether the child displays evidence of separation anxiety, physical aggression towards other children that explicitly excludes siblings (which is not done in the ECDI) or tantrum behavior.

⁸See for example the BITSEA: <https://eprovide.mapi-trust.org/instruments/brief-infant-toddler-social-emotional-assessment>

3.5.2 Potential Mechanisms

Table 3.7 reports the effects of a mother's childhood exposure to armed conflict on her economic capacities and fertility decisions. Mothers exposed to conflict in early childhood are less likely to have functional difficulty in at least one area, and more likely to be illiterate, and these results are significant at the 5% level. They are also marginally more likely to lose a parent if exposed to conflict from 0-15, and are also more likely to be wealthy. Mothers exposed to conflict in early childhood are more likely to cohabit before the age of 18, engage in early sex, lose at least one child, and desire children, with results significant at the 1% level. These results are consistent with evidence that exposure to conflict reduces age at first child (Akresh et al., 2017), suggesting that exposure to conflict is a disruptive influence on family formation choices, which may in turn affect the early childhood home environment and parenting practices within the home.

Table 3.8 reports the effects of a mother's childhood exposure to armed conflict on the likelihood of experiencing emotional, physical and sexual intimate partner violence. All items on the indices are positive for mothers exposed both anytime in her childhood and in her early childhood, though the results are only significant at the 1% level for the emotional violence items for mothers exposed during early childhood. Mothers exposed to armed conflict in their early childhood are more likely to experience emotional violence from their husband, including having husbands that accuse them of unfaithfulness, that threaten them with harm, or that insult or make them feel bad (significant at the 1% level). Mothers exposed to armed conflict in early childhood are also more likely to experience physical and sexual violence, including being physically forced to perform sexual acts they did not want to, and experiencing any form of less severe violence (significant at the 10% level).

Table 3.7: Estimated effects of mothers' childhood exposure to conflict on maternal capacities, family formation and fertility decisions

	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
<i>Maternal Capacity</i>		
Mother is illiterate	0.006 ** (0.003)	0.003 * (0.002)
Mother's highest level of education	-0.003 (0.005)	0.001 (0.003)
Wealth index	0.023 *** (0.009)	0.021 *** (0.007)
At least one parent is dead	0.001 (0.001)	0.002 *** (0.001)
Obs	24,726	24,726
<i>Fertility</i>		
Number of son deaths	0.011 *** (0.003)	0.008 *** (0.003)
Number of daughter deaths	0.007 ** (0.003)	0.004 (0.003)
Mother has lost at least one child	0.005 ** (0.002)	0.002 (0.002)
First cohabitation before age 18	0.007 *** (0.003)	0.001 (0.002)
Teenage motherhood	-0.001 (0.002)	-0.003 (0.002)
Age at first sex	-0.142 *** (0.018)	-0.067 *** (0.017)
Desire for children	0.053 *** (0.012)	0.037 *** (0.009)
Obs	25,047	25,047

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects (6) Additional missing values are as follows (in parentheses): "Mother is illiterate" (321), "Ability to work" (44), "Age at first sex" (1295), "Desire for children" (2780).

These results are consistent with evidence that women who experience childhood trauma are more likely to be re-victimized in their adulthood (Klest, 2012).

Table 3.8: Estimated effects of mothers' childhood exposure to conflict on likelihood of experiencing emotional, physical and sexual intimate partner violence

	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
<i>Emotional Violence</i>		
Ever been humiliated by husband/partner	0.008 *** (0.003)	0.003 * (0.002)
Ever been threatened with harm by husband/partner	0.007 *** (0.003)	0.003 (0.002)
Ever been insulted by husband/ partner	0.009 *** (0.004)	0.003 (0.002)
Ever experienced any emotional violence	0.011 *** (0.004)	0.004 * (0.002)
<i>Physical and Sexual Violence</i>		
Ever been physically forced to perform sexual acts	0.006 ** (0.003)	0.003 ** (0.002)
Experienced less severe violence by husband/ partner	0.008 ** (0.004)	0.003 (0.003)
Experienced any severe violence by husband/ partner	0.002 (0.003)	0.001 (0.002)
Experienced any sexual violence by husband/ partner	0.007 * (0.004)	0.003 (0.002)
Obs	12,747	12,747

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

3.5.3 Cumulative trauma and potential moderators

Given the cumulative nature of trauma and the importance of the environments in which traumatic experiences occur, I also examine whether the effects of a mother's childhood exposure to conflict vary by the mother's history of additional potentially traumatic childhood experiences. I hypothesize a set of potentially traumatic childhood experiences and factors that may act as buffers to early adversity. As additional potentially traumatic childhood experiences, I look at whether the mother reported witnessing her father beat her mother in childhood, and if she was ever forced into a sexual act over her lifetime, and specifically before the age of 18. I also examine whether the mother has lost at least one parent (which could be either in her childhood or at any point over her lifetime up until the time of the survey). As potential buffers against the effects of a mother's early adversity, I examine the presence of grandparents in the home and household wealth.

