UNIVERSITÄT BIELEFELD

„Growing up in times of change: Adolescents in post-conflict northern Uganda"

A long-term intergenerational study on the effect of family violence on adolescent psychopathological development and future expectations after war

Zusammenfassung und Schriften der kumulativen Dissertation zur Erlangung des akademischen Grades einer Doktorin der Naturwissenschaften (Dr. rer. nat.)

vorgelegt von

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Ingolstadt, den 30.12. 2020

Hiermit versichere ich, dass ich die vorliegende Synopse selbstständig sowie die für den Kumulus vorliegenden Schriften als Erstautorin verfasst habe. Damit trage ich die inhaltliche und methodische Verantwortung für die ausgeführten Schriften. Die Arbeit hat in der gegenwärtigen oder in einer anderen Fassung keiner anderen Fakultät oder Universität vorgelegen.

Ingolstadt, den 30.12.2020 _____

Laura Bebra Saupe

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List of abbreviations

CBI – Classroom-based intervention

CFA – Confirmatory factor analysis

DFG – Deutsche Forschungsgemeinschaft

FRC – Family resource center

HPA axis – Hypothalamic-pituitary-adrenal axis

IDP – Internally displaced person

LC1 – Local Council 1

LCMM – Linear latent class mixed model

LRA – Lord's Resistance Army

NET – Narrative exposure therapy

NGO – Non-governmental organization

PCA – Principal component analysis

PTSD – Posttraumatic stress disorder

THP – Tetra-hydro progesterone

UNCST – Ugandan National Council for Science and Technology

UPDF – Ugandan People's Defence Force

U.S. – United States of America

WHO – World Health Organization

1 Overview

1.1 Summary of the dissertation

1.1.1 Background

Adolescence as a universal developmental phase is characterized by a variety of hormonal, neurobiological, and social changes and is therefore particularly susceptible to certain risk factors that are related to long-term maladaptive development (Byrne, Davenport, & Mazanov, 2007; Cicchetti & Rogosch, 2002). In particular, family violence and the emergence of mental illnesses such as depression and internalizing symptoms represent fundamental challenges for a successful transition into adulthood (Giedd, Keshavan, & Paus, 2008; Sedlak et al., 2010). Across societies, the development of concrete, optimistic adolescent future expectations and the extent of adolescents' social and community integration have been highlighted as particularly relevant developmental markers for the successful transition into adulthood. (Arnett, 2014; Legge, 2008; Nurmi, 1991).

Beyond the already existing vulnerabilities during this developmental period, adolescents growing up in post-war societies are facing further multi-level challenges, such as social upheaval (societal level), disintegrated communities (community level), high levels of interpersonal and family violence (dyadic level), and an increased risk for psychopathology in both children and their guardians (individual level) (Akmatov, 2011; Betancourt & Khan, 2008; Lansford, Godwin, Tirado, et al., 2015). Despite the overlap between the prevalence of the above-mentioned risk factors in adolescence and in post-conflict societies, so far only a few studies examining the specific challenges of growing up during the transitioning period from armed conflict towards sustained peace exist. However, studying the cross-sectional and longitudinal interactions between these contextually and developmentally relevant multi-level factors and their impact on long-term successful and maladaptive development courses may

provide useful insights for the sustainable allocation of humanitarian aid in resource-poor contexts (Cicchetti & Rogosch, 2002).

1.1.2 Objectives

The present study consists of three manuscripts, which examined the relations between family violence, adolescents' and their guardians' mental health, and adolescent community integration and future expectations within a socio-ecological framework in a sample of northern Ugandan youths both transversely and longitudinally over a period of six years after civil war. The aim of the first manuscript was the adaptation and development of an instrument to assess adolescent future expectations for the Ugandan context. The second manuscript used cross-sectional data to investigate the association between experiences of family violence and adolescent future expectations, as well as the indirect influence of family violence on adolescent future expectations through internalizing symptoms and a lack of social integration. The aim of the third manuscript was the longitudinal analysis of the data to identify different groups of depressive symptom trajectories and their associations with risk factors (guardians' mental health, family violence, war-exposure) and indicators of adaptive or maladaptive development (school absenteeism, externalizing behavior, optimistic future expectations, community integration) at the individual, dyadic and social levels.

1.1.3 Methods

In 2010, 2012, and 2016, epidemiological interviews were conducted with 368 northern Ugandan families severely affected by the civil war between the Lord's Resistance Army and Ugandan government troops. Primary target of the study were second graders (2010), most of whom had grown up in the postwar period. The retrieval rates for participating children were *n* = 327 (88.9%) in 2012 and *n* = 285 (77.5%) in 2016. The data collection consisted of structured interviews conducted by 10 trained local lay counselors under the supervision of international

clinically experienced scientific staff. In order to ensure the adequacy of the investigated concepts and instruments for the Ugandan context, focus groups with local teachers, counselors, and study participants were conducted.

1.1.4 Results

Manuscript 1 resulted in the development of the Ugandan Future Expectations Scale for Adolescents (FESA) with the three subscales *family & children*, *work and education*, and *general future optimism*. The Northern Ugandan sample of adolescents in this study displayed relatively optimistic, but significantly more abstract future expectations when compared to their peers from other nations. The results of Manuscript 2 confirmed the assumed direct negative association between family violence and adolescent future optimism (β = -.20), as well as a partial serial mediation effect of family violence through internalizing symptoms and lower social and community integration on future expectations (β= -.07). The linear latent class mixed models (LCMM) in manuscript 3 revealed four distinct symptom trajectories: a *low symptom* class (70.65%), a *recovery* class (10.87%), and two classes with internalizing symptoms above the cut-off at the last wave of data collection, with a *chronic symptom course* (7.61%) and *late symptom onset* (10.87%). Membership in maladaptive trajectory classes was associated with female gender, maternal psychopathology, and increased family violence during childhood, as well as more pessimistic future expectations, poorer social integration, and increased school absenteeism during adolescence.

1.1.5 Conclusion

The present study contributes to a better understanding of the developmental challenges faced by adolescents in post-conflict societies. The results confirm the high prevalence of family violence and depressive disorders in adolescents in such contexts. The study also describes the complex cross-sectional and longitudinal interactions between parental psychopathology,

family violence, adolescent symptom development, and the fulfillment of important developmental tasks such as the development of future expectations and social and community integration. Building on the results of a field feasibility workshops on psychoeducation for depression and suicidality as well as on a parenting training, a select-care model is proposed. This entails interventions tailored to each family member's individual needs to address adolescent psychopathology and family violence on the individual, dyadic, and community level in rural Ugandan communities is proposed.

1.2 Zusammenfassung

1.2.1 Hintergrund

Adoleszenz als universelle Entwicklungsphase ist durch vielfältige hormonelle, neurobiologische und soziale Veränderungen geprägt und damit besonders anfällig für bestimmte Risikofaktoren, die mit langfristig maladaptiven Entwicklungsprozessen zusammenhängen (Byrne, Davenport, & Mazanov, 2007; Cicchetti & Rogosch, 2002). Insbesondere Erziehungsgewalt und der Ausbruch von psychischen Erkrankungen wie Depression stellen hierbei grundlegende Herausforderungen für eine gelungene Transition ins Erwachsenenalter dar (Giedd, Keshavan, & Paus, 2008; Sedlak et al., 2010). Gesellschaftsübergreifend sind hierbei vor allem die Entwicklung positiver, konkreter Zukunftserwartungen und das Ausmaß an sozialer Integration in die Gemeinschaft von Jugendlichen als relevante Entwicklungsmarker für eine gelungene Transition ins Erwachsenenalter hervorzuheben (Arnett, 2014; Legge, 2008; Nurmi, 1991).

Über die bereits bestehenden Vulnerabilitäten während dieser Entwicklungsperiode hinaus sind Jugendliche, die in Nachkriegsgesellschaften aufwachsen, mit weiteren Herausforderungen auf den unterschiedlichen sozio-ökologischen Ebenen konfrontiert, wie z. B. sozialen Umbrüchen (gesellschaftliche Ebene), desintegrierten Gemeinschaften (Community-Ebene), einem hohen Maß an interpersoneller und familiärer Gewalt (dyadische Ebene) sowie einem erhöhten Risiko für Psychopathologie sowohl bei Kindern und Jugendlichen als auch ihren Erziehungsberechtigten (individuelle Ebene) (Akmatov, 2011; Betancourt & Khan, 2008; Lansford, Godwin, Tirado, et al., 2015). Trotz der Überschneidungen zwischen der erhöhten Prävalenz der oben genannten Risikofaktoren in der Adoleszenz und in Nachkriegsgesellschaften gibt es bisher nur wenige Studien, die die spezifischen Herausforderungen des Aufwachsens in der Übergangsphase zwischen bewaffneten Konflikten zu dauerhaftem Frieden untersuchen. Die Untersuchung der quer- und längsschnittlichen

Interaktionen zwischen diesen kontext- und entwicklungsrelevanten Faktoren auf den unterschiedlichen Ebenen des sozio-ökologischen Modell sowie deren Auswirkungen auf langfristig erfolgreiche und maladaptive Entwicklungsverläufe bietet die Chance, Erkenntnisse für die nachhaltige Allokation humanitärer Hilfsmaßnahmen in ressourcenarmen Kontexten zu liefern (Cicchetti & Rogosch, 2002).

1.2.2 Fragestellung

Die vorliegende Studie besteht aus drei Manuskripten, die mithilfe eines sozio-ökologischen Modellansatzes diese Zusammenhänge zwischen Erziehungsgewalt, psychischer Belastung von Jugendlichen und ihren Eltern sowie sozialer Integration und Zukunftsoptimismus der Jugendlichen in einer Stichprobe von durch Krieg und Nachkriegszeit geprägten nord-ugandischen Jugendlichen quer- und längsschnittlich über einen Zeitraum von sechs Jahren untersuchten. Ziel des ersten Manuskriptes war die Adaptation und Entwicklung eines Instruments zur Erfassung von adoleszenten Zukunftserwartungen für den ugandischen Kontext. Das zweite Manuskript beschäftigte sich mithilfe von querschnittlichen Daten mit dem Zusammenhang zwischen erfahrener Erziehungsgewalt und adoleszenten Zukunftserwartungen sowie dem indirekten Einfluss von Erziehungsgewalt über internalisierende Symptome und einen Mangel an sozialer Integration auf die Zukunftserwartungen der Jugendlichen. Ziel des dritten Manuskript war die längsschnittliche Analyse der Daten zur Identifikation unterschiedlicher depressiver Symptomverlaufsgruppen sowie deren Zusammenhänge mit Risikofaktoren auf individueller, dyadischer und gesellschaftlicher Ebene (psychische Belastung der Jugendlichen und ihrer Eltern, Erziehungsgewalt, Kriegserfahrungen) und Indikatoren für adaptive bzw. maladaptive Entwicklung (Schulabsentismus, externalisierendes Verhalten, Zukunftsoptimismus, soziale Integration).

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1.2.3 Methoden

2010, 2012 und 2016 wurden epidemiologische Interviews mit 368 nordugandischen Familien geführt, die stark vom Bürgerkrieg zwischen der Lord's Resistance Army und den ugandischen Regierungstruppen betroffen waren. Der Hauptfokus lag dabei auf größtenteils in der Nachkriegszeit aufgewachsenen Zweitklässlern (2010). Die Wiederauffindungsrate der Kinder/Jugendlichen lag 2012 bei n = 327 (88.9%) und 2016 bei n = 285 (77.5%).

Die Datenerhebung erfolgte mithilfe strukturierter Interviews durch 10 ausgebildete lokale Laien-Counselors unter Supervision von klinisch erfahrenen wissenschaftlichen MitarbeiterInnen. Um die Adäquatheit der untersuchten Konzepte und verwendeten Instrumente für den ugandischen Kontext sicherzustellen, wurden zudem Fokusgruppen mit lokalen Lehrern, Counselors und Studienteilnehmerinnen durchgeführt.

1.2.4 Ergebnisse

Manuskript 1 resultierte in der Entwicklung der ugandischen *Future Expectations Scale for Adolescents* (FESA) mit den drei Subskalen *family & children*, *work and education* und *general future optimism*. Die nordugandischen Jugendlichen der vorliegenden Stichprobe zeichneten sich zudem durch verhalten optimistische, aber deutlich abstraktere Zukunftserwartungen als ihre gleichaltrigen Peers aus anderen Ländern aus. Die Ergebnisse von Manuskript 2 bestätigten den angenommenen direkten negativen Zusammenhang zwischen Erziehungsgewalt und adoleszentem Zukunftsoptimismus (β = -.20) sowie einen teilweisen seriellen Mediationseffekt von Erziehungsgewalt über internalisierende Symptome und geringere soziale Integration auf Zukunftserwartungen (β = -.07). Die längsschnittliche latente Klassenanalyse in Manuskript 3 ergab das Vorliegen von vier in der Literatur beschriebenen Symptomentwicklungsverläufen: einer Gruppe *ohne klinisch auffällige Symptomatik* (70.65%), einer *Recovery*-Gruppe, deren Symptome zum letzten Zeitpunkt der Datenerhebung remittiert waren (10.87%), sowie zwei

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Gruppen mit klinisch-relevanten depressiven Symptomen zum letzten Zeitpunkt der Datenerhebung, *chronischem Verlauf* (7.61%) und mit einem *verzögerten On-set* (10.87%). Maladaptive Symptomentwicklungsverläufe standen in Zusammenhang mit weiblichem Geschlecht, mütterlicher Psychopathologie und verstärkter familiärer Gewalt in der Kindheit sowie negativeren Zukunftserwartungen, schlechterer sozialer Integration und verstärktem Schulabsentismus in der Jugend.

1.2.5 Ausblick

Die vorliegende Studie liefert einen Beitrag zum besseren Verständnis für die Entwicklungsherausforderungen von Jugendlichen in Nachkriegsgebieten. Die Ergebnisse belegen die hohe Prävalenz von Erziehungsgewalt und depressiven Erkrankungen bei Jugendlichen in solchen Kontexten. Die Studie beschreibt zudem die komplexen quer- und längsschnittlichen Wechselwirkungen zwischen elterlicher Psychopathologie, Erziehungsgewalt, jugendlichen Symptomentwicklungsverläufen und der Erfüllung wichtiger Entwicklungsaufgaben wie der Entwicklung von Zukunftserwartungen und sozialer Integration. Diese Studienergebnisse liefern in Kombination mit den Ergebnissen einer Machbarkeitsstudie zu Psychoedukations- und Erziehungstrainings-Workshops mit betroffenen Familien wichtige Ansatzpunkte für die Entwicklung eines indizierten Versorgungsmodels mit individualisierten Interventionen für kriegsbetroffene Familien im ländlichen Norduganda.

1.3 Publications and submitted manuscripts of the cumulative dissertation

The three manuscripts that compose the core of this dissertation are the result of a long-term research project conducted in Northern Uganda by researchers from Bielefeld University with the support of vivo international Uganda staff. Copies of the manuscripts can be found in Chapter 8.

1.3.1 Adolescent life perspectives after war: Evaluation and Adaptation of the Future Expectation Scale in Uganda (FESA-Uganda)

by Laura Bebra Saupe, Katharina Gößmann, Claudia Catani and Frank Neuner, published in *Frontiers in Psychology*, 10 (July) 2019. The submitted manuscript (hereinafter referred to as 'Manuscript 1') can be found in Chapter 8.1

1.3.2 Understanding the link between child maltreatment and adolescent future expectations in northern Uganda: A serial mediation analysis

by Laura Bebra Saupe, Katharina Gößmann, Claudia Catani and Frank Neuner, published in *Child Abuse and Neglect*, 106 (April) 2020. The submitted manuscript (hereinafter referred to as 'Manuscript 2') can be found in Chapter 8.2.

1.3.3 Psychological adaptation after mass trauma: Depressive symptom trajectories in young adolescents after the civil war in northern Uganda

by Laura Bebra Saupe, Sarah Wilker, Regina Saile, Claudia Catani and Frank Neuner, submitted to *Child development*. The submitted manuscript (hereinafter referred to as 'Manuscript 3") can be found in Chapter 8.3.

1.4 Author's contribution

Due to the longitudinal nature of the project, the design of the overall project resulted from the collaboration between Dr. Regina Saile and appl. Prof. Dr. Claudia Catani (instruments and data collection at wave 1), Dipl.-Psych. Julia Möllerherm (instruments and data collection wave 2) and the author of this thesis (longitudinal study design, instruments, and data collection at wave 3).

The author of this dissertation thesis is the main contributor of the following aspects:

- Design of the integrated individual studies submitted with this thesis
- Operationalization of all theoretical concepts added at wave 3
- Data collection procedures at wave 3: Translation of all instruments added at wave 3; focus groups with lay counselors, rural and urban teachers; training and supervision of lay counselors for the interviews; supervision and monitoring of data acquisition
- Statistical analysis and interpretation of data
- Manuscript drafting as first author
- Development and conduction of a manualized community workshop for adolescents to address suicidality and depressive symptoms, and protective measures against family violence as well as a manualized parenting intervention for mothers in northern Uganda (in collaboration with Dipl.-Psych. Julia Möllerherm).

“After the war, they come to talk to the child soldiers, but then life goes on and they are not interested in us anymore” (adolescent workshop participant, Gulu district, 2016)

2 Introduction to the common context of this research

2.1 Adolescence – a time of change and transformation

Of all developmental phases adolescence most prominently marks a time period defined by rapid and tumultuous transformation and change (Brockmann, 2003). Adolescence has been called the age of identity exploration, instability, self-focus, and feeling "in between" childhood and adulthood but also the age of opportunity (Arnett, 2014), making it especially interesting for life-course research. While the beginning of the transitioning from childhood to adulthood is marked by the biological onset of puberty, the end of adolescence is defined by a social marker, "the achievement of relative self-sufficiency" (Arnett & Taber, 1994; Blakemore & Mills, 2014; Giedd et al., 2008). Adolescence constitutes a developmental time period marked by biological changes alongside the cognitive and psychosocial progression to become a fully functioning adult (Byrne et al., 2007). As a concept, adolescence has been found to be globally relevant. A global review on the meaning of adolescence in 187 societies concluded that independent of nationality or societal context, adolescence was found to be a universal developmental stage with specific developmental tasks and phases (Schlegel & Barry, 1991). The fulfillment of these developmental tasks is the main prerequisite for a successful transition from adolescence to adulthood. One of the main developmental tasks includes reaching increased independence from parents and siblings in the areas of the development of stable social relationships as well as financial and career matters (Brand et al., 2014), which will be further elaborated in section 2.2.1.

However, despite the global existence of the concept of adolescence, cultural and socio-economical differences influence both the length of adolescence as a developmental phase as well as the definition of "successful independence". One prominent example for the context-specific definition of "successful independence" includes the difference in the community's expectation on whether adolescents and young adults need to maintain individual social

relationships in their parental community in collectivistic compared to individualistic societies (Dasen, 2000). Therefore, adolescent developmental tasks should always be examined in reference to the cultural context of the young people involved, as the specific challenges and opportunities may well differ for adolescents in different contexts.

Although all children pass through adolescence to reach adulthood, young people differ in their capabilities to deal with these challenges. The wide range of areas in which changes occur during adolescence also explains why this stage of development is particularly sensitive to a variety of external stressors and vulnerabilities, including biological and psychosocial stressors which have in part far-reaching consequences for their future development and adult life (Cicchetti & Rogosch, 2002). Two of the main risk factors in this developmental stage include exposure to interpersonal violence as well as the emergence of psychopathology, which will be further elaborated on in the following paragraphs.