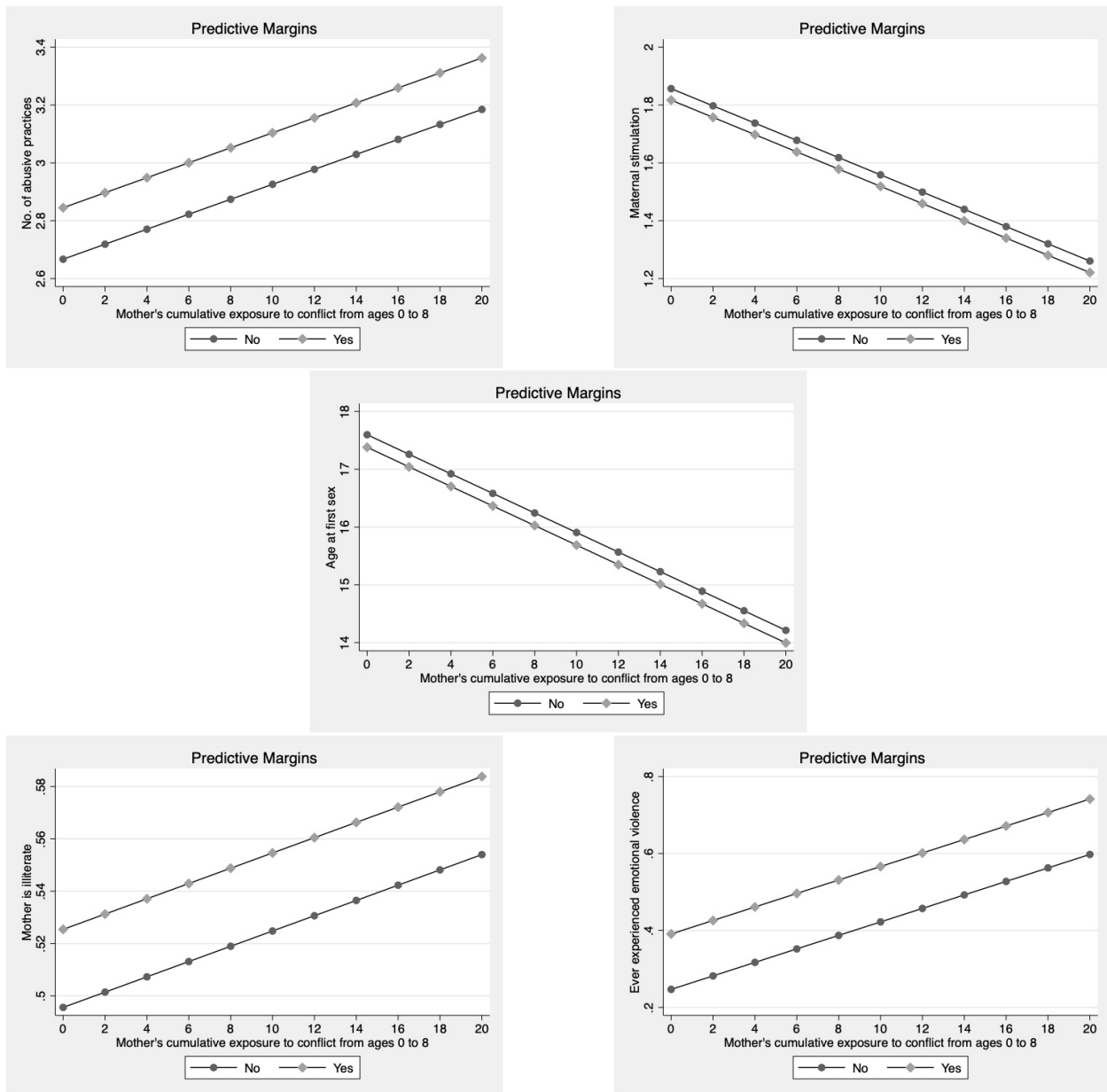
Table 3.9 reports descriptive statistics on the prevalence of each of these factors amongst mothers of children in the sample. These data indicate that only a small proportion of mothers in the sample experienced the death of a parent (approximately 2%), or being forced into a sexual act (about 3-5%), but one-fifth to a third of the sample report having witnessed their father beat their mother in childhood (about 20-42%). Given that the prevalence of witnessing intimate partner violence in the home during childhood is relatively high, and this is a traumatic experience that occurred either prior to or around the same time as the conflict (and therefore temporality issues of treatment affecting the potential moderator is less likely to be a concern), I focus on this as a potential moderator in my analysis. To do so, I interact whether the mother witnessed her father beat her mother in childhood with cumulative childhood exposure to conflict, and graph the relationship between treatment (cumulative childhood exposure to conflict) and a set of key adult outcomes, including the number of abusive disciplinary practices the mother uses, the number of educational activities she engages in with the index child, mother's age at first sex, whether the mother is illiterate, and whether the mother ever experienced emotional violence.

Table 3.9: Descriptives of potential moderators of maternal childhood exposure to armed conflict

	Mean	SD	Min	Max
<i>Death of a parent</i>				
Full Sample	0.02	0.150	0.00	1.00
Uganda	0.02	0.151	0.00	1.00
Burundi	0.02	0.151	0.00	1.00
Chad	0.02	0.149	0.00	1.00
<i>Father beat mother</i>				
Full Sample	0.36	0.481	0.00	1.00
Uganda	0.39	0.487	0.00	1.00
Burundi	0.42	0.494	0.00	1.00
Chad	0.20	0.400	0.00	1.00
<i>Ever forced sexual act</i>				
Full Sample	0.04	0.206	0.00	1.00
Uganda	0.04	0.206	0.00	1.00
Burundi	0.05	0.218	0.00	1.00
Chad	0.03	0.178	0.00	1.00
<i>Presence of grandparents</i>				
Full Sample	0.12	0.328	0.00	1.00
Uganda	0.14	0.349	0.00	1.00
Burundi	0.07	0.254	0.00	1.00
Chad	0.15	0.353	0.00	1.00
<i>Wealth</i>				
Full Sample	2.89	1.395	1.00	5.00
Uganda	2.87	1.418	1.00	5.00
Burundi	2.87	1.397	1.00	5.00
Chad	2.92	1.374	1.00	5.00

Notes: Data comes from the Demographic and Health Surveys (DHS). This table shows descriptive statistics for each of the potentially traumatic factors and buffers amongst mothers of children in the sample.

Figure 3.5: Moderating effects of father beat mother in childhood on a mother's exposure to armed conflict from 0-8



Notes: Data comes from the Uppsala Conflict Data Program (UCDP/ PRIO) and the Demographic and Health Surveys (DHS). This figure shows the moderating effects of whether the mother's father beat her mother in her own childhood on her childhood exposure to armed conflict from ages 0-8 on her parenting practices, age at first sex, whether she is illiterate, and ever experienced emotional violence.

Figure 3.5 demonstrates that outcomes are worse for mothers who witnessed their father beat their mother in childhood, but this experience does not seem to change the mapping of how mothers respond to exposure to conflict. That is, we see a shift in intercept between groups, but no

discernible change in slope, indicating no evidence of an interaction. This is also evident in the regression results, where the coefficient on whether the mother witnessed her father beat her mother in childhood is statistically significant in all cases, but the interaction terms are not.

I also perform the same analysis on the other potential moderators: death of a parent, ever forced into a sexual act, presence of grandparents in the home, and wealth, but since there are temporality issues where exposure to treatment might also influence these factors, making results difficult to interpret, I do not include them in the main analysis. Generally, these results show a similar trend of level effects (i.e shifts in intercept), but no interactive effects (i.e no discernible shifts in slope).