2.1.1 Interpersonal violence as a prominent risk factor for maladaptive development during adolescence

Experiences of interpersonal violence are very common among adolescents aged between 15 and 29 (Legge, 2008). According to the most recent global status report on violence prevention of the World Health Organization (WHO) from 2014, the highest rates of adolescent and young adult victims of homicides occur in the Americas (28.5 homicides per 100,000 population, followed by the African region with 10.9 homicides per 100,000 population). Violence is the fourth leading cause of death in adolescence and young adulthood worldwide. The report emphasizes that the brunt of non-fatal physical, sexual, and psychological abuse is experienced by women, children, and elderly people and in the case of children and adolescents is often perpetrated by guardians and caregivers. This might be partly because violence against children and adolescents often involves attempts in disciplining and “parenting” to correct unwanted behavior (Krug, Dahleberg, Mercy, Zwi, & Lonzano, 2002; Lansford, Godwin, Tirade Uribe,

et al., 2015; Straus, 2010). Especially women in African countries seem to resort more often to interpersonal violence as a parenting means compared to other nations (Akmatov, 2011).

The WHO defines child abuse as “any act or failure to act that violates the rights of the child, that endangers his or her optimum health, survival or development” (WHO report on the consultation of child abuse, 1999, p. 14). Under this definition, of child abuse may include

- *physical abuse* as nonaccidental physical injuries to a child perpetrated by the parent or caregiver,
- *sexual abuse* as any form of involvement of the child in any sexual activity to provide either sexual gratification or financial benefit to the perpetrator,
- *psychological or emotional maltreatment* as acts other than physical or sexual abuse that cause conduct, cognitive, affective, or other mental health problems as well as
- *neglect* as the lack of age-appropriate care by the parent or caregiver, despite the caregiver’s financial ability to provide for the child's needs.

All forms of maltreatment exept sexual abuse describe harsh forms of parenting practices often inflicted to prohibit unwanted behavior of the child. A global review of meta-analyses found vast differences in the estimated prevalence rates of the different forms of abuse and maltreatment depending on the mode of data collection: Self-report studies found much higher prevalence rates than informant-based studies with 127 per 1,000 compared to 4 per 1,000 for sexual abuse, 226 per 1,000 compared to 3 per 1,000 for physical abuse and 363 per 1,000 compared to 3 per 1,000 for emotional abuse (Stoltenborgh, Bakermans-Kranenburg, Alink, & Ijzendoorn, 2015). Cultural and geographical factors did not seem to affect the prevalence rates of emotional and physical abuse, which might be partly due to procedural effects (Stoltenborgh, 2012; Stoltenborgh, Bakermans-Kranenburg, van IJzendoorn, & Alink, 2013). Despite the popular belief that the risk for maltreatment is highest for infants and very young children, external reports for maltreatment rates spike between 12 and 14 years of age (Sedlak et al.,

2010). The authors found no gender differences in the incidence rates for maltreatment in a US population, except for a threefold risk for girls to experience sexual abuse. They further reported that although all forms of child maltreatment occur across social classes, the risk is further increased in low-income households and households in which the primary guardians had experienced child maltreatment themselves.

As most children and adolescents experience more than one type of maltreatment either sequentially or simultaneously (Belsky, 1993; Claussen & Crittenden, 1991), the term 'family violence' is used as an umbrella term for all forms of child maltreatment and harsh parenting. The complexity of the individual experience of maltreatment further complicates ascertaining the specific effects of singular kinds of maltreatment on adolescent development. This study follows the suggestion of Tricket and colleagues (2011) and focuses on the combined effect of all forms of maltreatment and harsh parenting on adolescent development. Their review of the last two decades of prospective and longitudinal empirical research reports the detrimental effects of family violence in general on different aspects of adolescent development, as summarized below.

2.1.1.1 The effect of family violence on psychobiological outcome

Family violence has a direct effect on the psycho- and neurobiology of stress. Studies show that it influences basal, morning, and diurnal cortisol levels as a function of psychopathology: Maltreated adolescents displaying clinical-level internalizing symptoms showed significantly higher basal cortisol levels and higher cortisol elevation across the day than their non-maltreated depressive and their maltreated non-depressive peers (Cicchetti & Rogosch, 2001). Maltreated adolescents also exhibit an attenuated cortisol response. Experiences of family violence as a form of early life stress are also associated with the early timing of puberty (early menarche) for girls, although the exact mechanisms and the causal direction of this association

are not clear (Trickett et al., 2011). Maltreated children also tend to display more aggressive and impulsive behavior (Kaplan, Pelcowitz, & Labruna, 1999).

Besides, family violence increases the risk of both boys and girls to develop psychiatric disorders, especially depressive disorders: 40% of maltreated children have a lifetime major depressive disorder diagnosis (Kaplan et al., 1999; Moylan et al., 2010). One possible explanation for this increased vulnerability to depression in maltreated adolescents is the observation that family violence affects cognitive and neural functioning in the form of white matter disruptions (Huang, Gundapuneedi, & Rao, 2012). Results from gene-environment interaction studies have shown that the same genes that enhance mental health in a positive and safe family environment induce major risks to develop depressive disorders if the child is exposed to maltreatment and neglect (Heim & Binder, 2012). Family violence has also strong links to adolescent suicidal behavior, irrespective of the age of first exposure (Gomez et al., 2017). The increased risk to experience family violence during adolescence as well as the link between family violence and depression in adolescents is of special interest as this developmental time is especially prone to the development of internalizing symptoms and depression, which will be further discussed under 2.1.2.

2.1.1.2 The effect of family violence on social skills, support networks, and risky behavior

Besides the psychobiological effects, family violence also influences the development of social skills and support networks, one of the main developmental tasks during adolescence. Maltreated children have been found to entertain less healthy peer relationships and friendships, which may be partly due to their increased display of aggression and poor emotion regulation (Kaplan et al., 1999; Trickett et al., 2011). Children and adolescents who experience family violence are also more likely to display adolescent dating violence and adult intimate partner violence (Gómez, 2011). Moreover, family violence has also been found to be a strong predictor of young adults' risky behavior. Studies have shown both cross-sectional as well as longitudinal

links between maltreatment and adolescent delinquency irrespective of other individual and family characteristics. The risk to display delinquent behavior as a young adult seems to be especially high if the maltreatment occurs beyond early childhood or starts in adolescence and is mediated by an adolescent's attachment to their primary guardians (Trickett et al., 2011). In addition, family violence has also been linked to adolescents' and young adults' substance abuse. One possible explanation for this link includes the self-medicating hypothesis: Maltreated children use substances as a coping mechanism for the mental and psychological consequences of their family violence experiences (Schuck & Widom, 2001).

2.1.2 Adolescent onset of psychopathology

Regardless of the occurrence of family violence, mental health problems are very frequent during adolescence (Hoek, Schuurmans, Koot, & Cuijpers, 2009). According to the National Comorbidity Survey Replication Study including over 9,000 US-citizens, the peak age for any mental disorder is 14 years of age (Kessler et al., 2005). This might be partly due to the substantial levels of stress that adolescents experience, which have been consistently linked to the occurrence of psychiatric symptomatology above clinical significance, including depression, suicidal ideation, and the acute risk for suicide (Deardorff, Gonzales, & Sandler, 2003; Diaz, Simantov, & Rickert, 2002; Grant, Compas, Thurm, McMahon, & Gipson, 2004; Johnson et al., 2002; van der Wal, de Wit, & Hirasing, 2003; West & Sweeting, 2003).

The developmental transitioning from adolescence to adulthood and its associated stressors such as finishing high school or entering a career may form hot spots for the onset or offset of psychopathology. During developmental transitions, vulnerabilities and opportunities may change, which may alter the course of adolescent and young adult development (Masten, 2004). Stress has been proven to increase the risk for maladjustment and psychopathology, although adolescents with better coping skills seem to deal better with potential developmental-specific stressors (Grant et al., 2004). These developmental-specific stressors include neural and

neurophysiological changes, a more complex social life as well as interaction effects between these stressors.

2.1.2.1 Neurological changes as precursors for the emergence of psychopathology

Studies have suggested a strong link between aberrations of maturational changes in the brain structure, activity, myelination, neural connectivity, and neurochemistry that occur during the developmental phase of the adolescent brain and the occurrence of psychiatric illnesses (Walker, 2002). The detailed description of the specific effect of maturational changes goes beyond the scope of this work; a comprehensive review can be found in Giedd et al., (2008). Another review on neurophysiological changes that help explain the changing social behavior of adolescents (e.g., individualization of adolescents and separation from parents) supports the hypothesis that the emergence of mood and anxiety disorders in adolescents is linked to changes in brain physiology, especially the occurrence of atypical processes during the gradual maturation of the prefrontal cortex (Nelson, Leibenluft, McClure, & Pine, 2005). These abnormalities occurring during the brain maturation process interact with psychosocial and biological environmental factors (e.g., relationships and pubertal hormone changes) and are closely connected to an increased risk to develop psychopathological disorders (Giedd et al., 2008).

2.1.2.2 Adolescent onset of internalizing symptoms and its consequences

The occurrence of depressive and internalizing symptoms[1] in adolescence is of special interest in the research on risk factors for maladaptive development during this developmental time frame as they belong to "the most well-studied, common, and disabling disorders to emerge during adolescence" (Giedd et al., 2008, p.6). Next to anxiety disorders, depression is the most

[1] According to Achenbach (1991), the term "internalizing symptoms" goes beyond mere depressive symptoms as it includes problems of withdrawal, somatic complaints, and anxiety and depressive symptoms.

prevalent disorder in adolescence with a lifetime prevalence between 17 and 28% by the age of 18 (Kessler et al., 2005; Rohde, 2005; Roza, Hofstra, Van Der Ende, & Verhulst, 2003). Adolescent onset of depression has been linked with more chronic symptom trajectories and a higher chance of relapse, even more so than childhood-onset depression (Andersen & Teicher, 2008; Birmaher & Axelson, 2006; Harrington, Fudge, Rutter, Pickles, & Hill, 1990). Neurologically, this might be partly due to structural abnormalities in the superior temporal gyrus, ventral prefrontal cortex, and amygdala, which affect depressed adolescents' emotional reaction to social stimuli as well as changes in their motivation and reward systems (Blumberg et al., 2003; De Bellis et al., 2002; DelBello, Zimmerman, Mills, Getz, & Strakowski, 2004; Thomas et al., 2001). Amongst others, depressive symptoms in adolescence have been linked to low peer contact and peer rejection, low perceived quality of social support, substance abuse, behavioral problems, and poor parent–child relationships (Barrera & Garrison-Jones, 1992; Garnefski & Diekstra, 1996; Ge, Lorenz, Conger, Elder, & Simons, 1994; Griswold, Aronoff, Kernan, & Kahn, 2008; Herman-Stahl & Petersen, 1999; Silk, Steinberg, & Morris, 2003). The latter association might provide another link between two of the major risk factors for maladaptive development during adolescence, family violence, and internalizing symptoms. Additionally, hormonal changes during adolescence might be the main factor for the gender disparity that only occurs after puberty. Female adolescents are twice as likely to display symptoms of depression than their male counterparts, which might be due to a link between the overexpression of a particular GABA-A receptor which binds tetra-hydro-progesterone (THP), a derivate from progesterone, and increased anxiety in adolescent girls (Angold & Costello, 2006; Hayward & Sanborn, 2002; Patton et al., 1996; Shen et al., 2007).

In sum, there is evidence that adolescents are at an increased risk to experience family violence and develop internalizing symptoms and depression. Moreover, these risk factors seem to be interconnected and carry far-reaching consequences for adolescent developmental outcome,

and might be partly gendered. Section 2.3.1 of this work will elaborate on existing models focusing on the interaction between both risk factors as well as possible protective factors and their effects on successful development.

2.2 „A successful transition“ – developmental outcome measures for adolescents

The successful transition from adolescence into adulthood depends on socially and culturally defined markers, as described above under 2.1. Two concepts that mark a successfully adapted adolescent and that have been found to be relevant across societies are the development of a social support network and the integration into the existing community independent of the adolescent's family of origin (the adolescent is no longer seen as a mere extension of their family of origin but a respected individual member of their community), as well as the development of individual future expectations. Both concepts are further explained in the following subsections.

2.2.1 Social and community support and integration

Adolescence has been described again and again as the time of "social awkwardness" and general insecurity in movies and literature. This popular belief is supported by the above-mentioned neurobiological developmental changes during this developmental phase which result in a heightened sensitivity to sociocultural signals in the environment (Crone & Dahl, 2012; Peper & Dahl, 2013). This sensitivity prepares the adolescent to develop a social network beyond their family of origin's position within the community and is one of the main steps towards adult independence and autonomy (Arnett, 2014). Adolescents who complete this developmental task successfully are able to establish themselves as individual members of their community who partake and are respected in community decisions and discussions, and find themselves in a position to rely on their communities' social support when needed. This can serve as a buffer from the detrimental effects of family violence on the long-term development

and has also been found to protect maltreated children and adolescents from displaying criminal behavior as young adults (Pepin & Banyard, 2006; Schuck & Widom, 2005). Establishing a functional social network is especially important for adolescents who grow up with an increased risk of youth unemployment and its consequential alienation from society: Results from an international study supported the buffering hypothesis of social integration for the inability to find employment and the sense of vulnerability, uselessness, and idleness among young people (Legge, 2008). Moreover, understanding the specific social context and the degree of social acceptance which adolescents experience is pivotal to gain a better grasp of adolescent behavior (Blakemore & Mills, 2014): The exposure to social stressors during adolescence seems to have a more long-lasting and qualitatively different effect on a person's development than at any other developmental time, which might be partly due to the interaction between the responsiveness of the developing hypothalamic-pituitary-adrenal (HPA) axis and the ongoing development of glucocorticoid-sensitive brain regions (for a review, see McCormick, Mathews, Thomas, & Waters, 2010). However, the ability to form a functional social network during adolescence can be heavily influenced by experiences of family violence, which might be caused by social withdrawal and the display of internalizing symptoms in maltreated adolescents (Betancourt, McBain, Newnham, & Brennan, 2014; Hildyard & Wolfe, 2002; Maughan & Cicchetti, 2002).

Social and community support and integration thus provide an excellent developmental marker, as failing this developmental task leaves the adolescent vulnerable in the "no-man's land" between their family of origin and their individual place as an adult in society. Moreover, community integration seems to be linked to two of the major developmental risk factors, i.e. internalizing symptoms and experiences of family violence, that emerge during this developmental phase.

2.2.2 Adolescent future expectations

The increased sensitivity of adolescents to social stressors may also negatively impact their willingness to invest in their future (Blakemore & Mills, 2014). In a sample of 12–16 year old Australian adolescents after stress of social interactions within the family home, at school, and in romantic relationships (explaining 8.5–10% of overall stress variance), stress due to school-leisure conflicts (9% of variance) and financial pressure (8.7% of variance), stress of future uncertainty explained nearly 7% of variance of an overall stress score, exceeding the influence of stress of school attendance and emerging adult responsibilities (Byrne et al., 2007). This is of special interest as the overall stress score was related to depression in both genders (r = .53) (Byrne et al., 2007). Adolescents' perceptions and expectations of their impending adulthood and its related developmental tasks such as school completion, marriage, parenthood, and entering a professional career are covered by the concept of future orientation. Future orientation consists of three facets: developing future interests (motivation), working towards realizing these interests (planning), and evaluating whether and to what extent these future interests and relevant developmental tasks will be successfully realized (expectations) (Nurmi, 1991). Future expectations are empirically different from aspirations or the concept of hopefulness, as the latter tend to overembellish actual expectancies (Constantine, Erickson, Banks, & Timberlake, 1998; Oettingen & Mayer, 2002; Sagy, 2006; Simmons, 1979). Future expectations are also better suited to predict adolescent development and behavior than hopefulness as they are more task-oriented and have an immediate influence on goal setting and planning (Oettingen & Mayer, 2002).

The study of future expectations has gained attention in adolescent developmental studies as positive future expectations help facilitate optimal development whereas negative future expectations provide an explanatory link between childhood stressors and early adulthood risky behavior such as early parenthood and alcohol and other substance abuse (Harris, Duncan, &

Boisjoly, 2002; Sipsma, Ickovics, Lin, & Kershaw, 2012; Stoddard & Pierce, 2015; Sulimani-Aidan, 2017;Thompson & Neilson, 2014; Thompson, Wiley, et al., 2012; Valadez-Meltzer, Silber, Meltzer, & D'Angelo, 2005; Wittchen et al., 2012). An optimistic approach to their future also protects adolescents from a sense of uselessness and idleness, which is connected to higher youth violence (Legge, 2008). Adolescence provides an excellent window to assess future expectations as many of the executive functions needed to plan time and delay gratification for a higher goal improve significantly during this developmental period (Giedd et al., 2008). Moreover, adolescence also marks the beginning of the development of greater intrinsic motivation and goal priorities adapted to the social environment (Crone & Dahl, 2012). The quality of adolescent future expectations seems to be negatively affected by experiences of family violence, harsh parenting, a negative family climate, or low socioeconomic status (Nurmi, 1991; Thompson & Neilson, 2014). This link has been shown to be partly mediated by an increase in hopelessness in maltreated adolescents, as well as their generally lower expectations to influence their future than their non-maltreated peers due to a stronger external locus of control as well as a more negative and pessimistic attribution style (Gibb et al., 2001; Meadows & Kaslow, 2002). One possible explanation for the negative effect of family violence and harsh parenting on adolescent future expectations is the development of internalizing symptoms (Valle & Silovsky, 2002). However, cross-sectional and longitudinal studies with at-risk children and adolescents were able to show a possible buffering effect of social support and community integration for the negative effects of family violence on adolescents' outlook on their impending adulthood and its related achievements (Dubow, Arnett, Smith, & Ippolito, 2001; Hagen, Myers, & Mackintosh, 2005; Kliewer, Murrelle, Mejia, Torres de G., & Angold, 2001; Sulimani-Aidan, 2017). The long-term predictive value for adult risky behavior combined with the link to two major sources of stress during adolescence (family violence and

social integration) make adolescent future expectations a developmental marker worthwhile investigating.

2.3 Post-war years – transforming societies

The study of adolescent development is especially interesting in the context of post-war societies. This time period after an armed conflict is marked by deep-rooted changes, risks and possibilities for the emergence of a peaceful society. The time period of "post-war" or "post-conflict" years[2] begins with either the end of large-scale organized violence, the victory of one conflict party, the petering out of a stalemate or an accord. However, the end of war does not immediately result in a phase of sustained peace (Klem, 2018). This transitioning period between war and peace is marked by drastic changes in public security, political and market shifts, increased population mobility, demographic changes as well as a plethora of daily stressors including poverty, lost infrastructure, heightened levels of violence, and decreased physical and mental health. Despite these challenges, the fundamental and intense societal changes also hold the growing potential for greater economic growth and new-found political stability (Bozzoli, 2010; Bozzoli, Brück, & Muhumuza, 2010a, 2011; Klem, 2018; Peou & Zinn, 2015). Adolescents and children belong to the most vulnerable groups during and after armed conflict (UNICEF, 2014). Currently, a quarter of the child and adolescent population worldwide lives in conflict- or disaster-affected areas (Boyd et al., 2017). The following section provides an overview of the overlap between prominent risk factors for maladaptive adolescent development and the main developmental goals of adolescence with the unique interplay between the opportunities and challenges provided by post-conflict societies.

[2] Klem (2018) argues that the term 'post-conflict society' should not be used when discussing the time period after war as post-war transition occurs after the end of war, not the end of conflict. According to this argument, post-war societies are mainly facing the reconfiguration of conflict, which in itself carries the potential for further conflict. However, the present study adheres to the terminology commonly used by other psychological scholars researching post-war societies and uses the terms post-conflict and post-war interchangeably.

2.3.1 A socio-ecological approach to the increased risk of family violence in post-conflict societies

According to the WHO report on the consultation of child abuse prevention (Geneva, 1999) the social upheaval and instability in the aftermath of war and armed conflict may also contribute to a rise in violence against children and adolescents, mostly perpetrated by their parents or main guardians. The risk for children and adolescents to experience child maltreatment has been repeatedly reported as especially high in war and post-conflict societies with prevalence rates of up to 90% (Akmatov, 2011; Olema, Catani, Ertl, Saile, & Neuner, 2014; Palosaari, Punamäki, Qouta, & Diab, 2013; Panter-Brick, Grimon, & Eggerman, 2014; Saile, Ertl, Neuner, & Catani, 2016; Sangalang, Jager, & Harachi, 2017; Sriskandarajah, Neuner, & Catani, 2015). This is especially worrisome as the daily experience of violent parenting predicts children's and adolescents' mental health as much as the exposure to war trauma (Eggerman & Brick, 2014). The socio-ecological perspective of the Bronfenbrenner model (Bronfenbrenner, 1979) helps to better understand the complex interplay between the multilevel risk and protective factors for family violence and harsh parenting in post-conflict societies and their effect on developmental outcome, as it goes beyond the dyadic relationship between guardians and their offspring (Betancourt & Khan, 2008; Cortes & Buchanan, 2007; Song, Tol, & de Jong, 2014). This approach suggests that individual characteristics of the adolescent may influence resilient developmental outcomes through their interactions with environmental and psychological variables (Punamäki, Qouta, & El-Sarraj, 2001). This includes characteristics of family and peer relationships (individual level), the interaction between the family system and the availability of support and resources in the community (community level) as well as the political and cultural context (societal level). Among the societal factors driving the higher prevalence of maltreatment after war are economic hardship of the family, the disruption of prior community structures and social cohesion, lack of child-protective infrastructure, and a

generally increased acceptance of violent and aggressive behavior which condones harsh parenting methods (Lansford, Godwin, Tirado, et al., 2015; Rubenstein & Stark, 2017; Seddighi, Salmani, Javadi, & Seddighi, 2019; Stark & Landis, 2016). Other risk factors for an increase in family violence include factors that originate on the societal level but manifest in the struggles of individual households by increasing the tension within the family, such as economic hardship, overcrowded living conditions, the loss of family members, changing gender roles and early marriages (Rubenstein & Stark, 2017). One model addressing the link between post-war societal factors and the occurrence of family violence and harsh parenting is the cycle of violence (Catani, 2010). Applied to war contexts, the cycle of violence describes the potential mediating factors between the traumatic experiences of parents and their offspring on the use of harsh parenting methods. It proposes that on the one hand, war trauma increases the risk of psychopathology in parents, which is often related to lower emotion regulation skills and sudden anger outbursts, substance abuse, and emotional isolation. Parents might thus be more prone to use violent parenting techniques. On the other hand, children are also more likely to develop psychopathological symptoms as a consequence of their war experiences, which in turn lead to behavioral and impulse control problems, which increase the risk of experiencing harsh parenting. Both parental and child/adolescent psychopathology are also influenced by the post-war societal and community factors' stability, which can either further destabilize or buffer the direct detrimental effects of war on the family level.

2.3.2 Examining the links between post-conflict family violence and adolescent future expectations within a socio-ecological system model

On the individual level, adolescent future expectations are an interesting yet understudied developmental outcome linked to family violence – especially in the post-conflict context. Adolescents' expectations for their career chances, longevity, and opportunities to successfully raise a family on their own have been argued to play a vital role in the reconstruction of a nation

and their motivation to invest in their future (Baines, Stover, & Wierda, 2006; Fischhoff, Bruine de Bruin, Parker, Millstein, & Halpern-Felsher, 2010). Positive future expectations have also been found to predict resilience in the aftermath of armed conflict (Cortes & Buchanan, 2007). At the same time, the multitude of external post-conflict society stressors dampens adolescent future expectations as they lead to a sense of uncertainty (Aspinwall, 2005; Florêncio, da Costa Silva, & Ramos, 2017; Peou & Zinn, 2015; Stoddard & Pierce, 2015). Furthermore, most technical and vocational training programs for disadvantaged youth in post-conflict contexts are built on the notion of precise future plans of the participating adolescents (Evoh, 2015). Other relevant developmental outcomes linked to experiences of family violence include risky behavior, such as school absenteeism, externalizing behavior and physical altercations, which are both also linked to negative future expectations (Harris et al., 2002; Sipsma et al., 2012; Valadez-Meltzer et al., 2005).

A possible mediator on the individual level between experiences of family violence and negative future expectations is adolescent psychopathology, especially depression (Valle & Silovsky, 2002). Studies have found an increased prevalence of depressive and internalizing symptoms (up to 85%) in children and adolescents who grow up in post-conflict societies, which were not only linked to war exposure but also to the increased risk of experiencing family violence and parental psychopathology and substance abuse (Allwood, Bell-Dolan, & Husain, 2002; Betancourt, McBain, Newnham, & Brennan, 2013, 2015; Betancourt, Yudron, Wheaton, & Smith-Fawzi, 2012; Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman, 2010; Catani, 2018; Freh, 2015; Khamis, 2016; Okello, De Schryver, Musisi, Broekaert, & Derluyn, 2014; Panter-Brick, Grimon, & Eggerman, 2014; Steele et al., 2009; Thabet, Abed, & Vostanis, 2004; Vossoughi, Jackson, Gusler, & Stone, 2018). Additionally, childhood exposure to trauma has been repeatedly linked to adolescent onset of depression (Marshall, 2016).

On the community level, perceived social support and community integration form a protective factor for successful adolescent development, as these can act as a counterweight to the constantly changing and unstable social structures in post-conflict societies with scarce state or institutional support. Community support alleviates the impact and intensity of armed conflict on families and increases the use of cognitive coping strategies and a personal sense of control (Barber, 2001; Farhood, 1999; Kliewer, Lepore, Oskin, & Johnson, 1998; Kliewer et al., 2001). It has also been found to buffer the long-term effects of child maltreatment on adult psychopathology (Evans, Steel, & DiLillo, 2013; Hildyard & Wolfe, 2002; Lynch & Cicchetti, 1998). Cross-sectional and longitudinal studies have shown that adolescents who are well integrated into their community also tend to form more optimistic future expectations (Dubow, Arnett, Smith, & Ippolito, 2001; Hagen, Myers, & Mackintosh, 2005; Kliewer et al., 2001; Sulimani-Aidan, 2017). However, due to their internalizing symptoms and social withdrawal, maltreated children struggle to receive social support and to become well integrated into their communities (Betancourt et al., 2014; Bolger & Patterson, 2003, 2001; Hildyard & Wolfe, 2002; Kim & Cicchetti, 2004; Lansford et al., 2002; Lynch & Cicchetti, 1998; Maughan & Cicchetti, 2002; Olema et al., 2014).

To date, these complex interactions between the multi-level risk and protective factors and their effect on adolescent development in post-conflict societies have not been studied in one comprehensive model. This gap might be partly due to the current underestimation of future expectations as a helpful prerequisite for a successful transitioning into adulthood in post-conflict contexts. The only studies including adolescent future expectations operationalized future expectations either with single items or hopelessness scales, which do not include the multitude of specific areas concerning future life or career opportunities or were only evaluated in western societies (Bozzoli et al., 2010; Carstensen, 1996; Seginer, 2000; 2008; Sipsma et al., 2012). A scale addressing these shortcomings is the Future Expectations Scale for Adolescents

(*FESA*) developed by McWhirter & McWhirter (2008). The FESA includes the different domains of adolescent future expectations, such as *work and education*, *children's future*, *marriage and family*, *health*, and *church and community*. The multi-faceted instrument was originally applied in a Chilean sample and was later adapted to the cultural context of Brazilian adolescents with varying socioeconomic status. Given the necessary adaptations from the Chilean to the Brazilian FESA, the authors emphasize the need for an additional cultural adaptation when applying the FESA item pool in other contexts. A more comprehensive description of the original and the adapted FESA can be found in manuscript 1.

2.3.3 Advantages of a socio-ecological approach in longitudinal research for humanitarian aid allocation

The main advantage of applying the socio-ecological framework to the complex phenomenon of post-war adolescence is the potential of these models to inform the allocation of scarce humanitarian aid resources for individual, family, and community-based preventive and interventive measures after war. However, despite the well-documented multi-level interaction between risk factors, the last decade in humanitarian disaster relief has been informed by the discussion whether resources should be primarily applied to provide psychotherapeutic services for the so-called "immediate" mental health consequences of armed conflict or to the establishment of social services to support community structures and alleviate the so-called "daily stressors" of the post-war time, e.g., poverty, lack of infrastructure, increased family and intimate partner violence, and lack of community cohesion (Miller & Jordans, 2016; Miller & Rasmussen, 2010b, 2010a; Neuner, 2010). Proponents of the latter approach argue that addressing daily stressors on the community and family level prior to individual mental health needs reaches more people and provides more sustainable relief (Miller & Jordans, 2016). However, this approach does not provide any insights into how to distinguish the consequences of war trauma from the consequences caused by traumatic experiences of family violence (daily

stressor), as both may result in psychopathology. It also does not explain as to why such a differentiation would be helpful when estimating the need for specific interventions after armed conflict. Most of the "direct" mental health consequences of war, such as parental, child and adolescent psychopathology affect the occurrence of daily stressors in post-conflict life. Besides, poor mental health also lowers the ability to take advantage of available coping resources, e.g., the diminished capacity of traumatized parents and guardians to abstain from harsh parenting methods when faced with traumatized offspring that display behavioral problems, or the barriers caused by mental health problems to access social services and community resources, and to form future perspectives. The proposed dichotomy seems thus not adequate to address the challenges faced by families in post-conflict societies. In order to allocate humanitarian aid to reach its full potential and address the most pressing risk and protective factors, longitudinal studies analyzing the multi-level and multifaceted individual developmental trajectories in post-conflict societies are needed.

2.3.4 Developmental psychopathology as a longitudinal approach to adolescent development in post-conflict societies

Despite the high prevalence of internalizing and depressive symptoms in post-conflict societies, to date, most studies on the complex interaction between family violence and adolescent development mainly focus on posttraumatic stress disorder (PTSD) as an outcome measure (Clarke et al., 2016; Punamäki, Palosaari, Diab, Peltonen, & Qouta, 2015). Additionally, most of the studies used cross-sectional data, which does not allow to study long-term relations between stressors, protective factors, and developmental outcome (Seddighi et al., 2019). Existing longitudinal studies have confirmed the link between early war trauma, parental psychopathology, family violence, and the course of depressive symptoms (Betancourt, McBain, Newnham, & Brennan, 2014; Catani, 2018; Panter-Brick et al., 2014) but have treated war-affected adolescents as a homogenous group with a unified symptom trajectory. This

approach may fall short of identifying subgroups with differing symptom trajectories within the sample and may underestimate their specific vulnerabilities and needs. Furthermore, to assume a unified symptom trajectory may also bear the risk of overseeing information on the differences in the underlying adaptation process, which might be helpful to inform specific interventions tailored to these subgroups (Wang, Chan, & Ho, 2013).

Developmental psychopathology offers an approach to study these subgroups by assuming that developmental pathways vary depending on the dynamic interplay between risk and protective processes, as these influence the level of ability with which the adolescent drives to complete their developmental tasks. It aims to understand psychopathology and its relation to normative adaptation through the concepts of *multifinality*, meaning that developmental pathways may differ in their outcome despite a similar starting point (e.g., resilience or psychopathology after war trauma) and *equifinality*, meaning a common outcome (e.g., psychopathology in adolescence) may have developed from different starting points in earlier childhood (e.g., caused by war trauma or experiences of family violence) (Cicchetti & Rogosch, 2002). These concepts make it necessary to study long-term developmental trajectories and focus on individual differences in these trajectories to identify specific at-risk groups as well as potential protective factors for resilient trajectory courses. The approach offers the opportunity to debunk the "developmental uniformity myth" (Kendall, Lerner, & Craighead, 1984, p.74), which assumes that mental disorders manifest themselves regardless of age and that interventions do not have to take developmental phases with their specific receptibilities for certain stressors and protective factors into account. Research to date assumes four distinct psychopathological symptom trajectories to account for the variance in symptom development after organized armed conflict (Bonanno & Mancini, 2008; Kronenberg et al., 2010; Masten & Narayan, 2016):

- a resilient trajectory with no symptoms above critical levels across all time points;

- a recovery trajectory, in which trauma-exposed individuals display critical symptoms initially, but adapt over time;
- a chronic symptom trajectory with high symptom levels across all time points;
- and a delayed dysfunction trajectory in which symptoms occur sometime after the traumatic event, potentially exacerbated by post-conflict environmental stressors such as lack of social support and cohesion or community and family violence.

Existing longitudinal studies on internalizing symptom trajectories after organized armed conflict support the suggested four distinct trajectory classes and their relations with war- and post-war-specific risk and protective factors on the multiple levels of the socio-ecological model (Betancourt et al., 2013; Garber, Keiley, & Martin, 2002; Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011; Kennedy, Bybee, Sullivan, & Greeson, 2010; Leve, Kim, & Pears, 2005; Masten & Narayan, 2016). Across these studies, links between symptom improvement and younger age, less violence exposure, and greater community support and integration were found. Chronic symptoms and deteriorating symptoms were associated with higher exposure to family violence, the stigma associated with being a child soldier, maternal psychopathology, risky behavior, and female gender. However, some of the studies included heterogeneous age groups at wave 1 of their data collection, making it harder to link a specific developmental period with its associated risks and vulnerabilities to the specific psychopathological trajectory. Most of the studies also did not establish links between the distinct psychopathological developmental trajectories and relevant adolescent developmental outcomes. To date, there are no trajectory studies including adolescent future expectations as a developmental outcome.

Identifying differences in symptom trajectories and their links to specific risk and protective factors could prove immensely helpful to allocate adequate humanitarian aid resources to the right sub-group of recipients and overcome the dichotomy of the trauma-focused versus the psychosocial approach in the wake of organized violent conflict.

2.4 Northern Uganda – a transforming post-conflict society

Northern Uganda is a prime example of a transforming post-conflict society. The Acholi region suffered from armed conflict from 1986 to 2006 due to a civil war between the Ugandan government troops (Ugandan People's Defence Force (UPDF)) and the Lord's Resistance Army (LRA) under the command of Joseph Kony. The LRA consisted mainly of guerilla fighters from the northern Langi and Acholi tribes. The conflict between the UPDF and the LRA was fueled by ethnic and political struggles within Uganda as well as between the Ugandan and Sudanese governments. Within Uganda, the armed conflict further consolidated the dominance of the southern Ugandan tribes over the northern region. During the war, especially the Acholi civil population fell victim to numerous raids and abductions: An estimated 38,0000 children were abducted to serve as child soldiers, sex slaves, or porters within the LRA (Pham et al., 2007). This led to the forced internment of over 1.8 million northern Ugandans in camps for internally displaced persons (IDP) from 1996 onwards. In 2003, nearly 90% of the civil population in the Acholi region lived in IDP camps (Bjorkhaug, Morten, Hatloy, & Jennings, 2007; International Crisis Group, 2006). Life in the camps was shaped by high levels of posttraumatic stress, depression, and alcohol-related symptoms in the IDP population (Ertl, Pfeiffer, Schauer-Kaiser, Elbert, & Neuner, 2014; Roberts et al., 2011; Roberts, Ocaka, Browne, Oyok, & Sondorp, 2008) as well as by the erosion of familial and social relationships, and high levels of intimate partner violence (Hovil & Moorhead, 2002; Uganda Bureau of Statistics & Macro International, 2007). An estimated 27% of children had lost at least one parent due to the war (Uganda Bureau of Statistics & Macro International, 2007). Since the beginning of peace talks of Juba, now South Sudan, in 2006, the civilian population slowly started to return to their villages of origin. However, as the peace treaty had not been signed by LRA leader Joseph Kony by the end of December 2008, the Ugandan government launched Operation *'Lightning Thunder'* which resulted in another military

intervention in the northern regions. This ultimately led to the relocation of the LRA from Garamba in the neighboring Democratic Republic of the Congo to the Central African Republic. Northern Uganda can thus be seen as a typical example of a post-conflict society, where the absence of active warfare did not immediately end in sustained peace.

2.4.1 Life in the post-war years in rural northern Uganda

One consequence of the war, which has had a major impact on the post-war period, is the destruction of traditional community structures especially in rural northern Uganda. The Acholi culture, which is mainly characterized by a collectivist approach, is based on a strong sense of community, which is expressed, among other things, in the shared responsibility for agriculture, child-rearing, and mutual social networks (Esuruku, 2013; Lundgren, 2014; Vorhölter, 2014). Since the return to their villages of origin, however, life of many families has been marked by land struggles and disputes, a stronger focus on the nuclear family as well as violence and social disorder within the community (El-Bushra & Sahl, 2005; Hovil & Moorhead, 2002). This might be partly due to the great exposure to war trauma and the consequential high number of psychopathological symptoms within the population (Ertl et al., 2014; Hovil & Moorhead, 2002; Roberts et al., 2008; Uganda Bureau of Statistics & Macro International, 2007). Alcohol abuse is especially prevalent in the adult population and is linked to high numbers of incidences of intimate partner violence and harsh parenting (Ertl, Saile, Neuner, & Catani, 2016; Saile, Ertl, Neuner, & Catani, 2014). According to the *Ugandan Violence Against Children Survey* (Ministry of Gender, Labor and Social Development, 2018), 75% of Ugandan children and youth report a lifetime experience of at least one kind of child maltreatment, with especially high rates of emotional violence against girls in the northern regions of the country.

2.4.2 Northern Uganda – a "youthful population"

Choosing northern Uganda to study the development of adolescents in post-conflict societies is of special interest as adolescents make up the largest portion of the population. Currently, 69% of the Ugandan population are under the age of 25, making Uganda the nation with the youngest age structure in the world as measured by Population Action International[3] (Central Intelligence Agency, 2018). With more than a quarter of the population between the age of 16 and 25, this phenomenon may be described as a "youthful population". The term "youthful population" refers to a population's age structure where the largest part is below the age of 25, resulting in an unfavorable ratio of working-age population to dependents. Additionally, Uganda has one of the highest population growth rates worldwide. According to United Nations estimates, Uganda is one of ten countries to collectively account for more than half the world's projected population increase within the period from 2017–2050 (African Institute for Development, 2017). Due to this age structure, northern Ugandan society faces greater challenges in improving the economic success and the welfare of its people. The country's natural resources already depleted by war and conflict are further strained by the high rate of population growth. This is further driving up the poverty rate and increasing the risk of food shortages, as arable land is divided between a growing number of children. In the early 2000s, nearly 38% of the Ugandan population lived below the poverty line, with an increase of 28 points over the course of five years (Daumerie & Madsen, 2010).