3.5.4 Effects on the characteristics of the father

I also examine the effects of a mother's childhood exposure to armed conflict on the characteristics of the father of the index child, under the hypothesis that childhood exposure to conflict may be a formative experience that affects the way mothers partner with men in the future. To complete this analysis, I match children with their fathers in the survey when possible, and look at education, economic and labor market outcomes, and attitudes toward intimate partner violence. Results are difficult to interpret as I was only able to match about one-third of the sample of children with their father (6,862 children are successfully matched to their fathers). These results are included in the appendix (see Appendix Table A.17). I also check whether a mother's exposure to treatment is correlated with whether the child can be matched with the father in the sample (to examine selection effects into the sample), and I find no evidence that it is.

3.5.5 Additional Specifications and Robustness Checks

In this section, I report the results of robustness checks to address the possibility of endogenous migration in the sample. The key concern is that endogenous migration may be driving non-random errors in assignment to treatment or in who appears in the sample based on unobservable factors. To address these concerns, I identify, for mothers in Uganda and Burundi (where the data is available), the years lived in their current place of residence, including whether they have ever moved. Using these data, I separate the sample into ‘movers’ (those who have ever moved) and ‘stayers’ (those who have never moved). About 25% of this sample have never moved, and an additional 5% have lived in their residence for over 30 years. I first check balance in the full sample and the sample of ‘stayers’ across treated and comparison groups on *living in a rural area*, *wealth* and *age of the mother* to understand whether the sample that are treated are significantly different on any of these factors from the comparison group. I also check balance across ‘movers’ and ‘stayers’ for the treated sample on these same variables and a set of key outcomes to identify how ‘stayers’ may be significantly different from ‘movers’ within the treated sample. Additionally, to identify the extent to which endogenous migration may bias estimates and the possible direction of any bias, I run the analysis, separating ‘stayers’, i.e. mothers who have never moved, from ‘movers,’ to see the effect of maternal childhood exposure to armed conflict for those who have not moved since birth. This may provide insight into which groups (if any) are driving the treatment effects for the full sample, and whether effects are radically different for the ‘stayer’ or rural samples from the main estimates.

Results are included in the Appendix. Tables A1, A2, and A3 show the results of these initial balance checks. Mothers who are coded as treated are slightly more likely to live in an urban area, are slightly wealthier (significant at the 1% level) and slightly older, though these results are not significant. The sample of stayers are slightly more likely to live in a rural area and to be less wealthy (significant at the 1% level), and are slightly older, though these results are not significant. On key outcomes, ‘stayers’ are more likely to stimulate their children, and are more

likely to have lower levels of education and engage in early sex, and have a child at a younger age, but otherwise are not statistically different on key outcomes such as child discipline or exposure to intimate partner violence. Given that ‘movers’ and the treated sample are more likely to live in an urban area, I also run additional analyses to identify effects for mothers living in urban and rural areas to check whether effects are driven by being in an urban area.

Tables A4 through A11 show results on all key outcomes separating the sample by ‘movers’ and ‘stayers’ and by those living in urban and rural areas. Overall, results remain generally consistent across all samples, and results within the ‘stayer’ and rural samples remain consistent in direction, and in many cases level of significance, with the main estimates.

Tables A4 and A5 report the estimates for the effect of a mother’s childhood exposure to armed conflict on her child disciplinary practices for the ‘stayers’ versus ‘movers’, and for urban and rural samples, respectively. The results for ‘stayers’ are generally consistent with the main effects for the full sample: the coefficient on the number of abusive disciplinary practices reported is positive, though not statistically significant, and the coefficient on the items ‘shouted, screamed, yelled’ and ‘hitting/ slapping on the face, head or ears’ remain positive and significant at the 5% level. The one inconsistency is marginal evidence that, for the ‘stayers’ sample, mothers exposed during early childhood are less likely to report beating the child up over and over or hitting with a hairbrush, stick or other hard object (significant at the 10% level). Similarly, for the rural and urban samples, the effect for the number of abusive disciplinary practices is consistently positive across both samples, and the coefficient on the individual items ‘shouted, screamed, yelled’ and ‘hitting/ slapping on the face, head or ears’ for the rural sample remain positive and significant at the 1% and 10% level respectively.

Tables A6 and A7 reports the estimates for the effect of a mother’s childhood exposure to armed conflict on her maternal stimulation practices by the ‘stayers’ versus ‘movers’ and urban versus rural samples respectively. The coefficients on maternal stimulation activities for the ‘stayers’ sample exposed in early childhood remain largely negative; and the individual item of mother

reads books, and the summary score for total number of educational activities are significant (at the 1% and 5% levels respectively). Similarly for the urban and rural samples, effects remain consistently negative and significant across samples, and are strongest for the rural sample of mothers exposed in early childhood.

Tables A8 and A9 report the estimates of the effect of a mother's childhood exposure to armed conflict on the early developmental outcomes of her children for 'movers' versus 'stayers' and urban versus rural samples respectively. Here, the coefficient on whether the child is on track in literacy and numeracy remains consistently negative across samples, though in this case, significant effects appear to be largely driven by the 'movers' and the urban sample, with similar coefficients to the full sample (significant at the 1% level).

Tables A10 and A11 reports the estimates of the effect of a mother's childhood exposure to armed conflict on her maternal capacities and family formation decisions for the 'movers' versus 'stayers' and urban versus rural samples respectively. Here, we see some consistent effects across the 'movers' and 'stayers' subsamples that are consistent with the full sample. Coefficients for number of son deaths or death of a child, early marriage, early sex and desire for children are consistent in direction (positive for death of a son or child, early marriage, and desire for children, and negative for age at first sex), but are only significant for 'stayers' exposed in early childhood for age at first sex and desire for children (at the 1% and 10% levels respectively), and for number of son deaths for 'stayers' exposed anytime during childhood (at the 1% level). Results are significant for the sample of 'movers' exposed during early childhood for number of son deaths (at the 5% level), early marriage, age at first sex and desire for children (significant at the 1% level). Similarly, for the urban and rural samples, the effects for age at first sex and desire for children are consistent and significant across all samples, and other effects (such as death of a son and early marriage) within the rural sample remain consistent with the full sample.