Additionally, young population age has been linked to a heightened risk of activism, revolution, political extremism, and warfare, especially when paired with economic difficulties (Weber, 2013). In the northern Ugandan context this is further increased by the fact that despite the

[3] The Population Action International's measure assesses a country's progress along with the demographic transition, determined by the share of its population younger than age 30 and the share older than age 60. For more details see Leahy, Engelman, Vogel, Haddock, & Preston, (2007).

comparably high access rate to education, the national educational system is far removed from the contemporary labor market, which mainly consists of subsistence agriculture as a means of living, resulting in an increased risk of youth under- and unemployment (Esuruku, 2013). Besides, the central government's political decision to under-prioritize the development and re-building of the northern regions of the country lead to a gross lack of necessary infrastructure and resources to alleviate these issues. This may lead northern Ugandan adolescents to develop a sense of hopelessness and disenfranchisement towards political leaders. These negative future expectations make it less likely for them to positively invest in their communities, and enhance the risk of political unrest and renewed civil conflict (Daumerie & Madsen, 2010; Hart, Atkins, Markey, & Youniss, 2004; Urdal, 2004).

However, within a supportive, future-oriented community, adolescents also have the potential to become a major asset in Uganda's drive to forward positive development in their communities. It has been found that across all continents community child saturation was a predictor for higher levels of voluntary community service, but only if adolescents felt a sense of belonging and integration within their community. Due to the lower number of adults to pass on community rules, local knowledge, and civic participation rituals, adolescents are limited in their opportunities to gain knowledge about the aspects of their particular community (Hart et al., 2004; Inayatullah, 2016). Northern Ugandan youths also struggle with balancing between traditional Acholi culture, which is no longer passed on by community elders to the same extent as before the war, and growing westernization and individualization due to the increased availability of internet technology and mobility in the last decades (Cole, 2011; Vorhölter, 2014). This ambivalence increases the importance for northern Ugandan adolescents to get integrated into the existing community structures by the remaining adults to combat feelings of disenfranchisement and to feel encouraged to participate in community matters (Hart et al., 2004; Inayatullah, 2016).

As this generation of young Ugandans will most likely be the main driving force to shape the future of their nation, it appears helpful to further investigate the long-term effect of growing up in the post-conflict years with their heightened levels of disrupted community structures, family violence, and parental and adolescent psychopathology on adolescent future expectations in this region.

3 Objectives

The present research project therefore focuses on the long-term effects of war and its accompanying stressors on adolescent development and psychopathology in post-conflict northern Uganda. The aim of the entire research project is to present the specific challenges faced by young people and their families in post-war societies both transversely and longitudinally (2010–2016), thus contributing to the scientific foundation of humanitarian aid. Following a cross-sectional approach, this study deals with the current development of future expectations of war-affected youths in northern Uganda ten years after the official end of the civil war. Future expectations of Acholi adolescents are examined in their connection with war and post-war multilevel socio-ecological stressors of experienced family violence, community support and integration, and adolescent psychopathology in the form of internalizing symptoms. Additionally, a longitudinal approach informed by developmental psychopathology is applied to depict the multitude of internalizing symptom trajectories from childhood into adolescence with the goal of identifying the incremental impact of war and post-war related risk and protective factors on different socio-ecological levels for a successful transitioning into adulthood. For a graphical description of the combined studies objectives, please refer to Figure 1. The following subsections describe the specific objectives of each manuscript included in this body of work.

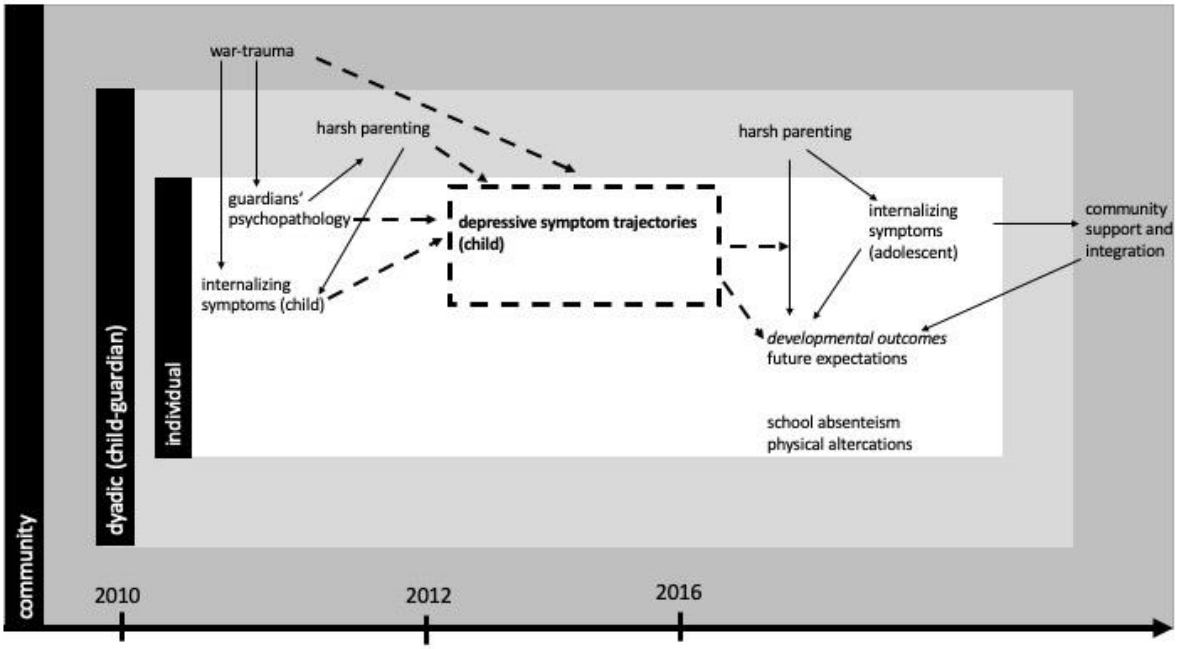

Figure 1. Graphical depiction of the present study's objectives within the ecological framework. Solid lines represent cross-sectional associations as found by Saile and colleagues at wave 1 (2010) and hypothesized cross-sectional associations at wave 3 (2016). Dashed lines represent hypothesized longitudinal associations between internalizing symptom trajectories and multi-level risk-factors measured at wave 1 and developmental outcomes at wave 3.

3.1 Manuscript 1: The development of a future expectations scale for northern Uganda

Given the lack of appropriate instruments to assess adolescent future expectations in northern Uganda, manuscript 1 focused on the adaptation of the *Future Expectations Scale for Adolescents* (*FESA*) by McWhirter & McWhirter (2008) to the Ugandan context. It explored how the post-conflict setting of northern Uganda influences the concepts of adolescence and future expectations, as well as the questionnaire's item and factor structure compared to both the Chilean original of the FESA and the Brazilian adaptation by Dutra-Thomé and colleagues (2015).

3.2 Manuscript 2: Investigating risk and protective factors that link experiences of harsh parenting and adolescent future expectations

By applying a socio-ecological perspective, manuscript 2 aimed to explore the direct link between harsh parenting and negative future expectations in northern Ugandan adolescents, depicted in figure 2, path c. It also investigated the mediating effect of internalizing symptoms and perceived community support and integration on the link between experiences of harsh parenting and adolescent future expectations. We proposed both a singular mediation effect from harsh parenting through internalizing symptoms on adolescent future expectations (figure 3, path a_1b_1) as well as a serial mediation effect through internalizing symptoms and community support and integration (figure 3, path $a_1d_{21}b_2$).

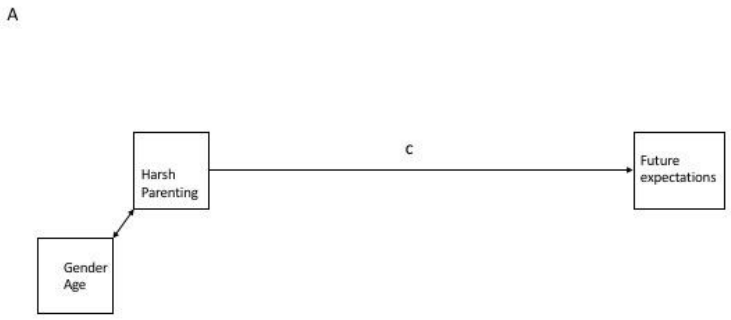

Figure 2. Direct effect of harsh parenting on adolescent future expectations, controlling for gender and age.

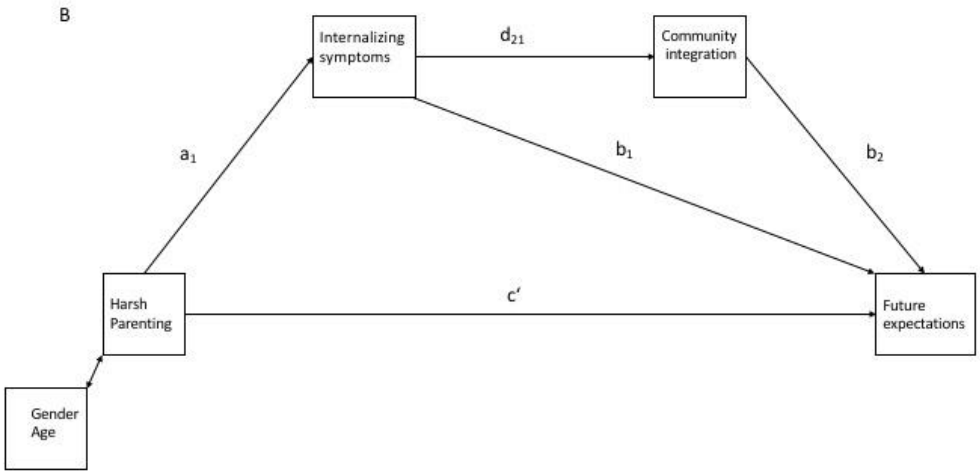

Figure 3. Serial multiple mediator model for the direct and indirect effects of harsh parenting on adolescent future expectations through internalizing problems and perceived community integration and support.

3.3 Manuscript 3: Exploring internalizing symptom trajectories, their multi-level predictors and associated developmental outcomes

Following the developmental psychopathological approach, manuscript 3 aimed to determine latent classes of internalizing symptom trajectories across three waves of data collection (2010, 2012, 2016) in a sample of war-affected northern Ugandan children during their transition from late childhood into adolescence. We hypothesized that multifinality, meaning several unique trajectories, would be better suited to characterize depressive symptom development over time than a singular, unified trajectory for the whole sample. Additionally, it was assumed that experiences of family violence, war trauma and parental psychopathology measured at wave 1 would be able to predict trajectory class membership, with a special focus on the importance of family violence during this developmental period. Furthermore, manuscript 3 studied the associations between developmental outcome measures, such as future expectations, school absenteeism and physical altercations, and depressive symptom trajectory class membership. For a graphical description of the study's objectives, please refer to figure 4.

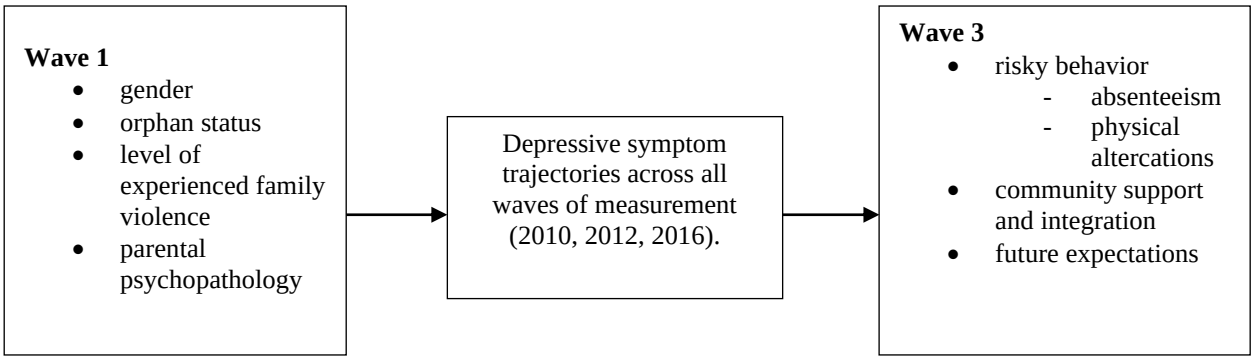

Figure 4. Graphical depiction of manuscript 3's objectives.

4 Methods

4.1 Setting and participants

The present research project consisted of three waves of interviews (2010, 2012, and 2016) with rural northern Ugandan students whose families had been affected by the war between the Ugandan government and the LRA.

In 2010 (wave 1) the project included 516 households with a second-grade student (P2) from nine communities (Bwobomanam, Cubu, Binya, Agweno, Orapwoyo, Lakwana, Idure, Koch Lila, Koch Kalang) in Gulu and Nwoya Districts in northern Uganda (see Appendix 9.1 for a map). Families and children were recruited through schools. As advised by the district education officer (DEO), study coordinators decided against the random sampling of schools as many were not accessible by vehicle. Instead, a two-stage selection procedure with a first non-random stage of cluster selection was chosen. Clusters (communities) were selected in a way to ensure they represented the variability of the overall target population. The final sample included two schools in urban communities in Gulu district (Bwobomanam and Cubu, $n_{students}$ = 148) and seven rural schools in Nwoya district ($n_{students}$ = 368), which were located close to former IDP camps. Interviews with administrative and school staff in the IDP camps had revealed that those families still living in the periphery of the camps were a selection of highly functioning successful individuals (such as businessmen and -women) as well as highly dysfunctional individuals, including severely mentally ill and substance-dependent persons. The sampled schools differed in their distance to Gulu-town to address possible secondary adversities, such as poverty, restricted access to education and healthcare, and local economic activity: Three schools were in the very remote area of Odek sub-county that had been especially hard-hit by the war and two in Lalogi sub-county between Gulu and Odek. The other two schools included were in Koch Goma sub-county, which is comparably as far from Gulu as Lalogi but had been hit by the war as hard as Odek. All analyses included location as a fixed

factor to control for possible cluster effects. The sample was stratified, having a child in P2 served as the key variable. At each sampled school all families with a child in P2 were sampled exhaustively to ensure a good representation of the stratum population. As some of the interview instruments were adapted after the data collection at the two urban schools, only the seven rural schools (Koch Lila, Koch Kalang, Lakwana, Idure, Orapwoyo, Agweno and Binya) were included in the longitudinal research.

Wave 1 thus included N = 368 P2 students (46.7% female, M_{age}= 9.01, SD=1.25) as well as their primary female (M_{age}=38.37, SD=11.04) and male (M_{age}=41.46, SD=11.44) guardians. The study protocol followed the suggestion of the World Health Organization (1999) in the definition of primary guardians: Guardians were defined as the adult persons living in the same household as the P2 child, who carried the responsibility for the emotional and material needs as well as for the raising and education of the child in question. Data collection at waves 2 and 3 only included the former P2 students.

In 2012 (wave 2) 327 (88.9% of the original sample; 46.2% female) P2 students were successfully localised and interviewed again and 285 students (77.5% of the original sample, 44.2% female) participated in the study in 2016 (wave 3). The retrieval rate of 77.5% at wave 3 is similar to retrieval rates after six years in other studies in comparable settings (Betancourt, McBain, Newnham, & Brennan, 2013; Panter-Brick, Grimon, & Eggerman, 2014).

All students who were contacted again for interviews at wave 2 and 3 agreed to participate. Drop-out rates between wave 1 and 3 were mainly due to the inability to localise students (n=65, 17.6%), families moving too far away to be interviewed again (n=8, 2.2%), students having passed away (n=4, 1.1%), or being physically too sick to be interviewed (n=6, 2.2%). Drop-out analyses revealed no significant differences between those adolescents who participated in 2016 and those who dropped out. For a participant flow-chart please refer to figure 5.

Integration of manuscripts

During the data collection in 2016, Gulu district experienced political tensions between the Ugandan government and opposing political forces from the northern part of the country which culminated in two shootings between the opposing forces in June 2016. To ensure the safety of the local and international research staff, data collection was paused for two weeks but resumed thereafter. Focus groups revealed no effect of the upheaval on the rural communities, as most of the conflict took place in Gulu-town.

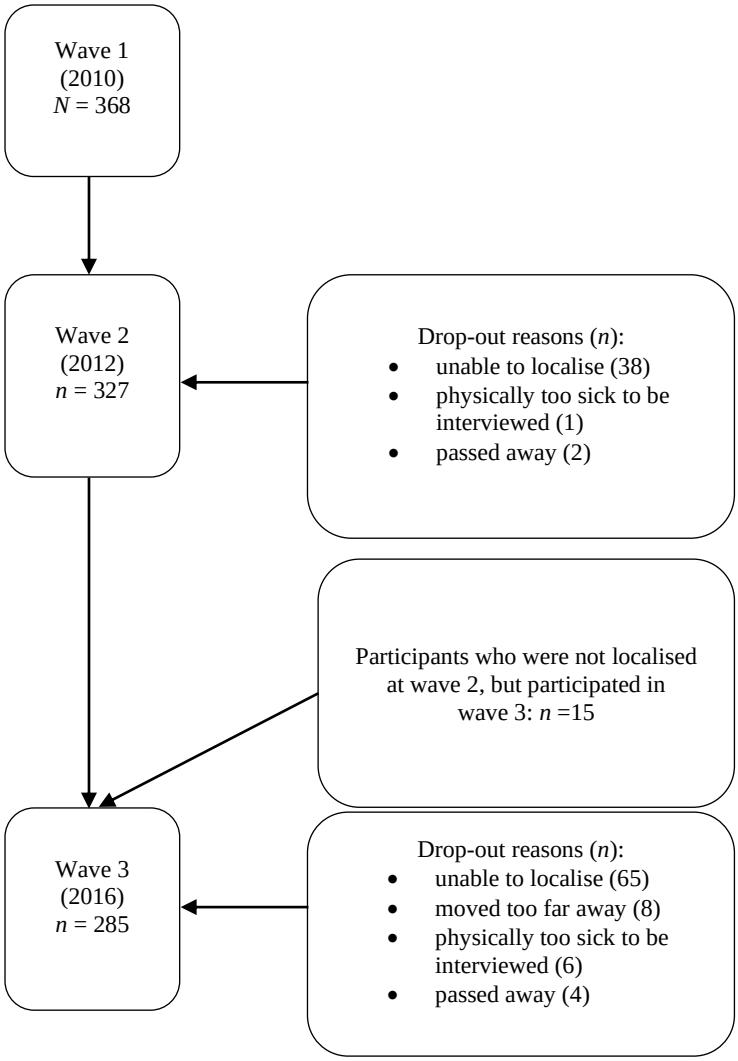

Figure 5. Participant flow-chart depicting participant attrition between wave 1 and wave 3 of the data collection, as published in manuscript 3.

4.2 Cross-sectional results of the first wave (2010)

The first wave of data collection was analyzed for cross-sectional associations by Saile and colleagues with an emphasis on the transmission of violence in war-affected families. Analysis revealed high levels of intimate partner violence against women (80% reported at least one type of verbal/psychological abuse, 71% physical abuse, 52% isolation, 23% sexual violence), which was associated with women's prior exposure to war trauma, re-experiencing symptoms and men's level of alcohol-related problems (Saile, Neuner, Ertl, & Catani, 2013).

The authors also found high levels of guardians' violence against children. Although most guardians reported using non-violent discipline methods, the majority of them also resorted to acts of psychological aggression (86% of male and 93% female guardians) and corporal punishment (71% male and 88% female guardians). A third of all female guardians and a fifth of all male guardians even reported at least one type of behavior that qualified as physical maltreatment. The strongest predictor for self-reported aggressive parenting behavior were guardians' own childhood maltreatment experiences, female guardians' intimate partner violence experiences, and male PTSD symptoms and alcohol-related problems. The level of children's self-reported victimization was associated with intimate partner violence between guardians, male PTSD symptom severity level, and on a more distal level female guardians' own history of childhood maltreatment experiences and exposure to war trauma (Saile et al., 2014).

A multilevel risk factor assessment through mediation analyses revealed slightly different pathways for depressive symptoms and PTSD symptoms in the P2 students. For both mental health outcomes, the authors found a direct link between traumatic exposure (community level) to PTSD symptoms and depressive symptoms as well as a double mediation effect through an increase of family violence and decrease of maternal care (dyadic), which in turn negatively affected the child's mental health. However, only depressive symptoms were directly linked to

both mediators, family violence, and perceived maternal care, whereas PTSD symptoms had no direct link to family violence (Saile et al., 2016).

In summary, cross-sectional analysis from wave 1 revealed the study sample's high exposure to war trauma and both intimate partner violence and harsh parenting. This part of the study was also able to replicate the cycle of violence by linking guardians' own prior experiences of child maltreatment and experiences of traumatic violence with harsh parenting behavior. Moreover, the results by Saile and colleagues emphasize the complex relations between family violence and consequential internalizing mental health problems, which informed the present study's research objectives.

4.3 Translation, measures, and data collection

All instruments were translated into the local language Luo Acholi following the recommended procedures for transcultural research (Flaherty et al., 1988; van Ommeren et al., 1999) including translation, lexical back translation, blind back translation, and separate focus group discussions on the conceptual, criterion and semantic equivalence with bilingual local mental health counselors as well as study participants. Some instruments had already been used in a prior epidemiological study by Ertl and colleagues (Ertl et al., 2014; Ertl, Saile, Schauer, Elbert, & Neuner, 2010). A comprehensive description of the development of the sociodemographic questionnaire, the self-report on the use of harsh parenting methods as well as a checklist for intimate partner violence can be found in Saile (2015). The final version of the sociodemographic questionnaire included detailed information on age, gender, ethnicity, religious denomination, education level (guardians), household possessions, source of income and history of abduction and displacement as well as family composition. To reduce redundancy in the data, the socio-demographic part of the questionnaires for men, women, and children differed slightly. The final set of instruments used for the guardians at wave 1, which were also included in the analysis of the longitudinal study as well as the children's measures included at

waves 1, 2, and 3 of data collection can be found in tables 1 - 3. For a complete set of all instruments used to assess the guardians at wave 1, please refer to Saile (2015).

At wave 3 (2016) instruments and items to assess adolescent future expectations (Future Expectations Scale for Adolescents (FESA), McWhirter & McWhirter, 2008), community support and integration (selected items from the Interpersonal Support Checklist (ISEL; Cohen & Hoberman, 1983, 2 items) and Perceived Community Support Questionnaire (PCSQ, Herrero & Gracia, 2007, 4 items), as well as risky behavior such as physical altercations and school absenteeism, were added. The process of adapting the added instruments to the Acholi language and the specific northern Ugandan setting is described in detail in manuscript 1 for the FESA and in manuscript 2 and 3 for community support and integration, and risky behavior.

To address the varying degrees of literacy among the study participants, all questionnaires were administered as structured interviews in Luo Acholi by trained local counselors under the supervision of an international team of clinical experts with extensive experience in transcultural research. Interviews were conducted on school grounds within the village in either empty classrooms or secluded areas under trees in a one-on-one setting with only the interviewer and interviewee present. All interviewees were provided with graphical representations of the rating scales and could answer either verbally or by pointing to the graphical representation of the scale.

Additionally, data collection at wave 3 also included three focus groups. One group consisted of 12 local mental health counselors who had worked in previous research projects. The other two groups were teachers from schools in urban (n = 10) and rural (n = 8) communities. In addition to ensuring the appropriate adaptation of all instruments and theoretical concepts to the northern Ugandan setting, focus groups were also used to define the theoretical concepts of adolescence, future expectations, and community support and integration. The results of the focus groups are described in section 5.2. We applied the free-listening approach, asking

participants several questions regarding their definition of the aforementioned concepts, their importance in Acholi culture, and whether the war or post-war time had caused a shift in the definition and importance. Responses were collected and discussed with another group of clinical counselors and international research staff and compared to the items of the original and the Brazilian adaptation of the FESA (Dutra-Thomé et al., 2015; McWhirter & McWhirter, 2008), as well as the ISEL and the PCSQ (Cohen & Hoberman, 1983; Herrero & Gracia, 2007). Items were then selected based on their overlap with the focus group results.

Table 1. *Set of instruments used in guardians' interviews at wave 1, which were also included in the longitudinal analysis of the present study*.

Guardians Instruments (wave 1)	**Author**	**Description**
Socio-demographic questionnaire	Adapted from Ertl et al. (2010, 2014)	Age, sex, marital status, family composition, socioeconomic information, religious denomination and practice, education, ethnicity, displacement and abduction history, war-related loss of first-grade relatives
Posttraumatic Diagnostic Scale (PDS)	Foa (1995)	PTSD symptoms
Hopkins Symptom Check List Depression Section (DHSCL)	Derogatis, Lipman, Rickels, Uhlenhuth, & Covi (1974)	Depression symptoms

Table 2. *Set of instruments used in children's interviews at waves 1, 2, and 3.*

Children Instruments (wave 1, 2, 3)	**Author**	**Description**
Socio-demographic questionnaire	Adapted from Ertl et al. (2010, 2014)	Age, sex, marital status, family composition and relationships, meals per day, religious denomination and practice, ethnicity, displacement and abduction history, war-related loss of first-grade relatives
Physical Health Assessment (PHA)	Ertl (2010, 2014)	Prevalence of chronic disease and one-month prevalence of common disease
Violence War and Abduction Exposure Scale (VWAES)	Adapted from Ertl et al. (2010, 2014)	Shortened list with different event types covering general traumatic events, war-related traumatic events, LRA-specific events, and forced perpetration
UCLA PTSD Index for DSM IV	Pynoos, Rodriguez, Steinberg, Stuber, & Frederick (1998)	PTSD symptoms
Children's Depression Inventory (CDI) – Short Version	Allgaier et al., (2012)	Depression symptoms, suggested cut-off for a clinical level of depressive symptoms >3
Mini International Neuropsychiatric Interview for Children and Adolescents (MINI KID) Module B (Suicidality)	Sheehan et al. (1998)	Suicidal ideation
Event list for aversive experiences at home	Adapted from Catani, Schauer, & Neuner (2008)	Maltreatment experiences in the family home
Event list for aversive experiences in school	Shortened and adapted version of the event list for aversive experiences at home	Experiences of verbal, physical, or sexual violence at school
Parental Bonding Instrument (PBI)	Parker (1998)	Perceived parental care
Strength and Difficulty Questionnaire (SDQ) – self-report	Goodman (2001)	Emotional and behavioral problems reflecting internalizing and externalizing behavior problems

Table 3. *Set of instruments used in children's interviews added at wave 3.*

Children Instruments added at wave 3	**Author**	**Description**
Future Expectations Scale for Adolescents – Ugandan version (FESA-Uganda)	Adapted from McWhirter & McWhirter (2008)	Adolescent future expectations in the areas of family and children, work and education, and general future optimism
Community support and integration	Adapted from the Interpersonal Support Checklist (ISEL, Cohen & Hoberman, 1983, 2 items) and Perceived Community Support Questionnaire (PCSQ, Herrero & Gracia, 2007, 4 items) as well as 1 item on support by elders from Betancourt et al. (2014)	Community participation, community integration, feeling of belonging, and perceived support by elders of the community
School absenteeism	Adapted from the Global school-based health survey (GSHS core, World Health Organisation, 2013)	Days not spend at school during the past 30 days, excluding physical illness as a reason
Physical altercations	Adapted from the Survey program dynamics adolescent questionnaire field representative version (SPD-18008, US department of Commerce, 1998)	Physical altercations with someone other than siblings during the past 30 days

4.4 Ethical and practical considerations of the present research

4.4.1 Ethical approval

The study protocol was approved by the ethics committee of the German Research Foundation (DFG), the ethics committee of Gulu University in Uganda, and the National Council for Science and Technology in Uganda (UNCST). All participating adolescents and their primary caregivers were invited to an information meeting before the beginning of data collection, where the study objectives and procedures were explained. Written consent by at least one primary guardian and the participant were collected. No monetary incentives were given, but all participants received a snack during the interview.

4.4.2 Follow-ups and workshops

Due to the sensitive nature of the study and prior experiences with the sample from data collections at wave 1 and 2, the study protocol at wave 3 included the following measures to address the high levels of family violence and trauma exposure:

In cases of extremely high family violence, we obtained permission from the affected adolescent to speak to their guardians via follow-up visits to their families. During these visits, a local counselor and the study coordinator tried to establish the circumstances of the occurring violence (e.g., alcohol consumption by a guardian, unrealistic expectations of the adolescent's capability to support the parents in their household duties, problematic behavior of the adolescent) and to offer possible solutions (psychoeducation on the effects of trauma and impulsive behavior in both guardians and children; establishing a social support network through other respected adults in the community, reporting child abuse to local leaders, such as the local elected government representatives (LC1) or the District Probation and Welfare office). In two cases children were re-homed to live with other relatives to ensure their physical and emotional safety. Four children with debilitating PTSD symptoms received trauma treatment in the form of Narrative Exposure Therapy (NET) by our cooperation partner, NGO vivo international Uganda outpatient clinic. As all four children lived very remotely and had no means of transportation, two of them were placed with relatives living in Gulu town for the duration of their treatment, whereas the other two were treated by the counselors in their home villages.

Wave 3 revealed a high percentage of suicidal adolescents (nearly 20% of the sample reported acute suicidal thoughts). Counselors were instructed to inform the study coordinator immediately in cases of active suicidal thoughts and acute suicidal ideation. The study coordinator then talked directly to the adolescent to thoroughly assess the level of suicidality. Interventions included the activation of resources (e.g., friends, family members, trusted

teachers), follow-up conversations with guardians, and in some cases home visits to remove the items intended to use for a suicide attempt. All adolescents considered to be at risk of self-harm were followed up by the study staff up to two weeks after the interview. They all received a phone number to contact one of the local counselors and explore treatment options.

Regarding the treatment of depressive symptoms, we faced the same problem as the study coordinator of the data collection at wave 1 as all treatment options were based in Gulu town. We did however offer psychoeducation both to the affected adolescents as well as their guardians on the nature of depressive symptoms and the use of anti-depressants and provided contact numbers of NGO World Vision staff who offered further treatment.

Since most of these treatment offers were out of reach for most of the participating families, we developed a manualized workshop for all participating families concerning parenting skills (female guardians) and dealing with domestic violence and suicidal ideation (adolescents). The workshop for adolescents was based on the previous results of the study from wave 1 as well as the preliminary results from wave 3 and was adapted from the PATH – Life Planning Skills (Uganda) program (Hvidt, Steen, & Mayega, 2010; PATH, 2003). The parenting workshop was also based on the study's results as well as previous research focusing on parenting skills in Acholi families by Möllerherm and colleagues, (2019) and Wieling and colleagues (Wieling, Mehus, Möllerherm, et al., 2015; Wieling, Mehus, Yumbul, et al., 2015).

Main goals for the workshops included:

- enabling adolescents to deal with potentially threatening situations within their families, and learn positive emotion regulation techniques
- sensitizing female guardians for the effect of family violence on child and adolescent well-being
- creating a space within the community to share common conflict situations and experiences as well as best practice parenting examples

- teaching positive emotion regulation techniques and parenting strategies.

Secondary goals included the identification and activation of existing resources, facilitating a better exchange between adolescents and their female guardians, as well as the dissemination of the study's results and implication in the community.

A brief overview of the manual's content as well as examples of the workshop material can be found in Appendix 9.3–9.6. To address the low literacy especially among the female guardians, course material heavily relied on roleplays and images that were purposely created for the workshop. Five counselors were trained over the course of a week to deliver the workshops after data collection was completed. Workshops lasted for two days and took place on the school grounds of the participating communities. No monetary incentives to participate were given; we did, however, provide a hot lunch. In most communities, workshop participation increased on day 2 as many female guardians and adolescents invited neighbors and friends along. Across all communities, we reached $N = 253$ female guardians and $N = 296$ adolescents of our original study sample. A feasibility evaluation revealed a good match of the training content to the daily problems of the concerned families and showed an improvement of attitudes towards violence-free parenting in the female guardians (Saupe et al., 2017).

The participating families and local leaders were also informed about the results of the study via information meetings and written short reports on the results of wave 1 data before the data collection at wave 3 as well as on the preliminary results of wave 3 before the workshops. To ensure that participants were able to understand the meaning of the study results both for their own communities as well as their contribution to the general body of research on the effect of war and conflict on families, a narration with a fictional case family based on the study's results was presented and discussed at the beginning of the workshops with all participants.

4.5 Data analysis

Data analysis was conducted according to the respective hypotheses and the requirements of the data and is described in detail in the respective manuscripts. Analysis was carried out using SPSS version 24 (IBM Corp., Armonk, NY), including the PROCESS (version 3) macro for SPSS and SAS (Hayes, 2017) and using the lcmm package 1.8.1 in the statistical environment R (version 3.6.0) (Proust-Lima, Philipps, Diakite, & Liquet, 2019; Proust-Lima, Philipps, & Liquet, 2017).

5 Summary of results and implications

The following section provides an overview of the sample's demographics, as well as summaries of the focus group discussions and each manuscript's results and implications. The global implications of the entire study for prevention, intervention, and future research as well as a critical discussion of the strengths and limitations of the project will be discussed under section 6 "Résumé and perspective".

5.1 Demographics

The descriptive information of the sample at all three waves of data collection (2010, 2012, 2016), including child developmental indicators and risk factors at wave 3 and the distribution and frequencies of guardian mental health at wave 1, are displayed in table 4.

Table 4. *Descriptive information of the sample at all three waves of data collection (T1/T2/T3), including child developmental indicators and risk factors (T3) as well as distribution and frequencies of guardian mental health (T1).*

	T1 2010 (n = 360)		T2 2012 (n = 327)		T3 2016 (n = 285)		
Child adverse events	Mean (SD), range	n (%)	Mean (SD), range	n (%)	Mean (SD), range	n (%)	Group comparison[3]
Traumatic events[1]	2.47 (2.02), 0-9		1.89 (1.63), 0-9		3.20 (1.89), 0-10		
Family violence[2]	4.02 (3.37), 0-19		3.57 (3.27), 0-17		6.57 (4.34),0-22		
Child psychopathology							
CDI sum	2.46 (2.62), 0-12^{ab}		2.07 (2.41), 0-15^{ab}		3.41 (3.40), 0-16^{c}		F (2;969) = 17.87 ***
CDI, cut-off > 3		138 (37.4)		101 (27.4)		131 (35.5)	
UPID UCLA sum	2.55 (3.67), 0-23^{ab}		3.17 (5.20), 0-30^{abc}		3.54 (5.53), 0-35^{bc}		F (2;977) = 3.57*
UPID UCLA PTSD, cut-off per item > 1		10 (2.7%)		21 (5.7%)		17 (4.6%)	
SDQ internalizing behavior sum	5.04 (3.41), 0-18^{ab}		4.91 (3.36), 0-16^{ab}		6.17 (4.15), 0-18^{c}		F (2;973) = 11.09***
SDQ externalizing behavior sum	2.73 (2.52), 0-12^{abc}		2,69 (2.25), 0-13^{abc}		3.01 (2.73), 0-14^{abc}		F (2;976) = 1.45^{ns}
PBI female guardian sum	32.27 (6.44), 0-36^{ab}		31.57 (8.26), 0-36^{ab}		27.95, (10.55), 0-36^{c}		F (2;951) = 22.50***
PBI male guardian sum	28.66 (10.32),0-36^{ab}		28.80 (10.21), 0-36^{ab}		22.67 (12.27), 0-36^{c}		F (2;853) = 26.72 ***
Child developmental indicators							
FESA sum					62.3 (11.44) 21-76		
Community support and integration sum					43.98 (8.71), 12-61		
Child risk factors							
Missed school days, past 30 days					1.93 (1.34), 0-4		
Physical altercations, past 30 days					.25 (.57), 0-4		
Guardians' psychopathology							
Female guardian DHSCL sum	.80 (.66), 0-2.80						
Female guardian DHSCL , cut-off > 1.65		49 (13.3)					
Female guardian PDS sum	2.92 (4.75), 0-24						
Female guardian PDS diagnosis		34 (9.2)					
Male guardian DHSCL sum	.41 (.49), 0-2.67						
Male guardian DHSCL, cut-off > 1.65		58 (15.7)					
Male guardian PDS sum	2.81 (4.42), 0-24						
Male guardian PDS diagnosis		22 (6.0)					

Note. [1] Traumatic events at T2 equals the number of traumatic events between 2010 and 2012, traumatic events at T3 equals the number of trauma between 2012 and 2016. [2] Family violence (FV) at T2 equals the number of FV between 2010 and 2012, FV at T3 equals the number of FV between 2012 and 2016. [3] Continuous variables were compared across trajectory classes using one-way ANOVA with Hochbergs' GT2 post-hoc test to account for the differences in sample size. Superscripts (^{abc}) indicate significant differences between waves of data collection (T1 =^{a}, T2=^{b}, T3=$^{c.}$). *= p<.05, **p<.005,*** p<.001, ns=non-significant.

5.2 Focus group discussions

Focus group discussions were centered around the definition of the study's main constructs of *adolescence*, *future expectations*, and *community support and integration* in the rural northern Ugandan context, as well as the shift in meaning these concepts had experienced from before the war to the post-conflict time. Detailed results of the focus group discussions can be found in the published versions of manuscripts 1 and 2.

5.2.1 Adolescence

The global concept of *adolescence* as the timespan between childhood and adulthood (approximately between 13 and 17 years of age) was deemed appropriate for the Ugandan context. Marriage or "living by yourself in a hut" was commonly deemed the end of childhood. Since the end of war, the governmental campaign "education first – marriage second" has led to a delay of marriage, pushing the average age to get married back to 20 years for girls and 24.3 years for boys (WorldBank, 2011). It is important to note though that in many rural communities marriages are not officiated by the state and might thus not be counted in official statistics. Earlier marriages in the form of partnerships that are condoned by the involved families still happen frequently – often due to financial reasons or unplanned pregnancies. The study's participants all agreed that early marriage is less respected by teachers, elders, and village leaders. The Ugandan National Youth Policy's definition of adolescence as "period of great emotional, physical and psychological change that requires societal support for a safe passage" (Republic of Uganda, 2001) was mainly agreed on, but some focus group members mentioned that there was little tangible state support or guidance for young people in their home villages. An important result includes the focus groups' unanimous statement that the length of adolescence heavily depended on the parents' financial and emotional capacity to provide their offspring with a time period where they are not already required to fully take over adult

responsibilities. In rural communities, girls were considered as adults slightly earlier than boys. Adolescence as a developmental span was defined as the age of identity exploration, instability, self-focus, and exploration of future opportunities, which is in line with research on the concept of adolescence in other nations (Arnett, 2014; Raffaelli, Lazarevic, Koller, Nsamenang, & Sharma, 2013; Schlegel & Barry, 1991). However, a strong focus of the focus groups laid on adolescents' ability "to be trained to take over more responsibilities within their families or communities", often under the leadership of a respected adult, and to "find a respected place in our community". None of the focus groups mentioned any initiation rituals for girls or boys to mark the transitioning from childhood to adolescence, which is in accordance with other studies in northern Ugandan Acholi communities (Lundgren, 2014; Vorhölter, 2014).