Tables A12 and A13 report the estimates of the effect of a mother's childhood exposure to armed conflict on the likelihood of experiencing emotional, sexual and physical intimate partner

violence for ‘stayers’ and ‘movers’ and the urban and rural samples respectively. Coefficients are consistently positive, but only ‘ever been threatened with harm’ and ‘experienced any less severe violence’ are significant (at the 1%) level for the ‘stayers’ who experienced conflict in early childhood. For the urban and rural samples, results are weaker across samples, but the significant effects on emotional violence are consistently significant in the rural sample.

This analysis helps identify whether those who moved are systematically different from those who did not on any outcomes that would bias estimates. Given that those who move are more likely to live in an urban area and to be wealthier, this suggests more resilient or better-resourced households may be more likely to move, but these households are also slightly more likely to be coded as treated. This analysis also helps identify whether the results we see for the ‘stayers’ and the rural samples (those who we know have not moved since birth and who are more vulnerable in terms of wealth and resources) remain consistent with the main effects, and whether the results for the ‘movers’ sample are primarily due to living in an urban area. There is no strong evidence that this is the case since many results hold for both the ‘stayers’ and the rural sample, though we also still see consistent and significant effects coming from the ‘movers’ and urban samples.

We would be concerned about bias in our main estimates due to endogenous migration if there is evidence to suggest that better-resourced parents are more likely to move out of sample, and that better-resourced parents are more likely to be resilient to the effects of childhood exposure to armed conflict. Though not conclusive, these results suggest that this is not the case. If better-resourced households are misclassified as treated in the sample, there may be some concern of results being attenuated due to measurement error; however, given that results largely hold and are statistically significant for the ‘movers’ who are also likely to be better-resourced households, one interpretation is that the effect of an acute childhood trauma is actually larger for these households who otherwise may have been less likely to engage in abusive disciplinary practices or more likely to engage in maternal stimulation practices. The additional effect of an acute childhood trauma against a backdrop of multiple traumas may be less for the ‘stayers,’ who are less resourced and

potentially a more vulnerable group, and for whom one more trauma may be less impactful on their parenting practices.

These results are consistent with previous literature that examines effects of traumatic experiences and parenting on child outcomes, where, for example, we see no significant relationship between the loss of a parent and poor cognitive and socio-emotional outcomes for orphans who are exposed to multiple traumatic life events (Escueta et al., 2014); however, we do see significant effects of the loss of a parent on children's birth outcomes for pregnant mothers in Norway who are better resourced and less likely to be subject to multiple traumas above and beyond the loss of the parent (Black et al., 2016). This pattern of effects for acute trauma on better resourced populations may also hold for the mother's later life capacities and its intergenerational effects on children. The additional effect of an acute childhood trauma may have larger and more consistently significant effects for mothers who would otherwise be better off in the absence of such an acute trauma.

3.6 Conclusion

Maternal investments are a particularly important input to the quality of the early childhood home environment in traumatic contexts because they have the potential to buffer vulnerable children from the detrimental effects of early adversity. If the trauma a mother experiences in her own childhood disrupts key early investments at important junctures in the child's developmental trajectory, this can act as a double penalty for children who themselves are at risk of experiencing multiple potentially traumatic life events. Understanding the ways in which a mother's own childhood trauma can disrupt her maternal investments, and the consequences for her children's early development, is important for disentangling how multiple traumas can compound the detrimental effects of early adversity and have intergenerational consequences.

In investigating these pathways, this chapter demonstrates four key findings. First, a mother's childhood exposure to armed conflict increases the likelihood of her engaging in abusive child disciplinary practices. One of the key maternal investments in the early years of life is the nurturing

care that a mother provides by giving instructions and guidance, and providing discipline to her children. There are a number of behavioral responses to the trauma of exposure to armed conflict that may manifest as psychosocial symptoms. One potential consequence may be that childhood exposure to trauma may shorten a mother's emotional bandwidth, and may decrease her sensitivity and ability to emotionally invest in her children's needs through nurturing care.

Second, mothers exposed to armed conflict in their childhood are less likely to make time and material investments in the early development of their children. They are less likely to engage in educational activities with their children, by reading books or playing with their children, are less likely to provide their children with material investments such as household objects or toys from a shop, and are less likely to send their children to an early childhood education center. These findings are in line with previous research that community level trauma experienced by a mother can inhibit maternal stimulation (Cuartas et al., 2018).

Third, children of mothers exposed to armed conflict in their childhood are marginally less likely to be on track in their basic literacy and numeracy skills. One hypothesis is that this developmental outcome is potentially mediated by the mother's abusive disciplinary practices and decreases in maternal stimulation, which may decrease the child's cognitive development.

Finally, these effects may be explained by the way in which childhood exposure to conflict influences the mother's economic capacities and family formation decisions. For example, mothers may have an easier time engaging in the educational activities of their children if she is literate or has higher levels of education. A higher likelihood of illiteracy among mothers exposed to conflict in their childhood may explain decreased educational investments in her children. Similarly, a higher likelihood of early marriage, early sex, and losing at least one child may explain a mother's diminished capacities for time, material and emotional investments. Additionally, mothers exposed to conflict in her early childhood are also more likely to experience emotional, physical and sexual intimate partner violence, which may explain a tendency towards more abusive disciplinary practices with her children. This is in line with previous research showing a higher likelihood of

experiencing intimate partner violence for those who experienced childhood trauma, and research linking intimate partner violence in a household with abuse and neglect (Doyle Jr and Aizer, 2018).

Endogenous migration is still a concern for biasing estimates, and if many better resourced households who may have been more likely to engage in positive parenting practices in the absence of treatment move out of sample, there is a chance this may bias estimates upward. Nevertheless, this chapter presents a framework formalizing a way to conceptualize the potential pathways by which childhood adversity may act as a mechanism for the intergenerational transmission of trauma through the mother, an empirical framework for testing these pathways, and empirical results that move us closer to causal identification for the effects of an acute maternal childhood trauma on the early childhood home environment, specifically in the context of armed conflict. This lays the groundwork for future research to continue investigating the pathways by which trauma transmits across generations and plays a role in the intergenerational dynamics of inequality.

Despite these limitations, these results complement previous findings that trauma in the household can reduce maternal stimulation (Cuartas et al., 2018) and increase child abuse and neglect (Doyle Jr and Aizer, 2018). Understanding the potential pathways by which a mother's childhood trauma might influence her future maternal investments can provide insights into potential policy responses that decrease the disruptive effect of maternal trauma on early childhood investments. If economic or psychosocial supports to the mother in the aftermath of her trauma can provide reprieve from the potentially detrimental effects of childhood exposure to armed conflict, child development specialists and mental health providers may identify preventative measures to reduce the long term and intergenerational effects of childhood exposure to conflict.