5.2.2 Future expectations

Concerning *future expectations*, it was unilaterally agreed that although formulating concrete plans and hopes for their future is seen as a necessity for adolescents to become a "serious" member of the adult community, neither parents nor elders discussed these matters regularly with their adolescent offspring. Focus groups named two main reasons for this phenomenon: The struggle for daily survival and the consequential stronger present orientation leaves adults with little energy and resources to develop a more future-oriented approach with their children. None of the participating school curricula included modules for career planning or the development of a future vision. Among adolescents, aspirations and concrete future plans are mainly discussed at the end of 6^{th} grade (end of primary school), since the biggest obstacle to any career plans beyond farming typically centers on getting access to secondary schooling. This result is in line with studies on the individual weighing of past, present, and future in decision-making processes, which have shown that hard living conditions are often linked to a stronger present orientation (Jones & Brown, 2005; Zimbardo & Boyd, 1999).

Secondly, elders and guardians promote a stronger external locus of control through the religious conviction that “in the end, it will be up to God – you may hope for the best”.

5.2.3 Community support and integration

As mentioned above, c*ommunity support and integration* play a vital role in rural northern Ugandan communities. The extent to which a nuclear family is seen as integrated into and supported by their community depends on how actively they are involved in community decisions and cultural practices in the village. Another important factor is the extent to which a family is respected by the other members of the community. This includes respecting an individual family’s approach to deal with direct family matters as well as perceiving the family members’ behavior as in line with community rules and expectations. In rural communities, a child’s status as “an integrated and supported community member” depends on the extent to which the nuclear family of the child is perceived as part of the community. The child themself has little influence on the extent of integration but a main developmental task for adolescents involves seeking to increase or at least hold onto the level of integration their family of origin provided. Mental illness in the family as well as participating in the LRA during the war are seen as possibly detrimental to a family’s status in the community. Especially rural focus groups emphasized the importance of community support and integration as a means to survive in times of hardship. Practical examples included helping neighbors with fieldwork (“communal digging”) as well as the guidance from the community elders in difficult family situations (such as spousal conflicts or conflicts between adults and their offspring). All focus groups agreed that one of the biggest changes in daily life since the war was a decrease in shared communal life and responsibilities due to the disruption of the traditional community by the displacement in camps during the war as well as the current economic hardship. Given their daily struggle for survival, most families have shifted all their remaining resources to help out their blood-relatives, leaving little emotional and financial resources to invest in communal life. This results

in less involvement of the community in the raising and protection of children and adolescents: Clan members leave most of the supervision and educational tasks to the birth parents, leaving adolescents often with just a vague idea of traditional community expectations and in many cases little social support outside their families of origin.

5.3 Manuscript 1: The development of a future expectation scale for northern Uganda

The first manuscript targeted the development of a scale to measure adolescent future expectations in northern Uganda based on the existing Chilean Future Expectations Scale for Adolescents (FESA) and its Brazilian adaptation (Dutra-Thomé et al., 2015; McWhirter & McWhirter, 2008). The combined item pool of the original and the Brazilian adaptation of the FESA were discussed with local focus groups for their adequacy and face validity for the Ugandan context, resulting in a final item pool of 22 items. Confirmatory factor analysis (CFA) revealed that, as hypothesized, the original FESA factor structure did not provide an acceptable model fit for the Ugandan sample (Model fit: χ^2 [179, n = 231] = 613.033 (p < .001), TLI= .74, IFI=.79, CFI = .78, RMSEA = .11 [90%-CI = .10–.12, PCLOSE = .00], SRMR = .06.) and included four items with low factor loadings between .188 and .487.

In a second step, all 22 items were entered into a principal component analysis (PCA). PCA was chosen as previous research suggests that it is better equipped than other factor analytical techniques to reduce larger numbers of variables to underlying dimensions and to eliminate redundancy (Guadagnoli & Velicer, 1988; Krishnan, 2011; Watson & Thompson, 2006). The initial PCA with direct oblimin rotation revealed five factors over Kaiser's criterion of 1, explaining 66.34% of variance (Bartlett's test of sphericity X^2 (231) = 3340.828, p<.001; internal consistency α =.89; KMO $_{\text{scale}}$ = .88, KMO $_{\text{individual items}}$ >.79). The results of the initial PCA were discussed among a panel of experts with extensive knowledge in developmental and clinical research in Uganda and led to the further exclusion of three items that did not load on

any factors or did not fit the Ugandan context and the Ugandan approach to religious life. A second PCA with direct oblimin rotation was run on the remaining 19 items, which revealed three main components with eigenvalues >1 which explained 61.12% of variance (Bartlett's test of sphericity $X^2(171) = 2899.760$, $p<.001$; internal consistency $\alpha = .89$; $KMO_{scale} = .89$, $KMO_{individual\ items} > .83$). The remaining three components were named *family and children* (7 items, $\alpha = .89$), *work and education* (6 items, $\alpha = .85$), and *general future optimism* (6 items, $\alpha = .86$). All main components were intercorrelated and also correlated with the FESA sum score. Both the *family and children* and *work and education* subscales correlated higher with the *general future optimism* scale than with each other. The finalized version of the 19 item Ugandan FESA resulted in a scale ranging from 0 to 76, with a sample mean score of $M = 63.04$ ($SD = 10.99$, range = 21-76).

These findings support the hypothesis that while the item pool of the original FESA by McWhirter & McWhirter (2008) is overall applicable in other contexts undergoing political and societal change, the original five factor structure of the instrument is not fitting the Ugandan setting. The main difference of the Ugandan FESA is a simpler factor structure partly caused by the deletion of items due to statistical reasons and being deemed unfitting for the specific context by the focus groups. Between the differences in item pool and factor structure, the following aspects particularly stand out:

Items addressing voluntary participation in the community did not fit the communal-based structure of Ugandan village life, where sharing community work is necessary to gain the status of a respected community member. Similarly, fulfilling the community's expectations of belonging to the Christian faith was also an aspect of future expectations where adolescents felt that they have no choice if they seek to become part of their respective communities. This result emphasizes the importance of community expectations and integration for adolescents in rural communities, which seems to restrict their imagination of possible future choices. This is

especially interesting as scholars have argued in the past that due to the influence of westernization, urban Ugandan youths tend to assume a more individualistic approach to life in which community rules and traditions play less into personal future plans (Vorhölter, 2014). It thus seems to be important to take varying living contexts and the extent of an individualistic versus a collectivistic approach to life into account when assessing adolescent future expectations. The low factor loading of the item "I will have sufficient monetary wealth" supported the focus group results that despite the changing economy, improving mobility, and increasing access to education in the rural Acholi region, adolescents' concept of sufficient future wealth is not tied to monetary salaries, but is still highly dependent on the exchange economy and the ability to provide most necessities by subsistence agriculture. Again, this result emphasizes the importance of community support and infrastructure for adolescents' future wellbeing and should be taken into account when developing career programs for young people in rural northern Uganda. It might be promising to embed these programs within the existing community structures and seek community support to avoid creating an ambivalence for adolescents to either improve their life and career chances or belong to their community.

A finding that is especially relevant for the research on future expectations is that the participating adolescents displayed a strong sense of fatalism with deference to God as a higher power in the face of a more general future evaluation (e.g., having a long life). A stronger external locus of control has been repeatedly found in populations struck by poverty, unstable living conditions, and a general sense of an unforeseeable future (Peou & Zinn, 2015). This also further explains the existence of the *general future expectations optimism* factor and the simplified factor structure of the Ugandan FESA compared to the Chilean and Brazilian versions of the instrument. It is in line with the focus groups' result that neither parents nor teachers specifically address adolescent future expectations or concrete future plans. Currently, northern Ugandan adolescents live under the influence of ongoing conflicts and the influx of

weapons and refugees from the neighboring countries of South Sudan and the Democratic Republic of Congo, their families' experiences during the war between the LRA and the UPDF as well as the current harsh social conditions and ambivalences of a re-traditionalization discourse (Vorhölter, 2014). Their less detailed future expectations and their emphasis on a stronger present orientation might actually prove to be more adaptable to deal with the ongoing societal changes than very specific and concrete future plans (Jones & Brown, 2005; Leccardi, 2005; Nurmi, 1991; Zimbardo & Boyd, 1999).

Given these hardships, it seems unlikely that the study sample displayed rather optimistic future expectations, and differed mainly in their evaluation of future career and education opportunities. However, this might be due to the fact that, at the time of the wave 3 interviews, the following two years of schooling will decide whether participants will reach secondary school and thus gain access to a greater variety of career options. Currently, the participating adolescents stand at a crossroads before there future plans will be tested by reality. The present study did not assess whether their optimism was warranted and based on actual opportunity. The general optimistic outlook on life might be explained by mechanisms described in similar war-affect populations: The generational narrative of having overcome immense hardship during the war as well as the contrast to the relative safety of their current living conditions possibly influences adolescents' evaluation of their generation's opportunities and family-based resilience (Bozzoli et al., 2010a). Future studies should follow up on students' educational and career paths and examine any changes these may cause in their future expectations and whether the current optimism will work as a motivator in their favor or lead to even harsher disappointment.

5.4 Manuscript 2: Investigating risk and protective factors that link experiences of harsh parenting and adolescent future expectations

By applying a socio-ecological perspective, manuscript 2 investigated the direct link between experiences of harsh parenting and adolescent future expectations as well as the indirect effect of harsh parenting through internalizing symptoms on future expectations. In addition, the study set out to examine the possible double mediation effect between the risk factor of internalizing symptoms (individual level) and a protective factor (community integration) on the link between harsh parenting (dyadic) and adolescent future expectations (individual level).

Descriptive analysis revealed high levels of clinically relevant depression symptoms (36.7–44.7% of the sample, depending on the cut-off for the CDI-S sum score), with a mean of 5.61 (*SD* = 3.70, range 0–6). Nearly all adolescents reported at least one incident of family violence, and 69% of female and 60.8% of male guardians reached the threshold for perceived high care. Self-reported community integration and support varied in the sample. Future expectations were relatively optimistic, but had sufficient variance (*M* = 63.4; *SD* = 10.99). Zero-order correlations and regression analysis revealed a significant negative influence of internalizing problems and harsh parenting on future expectations, whereas community integration and support was positively related to adolescent future expectations. Internalizing problems were no longer a significant negative predictor in the multivariate analysis. Neither age nor gender was a significant predictor in the bivariate or multivariate analysis. The regression model was able to explain nearly 20% of the overall variance (Adj.R^2 = .194, F = (3, 193) = 15.71, p < .001).

The model fit of the serial multiple mediator model was R^2 = .22, F(5,193) = 10.54, p < .001. As hypothesized, the model revealed a direct negative effect of harsh parenting on adolescent future expectations of $\beta =$ -.28, p < .005 (see figure 6, Model A). Contrary to the hypotheses, the indirect effect of harsh parenting through internalizing symptoms on future expectations (figure 7, Model B, path a_1b_1) was not statistically significant (effect size = .044, 95% bootstrap

CI = -.08, 17). However, a serial mediation effect of harsh parenting on future expectations through an increase in internalizing symptoms which in turn negatively affected community integration was found to be significant (figure 7, Model B) with an effect size of -.07 (95% bootstrap *CI* = -.14, -.01). The direct effect of harsh parenting (figure 7, Model B) was still significant when including the other variables and exceeded the total indirect effect (effect size = -.07, 95% bootstrap CI = -.22,.08,) by a ratio of roughly 3 to 1 (-.20 /-.07).

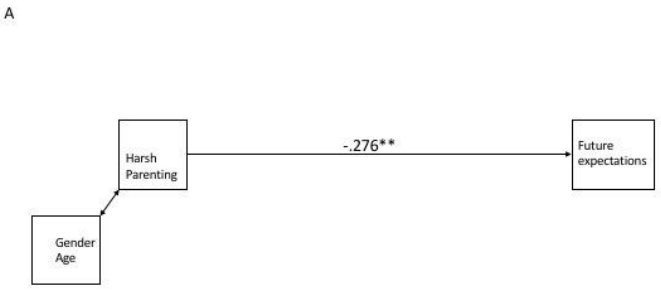

Figure 6. Path diagram showing the results of the total effect of harsh parenting on adolescent future expectations.
Note: **p<.005

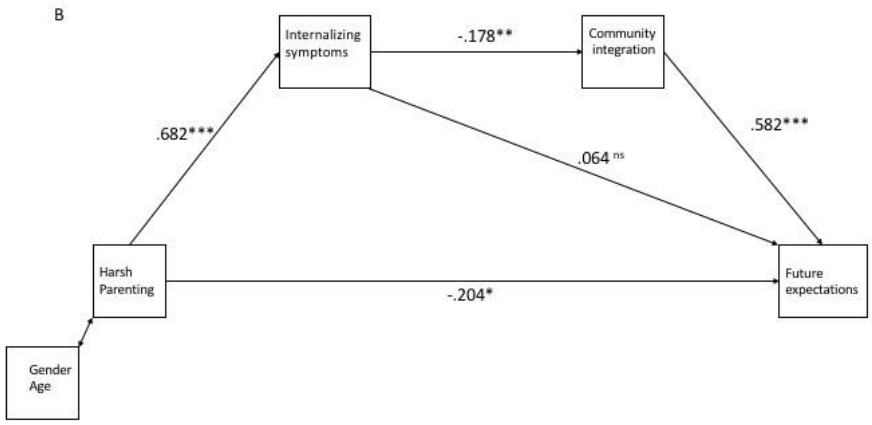

Figure 7. Path diagram showing the results for the direct effect and causal paths linking harsh parenting to future expectations. *Note:* *p<.05, **p<.05, **p<.005, ***p<.001, ns = non-significant.

The results suggest that the link between harsh parenting and adolescent future expectations is primarily a direct one. The lack of an indirect effect of harsh parenting through internalizing symptoms on future expectations shows that future expectations are a distinct developmental marker and go beyond the construct of mere hopelessness as an aspect of internalizing symptoms (Oettingen & Mayer, 2002; Sipsma et al., 2012; Zimbardo & Boyd, 1999). Given the high number of adolescents affected by family violence and the importance of future expectations as a developmental marker in post-war conflict societies, these results further emphasize the importance that preventive approaches first and foremost focus on family violence as a major risk factor for unfavorable developmental trajectories.

Following the socio-ecological approach, the double interaction effect of internalizing symptoms and community integration offers valuable information for preventive and interventive approaches on multiple levels. It seems as if the association between internalizing symptoms and harsh parenting might lead to an exclusion of adolescents from their communities, which would in turn negatively affect their future expectations. On a dyadic level, guardians should be educated on the short- and long-term consequences of harsh parenting and

positive parenting techniques as well as the importance to foster the development of optimistic future expectations in their offspring to decrease the development of risky behavior such as alcohol and drug abuse and early pregnancy (Harris et al., 2002; Namuggala, 2018; Thompson, Litrownik, et al., 2012; Thompson & Neilson, 2014; Valadez-Meltzer et al., 2005). The present study did not provide insights into the exact mechanism of how internalizing symptoms decrease adolescents' integration into the community, but it seems likely that this might be due to a display of unfavorable behavior associated with depression, such as withdrawal. This kind of behavior might be especially harmful in community-centered societies, where lack of participation is seen more negatively than in more individualistic contexts. Interventions on the individual level should therefore focus on treating maltreated adolescents' internalizing symptoms early on to avoid their exclusion from their respective communities. On the community level, interventions should aim to educate communities on signs of maltreatment and internalizing symptoms as well as to purposefully encourage maltreated, depressed children to participate in community activities (e.g., community digging, a traditional Acholi activity in which neighbors take turns to help each other with their fieldwork). This approach may serve two purposes:

On the one hand, it may help affected adolescents to find "safe spaces" within their community to speak out on their experiences of violence and to increase community involvement in and support for struggling families. This might also tap into the more traditional pre-war Acholi cultural approach to rearing and protecting children and young people as a community (Ministry of Gender Labor and Social Development, 2018; Namuggala, 2018). On the other hand, increasing maltreated adolescents' communal integration might also protect them from continuing the intergenerational cycle of mentally ill families living disenfranchised from their neighbors, being exposed to and committing further family violence. This seems especially

important in community-centered, collectivist communities with scarce governmental support structures.

5.5 Manuscript 3: Exploring internalizing symptom trajectories, their multi-level predictors and associated developmental outcomes

Manuscript 3 set out to explore depressive symptom trajectories across three points of measurement (2010, 2012, and 2016) in the sample of $N = 368$ northern Ugandan youths. The mean age at wave 1 was 9.01 years ($SD = 1.25$). The study was thus measuring depressive symptom development over six years from childhood to adolescence with a small intra-cohort age range. Linear latent class mixed models (LCMM) revealed the four distinct symptom trajectories suggested in literature (Bonanno & Mancini, 2008; Kronenberg et al., 2010; Masten & Narayan, 2016): a class with symptoms under the cut-off for clinically relevant depressive symptoms across all points of measurement (*low symptoms class*, 70.65% of the sample, $n = 260$), a *recovery* class with high symptoms at wave 1, which improved over time (10.87%, $n = 40$), and two classes with internalizing symptoms above the cut-off at wave 3, with high symptom scores across all time-points (*chronic symptoms*, 7.61%, $n = 28$) and a class with *late symptom onset* (10.87%, $n = 40$). Figure 8 depicts the observed mean trajectories of the four classes (mean scores of the individuals within the class) as solid lines, whereas the predicted group trajectories, which are based on the estimated model coefficient, are represented as dashed lines.

In the next step, multinomial regression was used to compare the odds of belonging to one of the trajectory classes with symptoms above the cut-off compared to the *low symptom* class. The results of the multinomial regression analysis showed that class membership in the *chronic symptom* class was associated with female gender ($OR = .35$, $p < .05$) and higher levels of experienced family violence at wave 1 ($OR = 1.67$, $p < .05$). Membership in the *recovery* trajectory class was also associated with female gender ($OR = .28$, $p < .01$), higher levels of

experienced family violence (*OR* = 1.88, $p < .01$), higher exposure to traumatic events at wave 1 (*OR* = 1.55, $p < .05$) and having a female guardian with higher levels of psychopathological symptoms (*OR* = 1.49, $p < .05$). None of the entered variables were able to predict membership in the *late-onset* trajectory class. The final model was able to predict 72.1% of class memberships correctly.

Given the importance of family violence in the prediction of maladaptive class-membership, post-hoc analysis included a second multinomial regression analysis with the z-standardized family violence change score between wave 1 and 3 as a predictor for class membership. Again, membership in the *low symptom* class was used as the comparison group. Results revealed that an increase in family violence from wave 1 to wave 3 was associated with a higher probability of belonging to the *late-onset* class (*OR* = 2.55, $p < .001$) or the *chronic symptom* class (*OR* = 1.74, $p > .05$), whereas a decrease in family violence was associated with membership in the *recovery* class (*OR* = .53, $p < .05$). The final model was able to predict 70.4% of class memberships correctly.

In a final step, MANOVA with planned simple contrasts (*low symptoms* as the reference group) were used to assess associations between trajectory class membership and developmental outcome measures at wave 3 (physical altercations, school absenteeism, perceived community support and integration, and future expectations) (F (12; 667.1) = 2.72, $p < .01$, *Wilks* Δ = .45). Participants in the *recovery* class did not differ from the *low symptom* class in any of the developmental outcome measures. However, participants in the *late-onset* class reported less optimistic future expectations (*mean difference* = -4.5, *SD* = 2.14, $p < .05$) and more missed school days during the past month (*mean difference* = .43, *SD* = *.25*, $p < .10$), and scored lower on perceived community support and integration (*mean difference* = -.39, *SD* = .14, $p < .05$). Belonging to the *chronic symptom* class was associated with less perceived community support and integration (*mean difference* = -.47, *SD* = .15, $p < .01$) and more missed

school days during the past month (*mean difference* = .69; *SD* = .31, $p < .05$). Involvement in physical altercations did not differ between trajectory classes, which might be due to the sample's overall low involvement in such altercations.

The results support the hypothesis that the assumption of multiple depressive symptom trajectories is better fitted to describe the course symptom development from childhood to adolescence in post-conflict societies than a unified course. The majority of the study's participants displayed *low symptoms* across all time points, which exceeds the amount of low-symptom trajectory class members in other studies (70% versus 41%, Betancourt et al., 2013 and 70% versus 45.2%, Kronenberg et al., 2010). This might be because the present study's sample was a "true" post-conflict sample with little involvement in active combat, whereas other studies included participants who were more actively involved in the armed conflict, for example as child soldiers, or had more direct trauma exposure. At wave 3 these differences between the present study and previous similar work diminished when including the members of the *recovery* class, and resulted in 82% of adolescents above the clinical cut-off for depression in the present study compared to 81% (Betancourt et al., 2013) and 72.3% (Kronenberg et al., 2010) above the cut-off.

The different associations between the maladaptive trajectory class memberships and the recovery class memberships carry important information for the understanding of depressive symptom development in post-conflict societies: First, the main difference between the *chronic symptom* and *recovery* trajectory class was that the *recovery class* seemed to be highly affected by both traumatic events and an unfavorable family environment at wave 1 but seemed to adjust so well over time that they did not differ in any of the developmental outcome measures at wave 3. Interestingly, membership in this class was associated with a decrease in exposure to family violence over time. In contrast, *chronic symptom* trajectories as well as the *late-onset* trajectory were both associated with an increase of family violence over the waves

of measurement. This result emphasizes family violence as a major risk factor for the chronification of depressive symptoms and unfavorable developmental outcomes in children and adolescents in post-conflict societies. This is in line with previous findings that exposure to family violence after war exceeds the impact of direct war trauma on child and adolescent mental health (Eggerman & Brick, 2014). The existence of the *delayed* symptoms class also confirms adolescence as a developmental phase with a heightened risk for the development of depressive disorders and might reflect the interaction between the effect of exposure to war and harsh parenting and an increased vulnerability for depressive disorders due to biological changes at this specific point in development. Additionally, it has to be noted that there might be a gendered effect, with female participants displaying higher levels of depression at wave 1 as well as a higher likelihood to develop a chronic symptom course. Results suggest that they might also be especially susceptible to experiences of violent parenting and might profit more strongly from improved parent-child relationships (Lewis et al., 2015). Future studies should compare male and female adolescents' depressive symptom trajectories in separate latent class models.

Implications of these results include the importance of an ongoing assessment of depressive symptoms directly after armed conflict as well as during the post-conflict years, as a subgroup of children and adolescents displays a delayed symptom development course. Good clinical practice should also include the assessment of individual war trauma and guardians' psychopathology to identify groups-at-risk. Correspondingly, levels of family violence and harsh parenting should be assessed recurrently, as the increase or decrease of family violence during late childhood and early adolescence has proven to be a better predictor for depressive disorder in adolescence than just the initial severity of such experiences during childhood (Kennedy et al., 2010; Klasen, Oettingen, Daniels, & Adam, 2010). Overall, the occurrence of family violence both directly after the war as well as during the transitional post-conflict period

should be a prime target for interventions for war-affected families to increase the degree of recovery from depressive symptoms as well as to prevent a late-onset of depressive symptoms among war-affected youths in this crucial developmental phase.

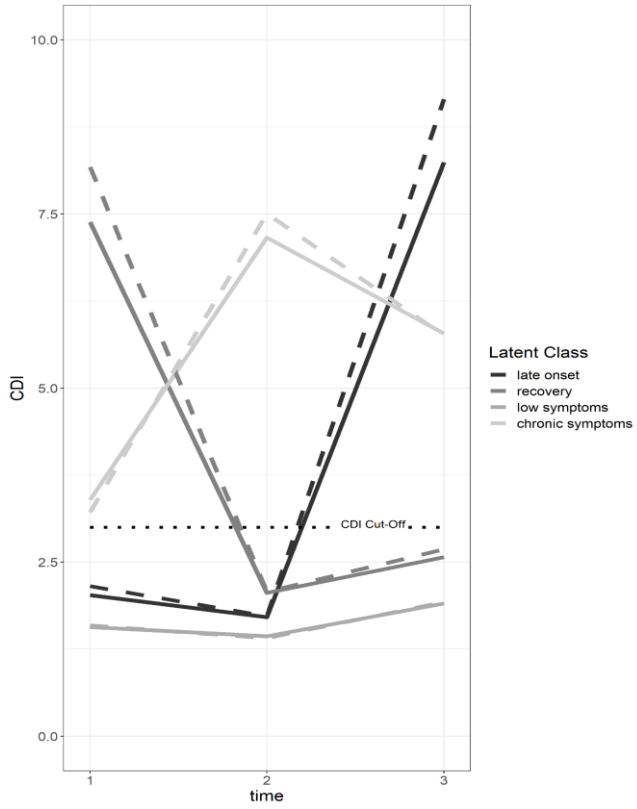

Figure 8. Estimated mean and predicted trajectories of northern Ugandan youth of depressive symptoms across three time points. Fat solid lines represent the observed and fat dashed lines the estimated latent class trajectories, as included in manuscript 3.

6 Résumé and perspective

The present study set out to investigate the challenges and opportunities northern Ugandan adolescents face while growing up in a post-conflict surrounding. The study followed a large sample of children and their guardians over the span of six years and included analysis on multiple levels, spanning from the individual over the dyadic to the community level. To our knowledge, it is one of only a few longitudinal studies with a high retrieval rate following war-affected children into adolescence with a small intra-cohort age range and a focus on depressive symptoms, which allowed for a developmental psychopathological approach in the interpretation of the data.

6.1 Where are they now? – Main findings of the combined efforts of six years of research in northern Uganda

Six years after the first wave of data collection, family violence was still highly prevalent and contributed to the high levels of depressive symptoms in the participating adolescents, exceeding the effect of adolescents' other traumatic experiences on depressive symptom levels at wave 3. This result is in line with Saile and colleagues' cross-sectional results from wave 1 (2015). Given the strong link between experiences of family violence and adolescent suicidal behavior, excessive alcohol consumption as well as other substance abuse in early adulthood, the participants of this study should be followed up to further establish the long-term effects of family violence on development (Gomez et al., 2017; Schuck & Widom, 2001). Additionally, our results confirm once more that long-term sustainable interventions to address family violence against children and adolescents in war-affected societies are highly needed. In their systematic review Seddighi and colleagues (2019) suggest three main components to address the increase in family violence after humanitarian disaster and warfare:

Integration of manuscripts

- Training all stakeholders in emergencies, including humanitarian organizations and state services such as the police or child protective services in safeguarding measures for children at risk
- Focusing especially on lower-income families to combat the additional threat from increased stress which might further exacerbate the risk of violent parenting
- Limiting the time families have to spend in emergency shelters or IDP camps as they further increase the risk of child abuse, and implementing child protection measures in camps

These suggestions address multiple levels of the socio-ecological model to combat family violence after armed conflict. The results of our present study suggest to further include long-term support for affected families beyond the immediate relief aid and to offer specific alternative solutions for parents to deal with their often traumatized and, as in the present studies' case, depressed children and adolescents. This seems all the more important given that over one-third of the present study's sample displayed depressive symptoms above the clinical cut-off at wave 3. So far, depression as a consequence of war and post-war stressors has taken a back seat in the development of post-war interventions, as most studies and interventions set in war and post-war settings seem to focus on the treatment of PTSD. Given the strong connection to guardians' psychopathology and family violence, interventions should address all risk factors for adolescent depression for optimal results and should be informed by the differing symptom trajectory classes' needs.

The present study was also able to show that it is feasible to measure adolescent future expectations in northern Uganda. It revealed the importance to adapt the concept of future expectations to the specific societal context with its strong community values and internalized social expectancies on how to adhere to religious and community standards. Despite their harsh living conditions and resource-poor surroundings, the sample's adolescents proved to be

surprisingly optimistic towards their future. An optimistic outlook on the attainment of future goals has been linked to higher levels of physical and mental well-being, a more positive mindset, and the activation of coping skills to undertake challenges (Forgeard & Seligman, 2012). The Ugandan adolescents' optimistic future expectations may therefore be interpreted as advantageous for their first steps towards adult life and responsibilities. However, the present study did not evaluate whether the participating adolescents' future expectations were based on realistic estimations or mainly informed by wishful thinking. Research on unrealistic optimism has revealed a more complex relation between optimism and success, as unrealistic and unwavering optimism as a form of future fantasies or wishful thinking may lead to the wasting away of additional resources in the face of unattainable goals and to disappointment and lower self-efficacy expectations down the line (Bortolotti & Antrobus, 2015). A shift from unwavering optimism to so-called "realistic optimism" in the estimation of the attainability of future opportunities allows for the allocation of personal resources to address challenges at hand and has been shown to lead to higher performances and success rates in academic and career endeavors as well as romantic relationships (Oettingen & Mayer, 2002; Sweeny, Carroll, & Shepperd, 2006). This helpful adaptation process normally occurs when people have the skills to respond to new information regarding their goal and realize that an undesirable outcome may come closer in time. It enables them to re-assess the importance and level of self-relevance of their goal as well as the use of their available resources for goal attainment (Sweeny et al., 2006). A study on optimism and wishful thinking or fantasies in a future expectations task with primary school-aged children showed that wishful thinking decreases with age while future expectations become more realistic (Bamford & Lagattuta, 2020). It might thus be that the present study's adolescents will "grow out" of their highly optimistic future expectations as they will be faced with more challenges and possible disappointments on their path to adulthood. However, a study on academic success with university students in the U.S. pointed

out that discouraging optimism does not provide a solution to enhance future performance and success: More successful students differed from their peers in their ability to identify the skills needed to overcome challenges and – most importantly – to assess whether they lacked these skills at the current point in time. These assessment skills in combination with a flexible form of optimistic future expectations proved to be most helpful to enhance performance and avoid disappointment (Svanum & Bigatti, 2006). Considering these results, it seems to be extremely important that the present study's adolescents will be supported in the development of these analytical skills to enable them to shift from their currently just about age-appropriate exaggerated positive future expectations to realistic optimism. Otherwise, their currently rather optimistic future expectations may only serve as a source of disappointment and frustration.

Another noteworthy result of the development of the Ugandan FESA and the focus group discussions included the sample's adolescents' lack of direct access to the concept of monetary wealth as a form of security, as most still plan to rely on self-sustaining agriculture. This may become problematic as the recent surge in birth rates will leave too little arable land to sustain the current cohort of adolescents. Already, violent land struggles within communities and families have started to further deteriorate the sense of community, fueled by the lack of an official land registry. Presumably, this will only increase due to the influx of South Sudanese refugees who have been promised land in the northern region by the Ugandan government, and the annexation of arable land by large global corporations for the cultivation of sugar cane (Kandel, 2016; Kobusingye, 2020; Martiniello, 2015; Sjögren, 2014). Adolescents need support in developing realistic future expectations and career plans to avoid the disenfranchisement and political radicalization of the currently largest age group of the Ugandan population. Already, northern Uganda youths and young adults are challenging the dominance of the southern Ugandan districts in the central government, which has led to multiple violent encounters in the past years between the Ugandan Government and opposing northern political parties around

the prominent figure of Bobi Wine. In sum, in 2016 the current study's sample consisted of a group of young people affected by high levels of family violence from early childhood on, with a high risk of depressive disorders and rather vague but surprisingly optimistic future expectations. This group of adolescents has set out to become the first generation after the war to transition with their communities into sustained peace while dealing with ongoing socio-economic struggles and multiple armed conflicts in their neighboring countries.

However, studying these high-risk youths in their stressful and impoverished communities with multiple interacting risk factors also offered the opportunity to identify processes that may contribute to positive adaptation and may help to inform preventive and interventive programs (Luthar & Cicchetti, 2000). In the light of the multi-faceted challenges faced by this generation of young northern Ugandans, the present study revealed the importance of community support and integration for a positive developmental path. The following sections deal with the implications of the present study's results for interventive and preventive programs and propose a select-care model for rural communities.

6.2 Implications of the study for preventive and interventive programs through humanitarian aid

Taking the scarcity of humanitarian aid resources into account, one of the present studies' overarching objectives was the aim to add scientific data to the ongoing discussion What is more appropriate to address the challenges of the post-war period: community-based psychosocial interventions aimed to involve as many war-affected community members at the same point in time as possible or highly specific psychotherapeutic interventions that target specific subsamples of the population based on indication. The results of the longitudinal part of the study support the notion that it does not seem helpful to offer the same preventive and interventive support program at once to all war-affected children and adolescents as they differ in the onset and trajectory course of symptom development, depending on their immediate

family environment, their own and their guardians' war-experiences as well as guardians' psychopathology. A "one-fits-all" approach on the community level would most likely lead to the underestimation of the prevalence of mental illnesses in war-affected populations in cases with late-symptom development. At the same time, it would lead to an unsustainable distribution of resources as each trajectory group was associated with different precursors. This demonstrates the different needs for intervention and supports the need for repeated mental health screenings and indicated instead of general treatment offers (Collins, Murphy, & Bierman, 2004). This result is in line with the evaluation of classroom-based intervention programs (CBI) (Ertl & Neuner, 2014; Tol et al., 2014). CBIs offer a general prevention program to target a multitude of difficulties such as depression, anxiety, and PTSD symptoms as well as general functioning and hopefulness, including all children within the participating school without specific indication. However, so far CBI programs have only been proven to benefit some of the participating children, while other children from the same cohort showed more detrimental symptom trajectories after completion of the program. Tol et al.(2014) attributed the differences in program outcome to multi-level differences in the child's environment (such as living conditions, family size, ongoing stressors), emphasizing the need for offering specific preventive or treatment options based on individual indication instead. Although broad prevention programs that entail some interventive elements might seem attractive, given their larger outreach and the scarcity of resources after conflict, first and foremost the universal right of war-affected children and adolescents to not be harmed should inform all preventive and interventive measures (Ertl & Neuner, 2014). However, a sole focus on the treatment of psychopathology as a direct consequence of war trauma may also not be ideal. The present study's result that the development of family violence over time surpassed the effect of war trauma as the main contributor to an adaptive or maladaptive symptom trajectory indicates that the artificial differentiation between "direct war effects" and post-

conflict stressors may not be suitable to address the needs of war-affected children and adolescents. Treating only those adolescents with direct war-related psychopathological symptoms would have led to a critical shortage of treatment offers for a large part of the present study's sample. Our results emphasize that the treatment of all mentally ill children and adolescents irrespective of the origin of their mental health problems must be paramount to interrupt the intergenerational cycle of violence, an approach that is in line with both the concepts of multifinality (differential depressive symptom trajectories after experiencing the same conflict) and equifinality (different precursors led to depressive symptoms above the clinical cut-off at wave 3) in developmental psychopathology (Catani, 2010; Cicchetti & Rogosch, 2002). Otherwise, post-conflict societies are faced with the emergence of another generation of parents who resort to harsh parenting methods as a result of their own childhood experiences of violence and untreated mental health issues which may lead to marginalization within their communities (Saile, 2015). The resulting lack of community support and integration for adolescents with maladaptive symptom trajectories should be addressed at all costs, especially in regions with low state-organized institutionalized infrastructure, as their marginalization may put them at risk of further disadvantages in life. Taking the relatively high percentage of the present study's sample with an adaptive symptom trajectory into account, it should also be feasible to distribute humanitarian resources to those with specific indications for treatment.

The present study was able to show that the direct effects of war and the challenges of the post-war period are both cross-sectionally and longitudinally intertwined across all levels of the socio-ecological model. A strength of the broader community-based programs such as CBI is the inclusion of more than the individual level of recipients. Taking this multi-level approach and combining it with differential intervention steps based on indication on each of the socio-ecological levels thus seems the most promising for a sustainable humanitarian aid approach.

6.3 Proposing a select-care program for rural war-affected communities

Based on the present studies' results from 2010 to 2016 we suggest a multi-level select care model with an emphasis on mental health and family violence to address the needs of war-affected families in rural northern Uganda. Logistically, it seems most promising to install any such program in proximity to rural primary schools. In many cases, these schools provide the center of small villages and settlements and are thus easily reached by all community members. As children already spend a large part of their time at school, schools also offer a low threshold for maltreated children to report incidences of violence and seek safety without immediately alerting their families. A promising US-based program with such an approach is *The Family Check-up* (Fosco, Van Ryzin, Connell, & Stormshark, 2016), which embeds so-called family resource centers (FRC) in schools to provide infrastructure for selected-level family services, offer general parenting information and regular updates for parents on each participating student's well-being as well as potential risk factors. In rural Uganda, it would make sense to train interested teachers and school staff as well as child welfare officers to work at such FRCs. Teachers and school staff have daily contact with their students and are thus – once appropriately trained – able to monitor them for maladaptive changes in behavior. The inclusion of local child welfare officers and other respected community members would help to embed such programs within the community and gain the support and trust of all relevant stakeholders.

For a depiction of the proposed select care model for the rural northern Ugandan context, please see figure 9.

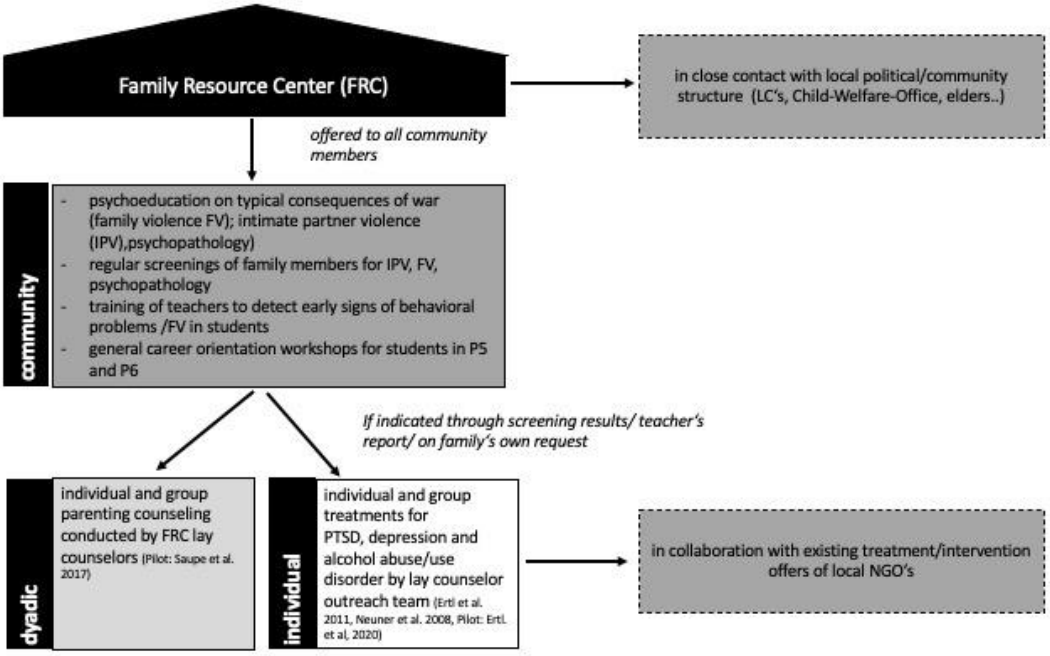

Figure 9. Proposed select care model to address family violence, mental health, and career planning support in war-affected, low infrastructure communities.