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Appendix A: Additional Tables

Table A.1: Balance checks between treated and comparison groups - Full Sample

	(1)	(2)	(3)	(4)
	Comparison	Treated	Difference	Obs
Lives in a rural area	0.878 (0.327)	0.718 (0.450)	-0.145*** (0.034)	25,009
Wealth index	2.748 (1.291)	3.153 (1.529)	0.319*** (0.075)	25,009
Age of Mother	29.095 (6.928)	30.261 (6.771)	-0.232 (0.194)	25,009

Notes: This table shows balance checks between the treated (mothers ever exposed to conflict during early childhood) and comparison groups for the full sample on whether the mother lives in a rural area, household wealth, and age of the mother.

Table A.2: Balance checks between treated and comparison groups - Stayers

	(1)	(2)	(3)	(4)
	Comparison	Treated	Difference	Obs
Lives in a rural area	0.899 (0.301)	0.842 (0.365)	0.091** (0.044)	3,607
Wealth index	2.514 (1.303)	2.929 (1.426)	-0.223** (0.094)	3,607
Age of Mother	29.432 (6.823)	30.813 (6.736)	-0.278 (0.466)	3,607

Notes: This table shows balance checks between the treated (mothers ever exposed to conflict during early childhood) and comparison group for the sample of 'stayers' (mothers who have never moved) on whether the mother lives in a rural area, household wealth, and age of the mother.

Table A.3: Balance checks between movers and stayers - Treated Sample

	(1)	(2)	(3)	(4)
	Movers	Stayers	Difference	Obs
Lives in a rural area	0.778 (0.415)	0.842 (0.365)	0.046*** (0.013)	7,440
Wealth index	3.037 (1.516)	2.929 (1.426)	-0.150*** (0.044)	7,440
Age of Mother	30.659 (6.630)	30.813 (6.736)	-0.252 (0.207)	7,440
Number of abusive disciplinary practices reported	2.667 (1.746)	2.718 (1.750)	-0.067 (0.054)	7,168
Total educational activities mother engaged in	1.806 (1.670)	1.883 (1.610)	0.119** (0.058)	5,738
Highest level of education	1.007 (0.084)	1.003 (0.053)	-0.005*** (0.002)	7,440
Mother is illiterate	0.396 (0.489)	0.431 (0.495)	0.020 (0.014)	7,427
Age at first birth	20.370 (3.927)	20.226 (3.359)	-0.633*** (0.111)	7,440
First cohabitation before age of 18	0.338 (0.473)	0.312 (0.463)	0.018 (0.014)	7,246
Age at first sex	18.473 (3.624)	18.642 (3.219)	-0.418*** (0.110)	7,311
Ever experienced any emotional violence	0.283 (0.451)	0.261 (0.439)	0.002 (0.015)	4,734
Experienced any less severe violence	0.366 (0.482)	0.362 (0.481)	-0.001 (0.018)	4,734
Experienced any severe violence	0.132 (0.339)	0.128 (0.334)	0.013 (0.012)	4,734
Experienced any sexual violence	0.242 (0.428)	0.246 (0.431)	-0.016 (0.017)	4,734

Notes: This table shows balance checks between the sample of stayers (mothers who have never moved) and movers for the treated sample (mothers ever exposed to conflict during early childhood) on select outcomes and socio-demographic characteristics of the mother.

Table A.4: Childhood exposure to conflict and maternal child discipline practices - Movers and Stayers

Children 2 to 5	(1)	(2)	(3)	(4)
<i>Child discipline</i>	<i>Mother exposed 0-8: Stayers</i>	<i>Mother exposed 0-8: Movers</i>	<i>Mother exposed 0-15: Stayers</i>	<i>Mother exposed 0-15: Movers</i>
Number of constructive disciplinary practices reported	0.007 (0.014)	-0.005 (0.008)	0.005 (0.010)	-0.002 (0.006)
Number of abusive disciplinary practices reported	0.001 (0.020)	0.010 (0.014)	-0.008 (0.016)	0.010 (0.010)
Took away privileges	0.007 (0.007)	0.002 (0.005)	0.004 (0.005)	0.000 (0.003)
Explained wrong behavior	0.003 (0.006)	-0.004 (0.004)	-0.004 (0.005)	-0.002 (0.002)
Gave something else to do	-0.002 (0.006)	-0.002 (0.004)	0.004 (0.004)	-0.001 (0.003)
Shouted, yelled, screamed	0.011 ** (0.005)	0.004 (0.003)	0.004 (0.004)	0.001 (0.002)
Hit/ slapped on the face, head or ears	0.007 ** (0.004)	0.005 (0.003)	0.003 (0.002)	0.002 (0.002)
Beat up, hit over and over as hard as one could	-0.004 * (0.002)	0.002 (0.002)	-0.002 (0.001)	0.002 ** (0.001)
Hit with belt, hairbrush, stick or other hard object	-0.008 * (0.005)	0.002 (0.004)	-0.003 (0.003)	0.003 (0.002)
Obs	3,470	10,981	3,470	10,981

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.5: Childhood exposure to conflict and maternal child discipline practices - Rural and Urban

	(1)	(2)	(3)	(4)
	<i>Mother exposed 0-8: Rural</i>	<i>Mother exposed 0-8: Urban</i>	<i>Mother exposed 0-15: Rural</i>	<i>Mother exposed 0-15: Urban</i>
Children 2 to 5				
<i>Child discipline</i>				
Number of constructive disciplinary practices reported	0.001 (0.010)	0.003 (0.011)	-0.002 (0.006)	0.008 (0.009)
Number of abusive disciplinary practices reported	0.020 (0.015)	0.012 (0.020)	0.008 (0.008)	0.026 * (0.015)
Took away privileges	0.006 (0.005)	-0.001 (0.006)	0.000 (0.003)	0.005 (0.004)
Explained wrong behavior	-0.003 (0.004)	0.005 (0.005)	-0.002 (0.002)	0.003 (0.004)
Gave something else to do	-0.002 (0.004)	-0.000 (0.004)	0.000 (0.003)	0.000 (0.004)
Shouted, yelled, screamed	0.008 *** (0.003)	0.003 (0.005)	0.002 (0.002)	0.003 (0.004)
Hit/ slapped on the face, head or ears	0.006 * (0.003)	0.006 (0.004)	0.002 (0.002)	0.006 *** (0.002)
Beat up, hit over and over as hard as one could	0.001 (0.002)	0.000 (0.002)	0.002 ** (0.001)	0.002 (0.002)
Hit with belt, hairbrush, stick or other hard object	-0.001 (0.004)	0.007 (0.006)	0.002 (0.002)	0.005 (0.003)
Obs	13,958	2,729	13,958	2,729

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.6: Childhood exposure to conflict and maternal stimulation - Movers and Stayers

Children 2 to 5	(1) <i>Mother exposed 0-8: Stayers</i>	(2) <i>Mother exposed 0-8: Movers</i>	(3) <i>Mother exposed 0-15: Stayers</i>	(4) <i>Mother exposed 0-15: Movers</i>
Mother reads books or looks at picture books	-0.008 *** (0.003)	-0.000 (0.003)	-0.002 (0.003)	-0.004 *** (0.002)
Mother sings songs	-0.004 (0.007)	-0.009 * (0.005)	-0.002 (0.005)	-0.004 (0.003)
Mother played with	-0.008 (0.007)	-0.010 ** (0.004)	-0.006 (0.004)	-0.008 ** (0.003)
Mother drew with	-0.005 (0.005)	-0.007 ** (0.003)	0.002 (0.003)	-0.006 *** (0.002)
Total number of educational activities mother engaged in	-0.043 ** (0.022)	-0.015 (0.015)	-0.013 (0.017)	-0.019 * (0.010)
Left with inadequate supervision in the last week	0.004 (0.005)	-0.003 (0.005)	0.005 (0.004)	-0.001 (0.003)
Plays with toys from a shop	0.002 (0.004)	-0.010 *** (0.003)	0.003 (0.003)	-0.002 (0.002)
Plays with household objects	-0.009 * (0.005)	-0.007 *** (0.003)	-0.002 (0.004)	-0.001 (0.002)
Child attends early childhood education center	-0.004 (0.004)	-0.010 *** (0.003)	-0.001 (0.003)	-0.004 ** (0.002)
Obs	2,773	8,891	2,773	8,891

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.7: Childhood exposure to conflict and maternal stimulation - Rural and Urban

Children 2 to 5	(1)		(2)		(3)		(4)	
	<i>Mother exposed 0-8: Rural</i>		<i>Mother exposed 0-8: Urban</i>		<i>Mother exposed 0-15: Rural</i>		<i>Mother exposed 0-15: Urban</i>	
Mother reads books or looks at picture books	-0.006 *** (0.002)		0.007 (0.006)		-0.003 ** (0.001)		-0.004 (0.004)	
Mother sings songs	-0.004 (0.005)		-0.010 (0.006)		-0.003 (0.003)		-0.005 (0.004)	
Mother played with	-0.007 (0.005)		-0.012 * (0.007)		-0.006 * (0.003)		-0.013 * (0.007)	
Mother drew with	-0.011 *** (0.003)		-0.003 (0.005)		-0.006 *** (0.002)		0.000 (0.005)	
Total number of educational activities mother engaged in	-0.026 * (0.015)		-0.014 (0.023)		-0.018 * (0.010)		-0.022 (0.018)	
Left with inadequate supervision in the last week	-0.010 *** (0.004)		0.010 * (0.005)		-0.002 (0.003)		0.004 (0.004)	
Plays with toys from a shop	-0.004 * (0.003)		-0.011 ** (0.005)		-0.001 (0.002)		-0.001 (0.004)	
Plays with household objects	-0.011 *** (0.004)		0.000 (0.004)		-0.001 (0.002)		0.000 (0.004)	
Child attends early childhood education center	-0.007 *** (0.002)		-0.010 * (0.006)		-0.004 *** (0.002)		0.000 (0.005)	
Obs	9,832		1,842		9,832		1,842	

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.8: Childhood exposure to conflict and early childhood outcomes - Movers and Stayers

Children 2 to 5	(1) <i>Mother exposed 0-8: Stayers</i>	(2) <i>Mother exposed 0-8: Movers</i>	(3) <i>Mother exposed 0-15: Stayers</i>	(4) <i>Mother exposed 0-15: Movers</i>
<i>Early Childhood Outcomes</i>				
Child is on track - literacy and numeracy	-0.001 (0.005)	-0.009 *** (0.003)	0.001 (0.003)	-0.006 *** (0.002)
Child is on track - physical	0.000 (0.003)	0.001 (0.002)	0.001 (0.002)	0.001 (0.001)
Child is on track - learning	0.005 (0.007)	-0.003 (0.004)	-0.002 (0.005)	-0.003 (0.003)
Child is on track - socio-emotional	0.006 (0.007)	-0.005 (0.005)	0.000 (0.005)	-0.004 (0.004)
Obs	2,769	8,882	2,769	8,882

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.9: Childhood exposure to conflict and early childhood outcomes - Rural and Urban

Children 2 to 5	(1)	(2)	(3)	(4)
	<i>Mother exposed 0-8: Rural</i>	<i>Mother exposed 0-8: Urban</i>	<i>Mother exposed 0-15: Rural</i>	<i>Mother exposed 0-15: Urban</i>
<i>Early Childhood Outcomes</i>				
Child is on track - literacy and numeracy	-0.002 (0.003)	-0.015 *** (0.006)	-0.003 (0.002)	-0.008 (0.005)
Child is on track - physical	0.000 (0.002)	0.000 (0.002)	0.001 (0.001)	-0.000 (0.001)
Child is on track - learning	-0.003 (0.004)	0.001 (0.006)	-0.004 (0.003)	0.001 (0.004)
Child is on track - socio-emotional	-0.003 (0.005)	0.003 (0.009)	-0.004 (0.003)	0.001 (0.007)
Obs	9,824	1,837	9,824	1,837

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) ***, $p < 0.01$, **, $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.10: Childhood exposure to conflict, maternal capacities, family formation and fertility decisions - Movers and Stayers

	(1) <i>Mother exposed 0-8: Stayers</i>	(2) <i>Mother exposed 0-8: Movers</i>	(3) <i>Mother exposed 0-15: Stayers</i>	(4) <i>Mother exposed 0-15: Movers</i>
<i>Maternal Capacity</i>				
Age 2 to 5				
Mother is illiterate	0.002 (0.006)	0.007 ** (0.003)	0.001 (0.004)	0.006 *** (0.002)
Mother's highest level of education	0.014 (0.009)	-0.007 (0.006)	0.008 (0.006)	-0.004 (0.004)
At least one parent is dead	0.003 ** (0.001)	0.001 (0.001)	0.002 *** (0.001)	0.001 * (0.001)
Wealth index	0.032 * (0.017)	0.003 (0.009)	0.015 (0.014)	0.005 (0.007)
Obs	3,596	11,197	3,596	11,197
<i>Fertility</i>				
Number of son deaths	0.006 (0.005)	0.007 ** (0.003)	0.010 *** (0.004)	0.006 * (0.003)
Number of daughter deaths	0.005 (0.005)	0.001 (0.003)	0.005 (0.005)	0.000 (0.003)
Mother has lost at least one child	0.005 (0.004)	0.003 (0.003)	0.006 (0.004)	0.002 (0.002)
First cohabitation before age 18	0.008 (0.006)	0.009 *** (0.004)	0.005 (0.004)	0.004 * (0.002)
Teenage motherhood	0.003 (0.005)	0.007 ** (0.003)	0.001 (0.003)	0.002 (0.002)
Age at first sex	-0.119 *** (0.034)	-0.184 *** (0.023)	-0.053 * (0.030)	-0.105 *** (0.019)
Desire for children	0.028 * (0.016)	0.035 *** (0.011)	0.011 (0.014)	0.024 *** (0.009)
Obs	3,543	11,032	3,543	11,032

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.11: Childhood exposure to conflict, maternal capacities, family formation and fertility decisions - Rural and Urban

Age 2 to 5	(1)	(2)	(3)	(4)
	<i>Mother exposed 0-8: Rural</i>	<i>Mother exposed 0-8: Urban</i>	<i>Mother exposed 0-15: Rural</i>	<i>Mother exposed 0-15: Urban</i>
<i>Maternal Capacity</i>				
Mother is illiterate	0.004 (0.004)	0.006 * (0.004)	0.005 * (0.004)	0.002 (0.004)
Mother's highest level of education	0.008 * (0.005)	-0.006 (0.009)	0.001 (0.008)	0.003 (0.008)
At least one parent is dead	0.002 ** (0.001)	-0.001 (0.001)	0.002 ** (0.001)	0.001 (0.001)
Wealth index	0.013 (0.012)	0.003 (0.006)	0.014 (0.005)	-0.005 (0.005)
Obs	12,353	2,447	12,353	2,447
<i>Fertility</i>				
Number of son deaths	0.005 (0.004)	0.006 (0.004)	0.006 * (0.003)	0.004 (0.003)
Number of daughter deaths	0.002 (0.004)	-0.002 (0.005)	0.004 (0.004)	-0.006 (0.004)
Mother has lost at least one child	0.002 (0.003)	0.003 (0.004)	0.004 (0.002)	-0.001 (0.003)
First cohabitation before age 18	0.007 ** (0.004)	0.011 (0.007)	0.004 * (0.002)	0.005 (0.004)
Teenage motherhood	0.005 (0.003)	0.007 (0.004)	0.001 (0.002)	0.002 (0.003)
Age at first sex	-0.148 *** (0.024)	-0.189 *** (0.029)	-0.077 *** (0.019)	-0.110 *** (0.034)
Desire for children	0.032 *** (0.013)	0.048 ** (0.021)	0.018 ** (0.009)	0.043 ** (0.019)
Obs	12,182	2,400	12,182	2,400

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) ***, ***, ***, * p<0.05, ** p<0.01, *** p<0.001 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.12: Childhood exposure to conflict and intimate partner violence - Movers and Stayers

Mothers of Children ages 2 to 5	(1) <i>Mother exposed 0-8: Stayers</i>	(2) <i>Mother exposed 0-8: Movers</i>	(3) <i>Mother exposed 0-15: Stayers</i>	(4) <i>Mother exposed 0-15: Movers</i>
<i>Emotional Violence</i>				
Ever been humiliated by husband/partner	0.005 (0.005)	0.007 * (0.004)	0.005 (0.004)	0.002 (0.002)
Ever been threatened with harm by husband/partner	0.011 *** (0.005)	0.001 (0.003)	0.007 ** (0.003)	-0.000 (0.002)
Ever been insulted by husband/ partner	0.007 (0.006)	0.009 ** (0.004)	0.006 (0.004)	0.003 (0.002)
Ever experienced any emotional violence	0.009 (0.006)	0.008 * (0.004)	0.006 (0.004)	0.002 (0.003)
<i>Physical and Sexual Violence</i>				
Ever been physically forced to perform sexual acts	0.001 (0.004)	0.010 *** (0.004)	0.005 (0.003)	0.003 * (0.002)
Experienced less severe violence by husband/ partner	0.019 *** (0.007)	0.006 (0.005)	0.013 *** (0.004)	0.002 (0.003)
Experienced any severe violence by husband/ partner	0.005 (0.005)	-0.001 (0.003)	0.007 * (0.003)	-0.001 (0.002)
Experienced any sexual violence by husband/ partner	0.001 (0.005)	0.011 ** (0.005)	0.005 (0.004)	0.003 (0.003)
Obs	2,175	6,896	2,175	6,896

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (3) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.13: Childhood exposure to conflict and intimate partner violence - Rural and Urban

	(1) <i>Mother exposed 0-8; Rural</i>	(2) <i>Mother exposed 0-8; Urban</i>	(3) <i>Mother exposed 0-15; Rural</i>	(4) <i>Mother exposed 0-15; Urban</i>
<i>Emotional Violence</i>				
Ever been humiliated by husband/partner	0.008 ** (0.004)	0.006 (0.007)	0.004 (0.002)	0.003 (0.004)
Ever been threatened with harm by husband/partner	0.007 ** (0.003)	0.000 (0.005)	0.002 (0.002)	0.000 (0.003)
Ever been insulted by husband/ partner	0.007 (0.004)	0.009 (0.007)	0.003 (0.003)	0.006 (0.005)
Ever experienced any emotional violence	0.009 ** (0.004)	0.009 (0.007)	0.004 (0.003)	0.006 (0.005)
<i>Physical and Sexual Violence</i>				
Ever been physically forced to perform sexual acts	0.004 (0.003)	0.010 ** (0.005)	0.003 (0.002)	0.003 (0.003)
Experienced less severe violence by husband/ partner	0.007 (0.005)	0.004 (0.007)	0.005 (0.003)	-0.004 (0.004)
Experienced any severe violence by husband/ partner	0.001 (0.004)	0.001 (0.003)	0.000 (0.002)	0.000 (0.002)
Experienced any sexual violence by husband/ partner	0.007 (0.004)	0.008 (0.007)	0.005 * (0.003)	0.001 (0.004)
Obs	8,454	1,513	8,454	1,513

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.14: Descriptives of early developmental outcomes by item and age of the child

<i>Early Developmental Outcomes</i>	(1) Ages 2 to 5	(2) Age 2	(3) Age 3	(4) Age 4	(5) Age 5
Child is on track - literacy and numeracy	0.16	0.19	0.12	0.18	0.30
Child is on track - physical	0.91	0.92	0.90	0.92	0.92
Child is on track - learning	0.71	0.75	0.67	0.73	0.83
Child is on track - socio-emotional	0.64	0.65	0.63	0.63	0.67
Can identify at least 10 letters of the alphabet	0.18	0.19	0.14	0.19	0.31
Can read at least 4 simple, popular words	0.13	0.15	0.10	0.13	0.24
Can recognize all numbers 1 to 10	0.24	0.27	0.18	0.27	0.40
Can pick up a small object with two fingers	0.83	0.84	0.81	0.85	0.85
Sometimes too sick to play	0.57	0.55	0.57	0.57	0.61
Can follow simple directions	0.66	0.69	0.62	0.67	0.78
Can complete tasks independently	0.56	0.60	0.50	0.58	0.68
Gets along well with other children	0.88	0.88	0.87	0.87	0.94
Kicks, bites or hit other children	0.42	0.42	0.42	0.41	0.46
Is easily distracted	0.62	0.60	0.62	0.64	0.57
Obs	16720	2902	6616	6661	541

Notes: This table shows descriptive statistics for the proportion of children in the sample who are able to do each of the activities in the ECDI by age.

Table A.15: Estimated effects of mothers' childhood exposure to conflict on the early developmental outcomes of their children by individual item

	(1)	(2)
	<i>Mother exposed 0-8:</i>	<i>Mother exposed 0-15:</i>
<i>Early Childhood Outcomes</i>		
Can identify at least 10 letters of the alphabet	-0.006 ** (0.003)	-0.005 *** (0.002)
Can read at least 4 simple, popular words	-0.006 *** (0.002)	-0.004 *** (0.001)
Can recognize all numbers 1 to 10	-0.008 *** (0.003)	-0.006 *** (0.002)
Can pick up a small object with two fingers	0.001 (0.003)	0.002 (0.002)
Sometimes too sick to play	0.006 (0.004)	-0.000 (0.003)
Can follow simple directions	-0.001 (0.004)	-0.001 (0.003)
Can complete tasks independently	0.003 (0.004)	-0.001 (0.003)
Gets along well with other children	0.000 (0.002)	0.002 (0.001)
Kicks, bites or hit other children	0.000 (0.004)	0.002 (0.003)
Is easily distracted	0.002 (0.003)	0.003 (0.003)
Obs	16,390	16,390

Notes: (1) Results are estimated using `reghdfe` (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.16: Estimated effects of mothers' childhood exposure to conflict on the early developmental outcomes of their children by individual item for age 4 children

	(1)	(2)
	<i>Mother exposed 0-8:</i>	<i>Mother exposed 0-15:</i>
<i>Early Childhood Outcomes</i>		
Can identify at least 10 letters of the alphabet	-0.011 *** (0.004)	-0.007 *** (0.003)
Can read at least 4 simple, popular words	-0.009 *** (0.003)	-0.006 *** (0.002)
Can recognize all numbers 1 to 10	-0.015 *** (0.005)	-0.011 *** (0.003)
Can pick up a small object with two fingers	0.002 (0.004)	0.002 (0.002)
Sometimes too sick to play	0.010 (0.006)	0.001 (0.004)
Can follow simple directions	-0.008 (0.006)	-0.003 (0.004)
Can complete tasks independently	-0.006 (0.006)	-0.005 (0.004)
Gets along well with other children	-0.001 (0.004)	-0.000 (0.002)
Kicks, bites or hit other children	0.001 (0.006)	0.003 (0.004)
Is easily distracted	-0.003 (0.005)	0.000 (0.004)
Obs	6,549	6549

Notes: (1) Results are estimated using reghdfe (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** p<0.01, ** p<0.05, * p<0.1 (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.

Table A.17: Estimated effects of mothers' childhood exposure to conflict on the characteristics of the father

<i>Father outcomes</i>	(1) <i>Mother exposed 0-8:</i>	(2) <i>Mother exposed 0-15:</i>
Father's highest level of education	0.000 (0.008)	0.002 (0.006)
Father is illiterate	-0.003 (0.005)	-0.005 * (0.003)
Father has worked in the last 12 months	0.000 (0.001)	0.000 (0.001)
Father is currently working	0.003 ** (0.001)	0.002 * (0.001)
Father owns land	-0.008 * (0.004)	-0.004 * (0.003)
Father believes beating is justified: wife goes out without telling husband	-0.003 (0.003)	-0.002 (0.002)
Father believes beating is justified: wife neglects the children	0.001 (0.004)	-0.000 (0.003)
Father believes beating is justified: wife argues with husband	-0.001 (0.002)	-0.002 (0.001)
Father believes beating is justified: wife refuses to have sex with husband	0.001 (0.003)	-0.002 (0.002)
Father believes beating is justified: wife burns food	0.001 (0.003)	-0.001 (0.001)
Obs	6,862	6,862

Notes: This table shows the effects of a mother's childhood exposure to armed conflict on the characteristics of the father of the index child. (1) Results are estimated using *reghdfe* (2) Robust standard errors are clustered at the level of the survey cluster (2) Regressions are weighted using survey weights (4) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$ (5) Controls included are child age, child gender, interactions between child age and child gender and being in a treated cluster and being in a treated birth cohort respectively, district fixed effects and mother year of birth fixed effects.