The *base level of the services* of the FRC offered to all interested community members should include psychoeducation on the most common consequences and challenges of war and post-war life, including symptoms of PTSD, depressive disorder, alcohol and substance abuse, intimate partner violence, and harsh parenting. Regular information meetings on these subjects may help to reduce stigmatization for mental illness, support the inclusion of families with mental health problems, and may also lead to better support networks within the community. Additionally, interested families should be invited to join general parenting workshops on methods of positive, attachment-oriented parenting. The feasibility evaluation of the parenting workshops in our project confirmed that female guardians welcomed the opportunity for exchange on matters of intimate partner violence, family violence, and the effects of psychopathology on their family life. It also provided first indicators that already two days of exchange on parenting topics may lead to improved communication both within families but also between families in the same village. Such workshops may also serve the purpose of raising

awareness on the long-term effects of family violence and reduce the acceptance of violent parenting on a social level in the long run. Changing guardians' perception on the normativeness of violent disciplining methods to address unwanted child and adolescent behavior has been found to be predictive of changes in guardians' reported harsh parenting over time (Lansford, Godwin, Tirade Uribe, et al., 2015). However, as proposed by the cycle of violence, children's and adolescents' behavioral problems may also increase their risk of experiencing harsh parenting irrespective of the societal norms on corporal punishment and other harsh parenting methods. It is thus also necessary to regularly monitor children and adolescents for internalizing and externalizing behavioral problems (Lansford, Godwin, Tirade Uribe, et al., 2015). Following the suggested approach of *The Family Check-up*, this could include family assessments on guardian and child psychopathology, parenting methods, and other forms of family violence including intimate partner violence. This approach would enable the detection of late-onset symptom trajectories as well as the referral of affected families to specific mental health interventions, which will be described in the paragraph on *indicated treatment offers* below.

FRCs could also collaborate with schools in helping adolescent students to develop realistic and detailed future expectations and the necessary skills to realistically appraise possible challenges on their path to goal attainment towards the end of primary school in specific career orientation workshops. The training of mental contrasting or WOOP (wish/outcome/obstacle/ plan) as suggested by Oettingen and colleagues may provide a helpful approach in this context, as it includes the development of plans and precise goals, trains the analysis of possible obstacles and challenges as well as the development of skills to either overcome these obstacles or adjust the goal (Krott, Marheinecke, & Oettingen, 2019; Oettingen & Reininger, 2016). These workshops should be informed by the community structure and supported by elders and political stakeholders of the community, such as the Local Council, to replace the missing state

support of young people in this area. These workshops might also serve as a means to connect adolescents with other supportive adults in their community.

Hopefully, one secondary effect of these broad and less specific services would be an increase in community cohesion, thus tapping into the traditional Acholi values of communal support.

If family members are deemed at-risk for maladaptive development or already display psychopathological symptoms and violence at home, the FRCs should connect them with *specific interventions and/or treatment offers*. FRCs should first try to connect with other providers of parenting interventions and mental health treatments. Currently, a growing number of non-governmental organizations (NGOs) in northern Uganda offer services targeting a specific disorder, such as PTSD, but systematic referral structures to other providers are lacking. Concerning specific treatment offers, group and individual programs conducted by trained lay counselors seem to be resource-efficient while still benefitting their clientele. Studies on the implementation of narrative exposure therapy (NET, Ertl, Pfeiffer, Schauer, Elbert, & Neuner, 2011; Neuner et al., 2008) for PTSD conducted by lay counselors have proven to be highly effective. A pilot study on a group program for alcohol disorder in rural Uganda has shown promising results and, as a side effect, may also lessen the risk of intimate partner violence and harsh parenting (Ertl, Pfeiffer-Tumusiime, Preusse, & Oettingen, 2020; Saile, 2015). Both the NET therapies as well as the group program for alcohol disorder have optimized scarce mental health resources by sending their trained counselors as an outreach team on specific days to the communities in which patients are treated. This approach reduces the costs and necessary effort to build mental health clinics in each community and enables the offering of mental health services in remote areas with little infrastructure. Similar programs for depressive disorder as well as parenting counseling for selected families should be piloted in these settings.

6.4 Implications for future research

The present study was able to show the importance of community support and integration as a developmental outcome measure at wave 3. Other studies have suggested a buffering effect of stable community life for the negative effects of child maltreatment on criminal behavior, alcohol abuse, and other risky behavior in young adulthood (Schuck & Widom, 2001, 2005). Future longitudinal studies should thus include community violence as a continuous measure to assess the mediating or moderating effect of community integration on maladaptive development.

Due to the high intercorrelations between family violence and internalizing symptoms at each wave of measurement, the present study's sample was not able to explore the second path of the cycle of violence, exploring the effect of child psychopathology on experienced family violence. Future studies should aim to include larger samples to enable cross-lagged analysis including the measurement of guardians' and children's psychopathology, community integration as well as family violence at each wave of measurement. This would provide further insights into the direction of the dynamics between individual psychopathology, dyadic guardian-child relationships, and community integration. Such a model might also be able to offer an alternative explanation for the link between an increase in harsh parenting and the existence of the late-onset symptom trajectory group: perhaps adolescents with late on-set depressive symptoms cause their parents to react with more violent behavior at this age as they might be hindered by their symptoms to fulfill their described role within the family household (e.g., raising younger siblings or provide labor on the family fields). The adolescents' inability to fulfill these tasks might be interpreted as willfully "stubborn" and thus prompt uninformed guardians to "double-down" with violent parenting, further increasing the spiral of family violence and depressive symptoms. Also, a longitudinal study on depressive symptom trajectory courses over ten years described two distinct segments in the trajectory, with one

significant negative change in slope during adolescence and another one during the transition into adulthood (Wickrama, Rand, Lorenz, & Jung, 2008). It may be worthwhile to continue to monitor the present sample into adulthood as they may prove to be less resilient than they seem at this point in time.

It is important to note that the present study found an effect of female gender on depressive symptom trajectory. This is in line with previous studies which reported a higher vulnerability of female adolescents to develop depressive symptoms (Angold & Costello, 2006; Hayward & Sanborn, 2002; Patton et al., 1996; Shen et al., 2007). As clinical research should aim to bridge the disadvantages of overlooking sex and gender differences specifically on treatment offers for women, future studies should replicate the trajectory classes in both a male and a female sample to assess whether their trajectory courses are comparable (Holdcroft, 2007). Furthermore, given the high prevalence of family violence directed at adolescents, future studies should focus on developing and evaluating parenting interventions specifically aimed at this age group (Lansford, Godwin, Uribe Tirado, et al., 2015). Currently, most established parenting trainings for post-conflict societies focus on young children without any research on their effectiveness for the specific challenges of raising adolescents in highly stressful surroundings.

Concerning adolescent future expectations, further research should focus on the long-term development of future expectations in this sample and their ability to shift to a more realistic optimism regarding the attainment of their future goals as well as the predictive value for later success in life. As of today, it remains unclear whether the adolescents' currently rather optimistic outlook on their future is linked to the necessary analytical skills to provide a motivational advantage to succeed in life despite the current challenges or whether it will result in even greater frustration and helplessness. Given the established links between adolescent future pessimism and risky behavior, such as alcohol and drug abuse, long-term studies should

also pay attention to the predictive value of adolescent future expectations on risky behavior in young adulthood. This may help to establish whether the extend of adolescent future optimism may serve as a predictive variable to identify adolescents at risk for secondary preventive measures. Comparably, it would also be of interest to study the link between adolescent future expectations and delay gratification behavior. Conducting studies both on links between adolescent future expectations and adolescent behavior in delay-gratification experiments as well as longitudinal studies on the effectiveness of micro-credit programs for young adults in accordance with their future optimism could offer further insights into the ability to predict the long-term pursuit of goals and future-oriented behavior based on adolescent future expectations. Such studies might help to inform economic development programs by starting at supporting the development of detailed and realistic future plans with adolescents before enrolling them in micro-crediting or similar programs as young adults.

6.5 Limitations

Despite the strength of the current study's design which included a large longitudinal sample of adolescents and their guardians in a post-conflict setting, the following limitations have to be noted:

The recruitment of the sample did not follow random sampling, the results may therefore not apply to other populations. Additionally, the study was mainly based on self-report data. Future studies should aim to cross-validate the self-report for community support and integration as well as family violence by interviewing relevant informants, such as teachers, guardians, and important community members. It should also be noted that the present study did not cross-validate the extent to which the optimistic future expectations of the individual study participants were realistic. It would be helpful to add estimations of adolescent's future opportunities by external observers, such as teachers or guardians. Most importantly, the present study only assessed baseline symptoms in children and guardians after the civil war. As

a result, we were unable to conclusively identify the impact of pre-conflict mental health status or family problems on symptom development after the war. Also, as noted above, guardians' psychopathology and community integration and support were not monitored across all waves of measurement. The present study was therefore only able to use community integration as an outcome measure and indicator for the achievement of a development milestone in the longitudinal analysis. However, as indicated by the cross-sectional mediation model, community support and integration may also serve as a buffer between the effect of war trauma and family violence on psychopathology and risky behaviors in late adolescence and early adulthood.

6.6 Conclusion

The present research project described the psychopathological development of war-affected adolescents in northern Uganda across the span of six years as well as their future expectations and current challenges. Results of the study prove the necessity to broaden the focus of long-term studies on psychopathological outcomes in war-affected adolescents beyond PTSD and to include depressive symptoms as a prevalent consequence of war experiences and post-conflict stressors. Furthermore, the results display the complex short- and long-term multi-level interactions between guardians' psychopathology, harsh parenting, adolescent symptom trajectories, and relevant developmental outcome markers. Clinical research in contexts with limited resources for interventions should apply a developmental psychopathological approach to understand the specific needs and risks of differing symptom trajectory groups. The knowledge gained by the research project may contribute to the development of data-informed intervention programs in post-conflict settings. Building on the results of a field feasibility workshop on psychoeducation for depression and suicidality as well as a parenting training, a select-care model to address adolescent psychopathology and family violence on the individual,

dyadic and community level in rural Ugandan communities is proposed. Addressing these developmentally specific challenges in the form of ongoing family violence and increasing psychopathology will be an important step towards transitioning from the post-war period to sustained peace for adolescents and their families in rural northern Uganda.

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Manuscript 2: Understanding the link between child maltreatment and adolescent future expectations in northern Uganda

8 Published and submitted manuscripts

8.1 Adolescent Life Perspectives after War: Evaluation and Adaptation of the Future Expectation Scale in Uganda

Manuscript 1 was published in *Frontiers in Psychology*:

Saupe, L. B., Gößmann, K., Catani, C., & Neuner, F. (2019). Adolescent Life Perspectives After War: Evaluation and Adaptation of the Future Expectation Scale in Uganda. Frontiers in Psychology, 10(July), 1–14. https://doi.org/10.3389/fpsyg.2019.01527

8.2 Understanding the link between child maltreatment and adolescent future expectations in northern Uganda: A serial mediation analysis

Manuscript 2 was published in *Child Abuse & Neglect*:
Saupe, L. B., Gößmann, K., Catani, C., & Neuner, F. (2020). Understanding the link between child maltreatment and adolescent future expectations in Northern Uganda : A serial mediation analysis. *Child Abuse & Neglect*, *106* (April), 104511. https://doi.org/10.1016/j.chiabu.2020.104511

8.3 Psychological adaptation after mass trauma: Depressive symptom trajectories in young adolescents after the civil war in Northern Uganda

8.3.1 Abstract

Despite high prevalence of depressive symptoms in children living in post-conflict societies, few studies have focused on continuing symptom development. Depressive symptom trajectories were determined across three assessment waves between 2010 and 2016 in a sample of *N*=368 Northern Ugandan youth (*Mean* age at wave 1: = 9.01 years (SD=1.25), 46.7% female). Linear latent class mixed models (LCMM) revealed four distinct symptom trajectories: a low symptom class (70.65%), a recovery class (10.87%), and two classes with internalizing symptoms above the cut-off at wave 3, with no recovery (7.61%) and late symptom onset (10.87%). Membership in maladaptive trajectory classes was associated with less favorable developmental outcomes, female gender, and increased family violence. Implications for programming for war-affected families are discussed.

8.3.2 Introduction

Symptoms of depression are highly prevalent (up to 85%) in children and youth who grow up in post-conflict societies (Allwood, Bell-Dolan, & Husain, 2002; Betancourt, Brennan, Rubin-Smith, Fitzmaurice, & Gilman, 2010; Freh, 2015; Steele et al., 2009; Thabet, Abed, & Vostanis, 2004; Vossoughi, Jackson, Gusler, & Stone, 2018). Children's depressive symptoms have been linked to trauma exposure such as war experiences and general trauma load (Amone-P'Olak, Ovuga, Croudace, Jones, & Abbott, 2014; Attanayake et al., 2009; Betancourt et al., 2010; Dimitry, 2012; Kolltveit et al., 2012; Saile, Ertl, Neuner, & Catani, 2016). However, post-conflict societies face numerous social and economic challenges that may also contribute to depression among children. In addition to poverty and unemployment (Miller & Rasmussen, 2010b; Patel, Flisher, Hetrick, & McGorry, 2007), the family context seems to play a role in

the development and maintenance of depressive symptoms: parental psychopathology and violence within the family have both been linked with depression among children in post-war societies (Betancourt, McBain, Newnham, & Brennan, 2013, 2015; Betancourt, Yudron, Wheaton, & Smith-Fawzi, 2012; Khamis, 2016; Okello, De Schryver, Musisi, Broekaert, & Derluyn, 2014; Panter-Brick, Grimon, & Eggerman, 2014a). Since children report more violence during the immediate post-war years (Sriskandarajah, Neuner, & Catani, 2015), it is likely that the family environment plays an important mediating role (Catani, 2018; Miller & Rasmussen, 2010b; Patel et al., 2007).

Longitudinal studies conducted in post-conflict settings have confirmed the link between depressive symptoms in children and adolescents and early experiences of war trauma, parental psychopathology, and family violence (Betancourt, McBain, & Brennan, 2014; Catani, 2018; Panter-Brick, Grimon, & Eggerman, 2014). However, treating children and adolescents in post-conflict societies as a homogenous group with unified symptom trajectories may hide underlying differences in the adaptation process and fall short of identifying sub-groups with specific vulnerabilities and needs (Wang, Chan, & Ho, 2013). Researchers have suggested four distinct psychopathological symptom trajectories to better account for the variance in symptom development after mass trauma: a resilient trajectory with no symptoms above a critical level across all time points; a recovery trajectory, in which trauma-exposed individuals display critical symptoms initially but adapt over time; a chronic symptom trajectory with high symptom levels across all time points; and a delayed dysfunction trajectory in which symptoms occur sometime after the traumatic event, potentially exacerbated by post-conflict environmental stressors such as lack of social support and cohesion or community and family violence (Bonanno & Mancini, 2008; Kronenberg et al., 2010; Masten & Narayan, 2016). Identifying differences in symptom trajectories after war is particularly relevant for the ongoing discussion on how to distribute the scarce resources for mental health and psychosocial

assistance following large-scale conflict. Two distinct approaches have been identified to support mental health and development in the wake of violent conflict. The trauma-focused approach aims to support the processing of pathological memories of traumatic events with targeted psychotherapy, whereas the psychosocial approach emphasizes improving coping with post-conflict stressors such as family violence, guardian's psychopathology, community problems, and financial struggles (see Miller & Rasmussen, 2010b, 2010a, 2017; Neuner, 2010). The identification of different symptom trajectories may provide some indications for a potential differential indication of these approaches.

Latent growth class analysis models (LCA) provide the opportunity to identify homogenous sub-groups in larger samples of individuals, with distinct symptom trajectories for each sub-group (Clarke et al., 2016; Punamäki, Palosaari, Diab, Peltonen, & Qouta, 2015). To date, most studies applying LCA in post-war and conflict settings focus on PTSD symptom development (e.g., Punamäki, Palosaari, Diab, Peltonen, & Quota, 2015). Some studies have indicated that PTSD covers only a limited range of mental health problems among children and adolescents after war since PTSD symptoms are highly associated with exposure to life-threatening traumatic events (Morina & Ford, 2008; Neria, Besser, Kiper, & Westphal, 2010). Post-conflict societies, though, are often characterized by a wide range of stressors beyond war trauma, which in turn are associated with a wide range of symptoms and behavioral problems, most of all depressive symptoms.

One study applying LCA to the study of depressive symptom trajectory after war trauma in adult civilians in Palestine identified three trajectories (Hobfoll, Mancini, Hall, Canetti, & Bonanno, 2011). The largest group identified (61.5%) showed moderate symptoms at T1 and recovery over time, the next largest group (24%) consisted of those with a severe chronic symptom trajectory, and the comparatively smallest group (14.5%) presented with high symptom levels at T1 and reported a significant recovery over time (Hobfoll, et al., 2011).

Symptom improvement was associated with younger age, less violence exposure, lower resource loss, and greater social support. Betancourt and colleagues (2013) have observed trajectories of Sierra Leonean youth for six years following the civil war in Sierra Leone. A significant portion of the sample had served as child soldiers in the conflict. Consistent with Bonnano & Mancini (2008), the LCA revealed four distinct classes. The largest class (47.6%) consisted of "improvers," or participants who displayed initially high symptoms that improved over time, followed by a class of consistently low symptoms (41.4 %), a group (6.4%) whose symptoms worsened over time (deteriorators), and a small group (4.5%) with high symptoms across all points of measurement. Class membership was associated with war-specific factors, such as the loss of family members (deteriorators), and post-war stressors such as family violence (high symptoms and deteriorator group), stigma associated with being an ex-combatant, hardship, and social disorder (high symptoms, deteriorators, improvers). Post-conflict protective factors, such as higher community acceptance were also found to play a role in group membership (improver group). Class membership was correlated with risk behaviors such as missed days at work and difficulties in daily household tasks. Other studies with non-war affected populations have linked female gender, maternal depression, and a negative attributional style with initially higher symptom scores (Garber, Keiley, & Martin, 2002; Leve, Kim, & Pears, 2005; Masten & Narayan, 2016), and an increase of witnessed and experienced community and family violence with more detrimental symptom trajectories (Kennedy, Bybee, Sullivan, & Greeson, 2010).

The present study aimed to determine latent classes of depressive symptom trajectories in a sample of war-affected children during the transition from late childhood to early adolescence. This developmental stage may be particularly sensitive for the detrimental impact of depressive behavior since depressive symptoms are negatively associated with adaptive life expectations and social support (Betancourt, McBain, Newnham, & Brennan, 2014; Hildyard

& Wolfe, 2002; Saupe, Gößmann, Catani, & Neuner, 2020; Valle & Silovsky, 2002). Previous studies have shown that negative future expectations were linked to later risky behavior such as alcohol and drug use and early parenthood, whereas positive future expectations may facilitate optimal development when transitioning into adulthood (Nurmi, 1991; Stoddard & Pierce, 2015; Sulimani-Aidan, 2017). We hypothesize that multifinality, or, several qualitatively unique trajectories, will be better suited to characterize depressive symptoms over timer than a singular, unified trajectory for the whole sample. No hypotheses regarding the potential number of distinct trajectories were made.

Many studies in post-conflict settings have focused on mental health outcomes of children directly exposed to war. However, young people growing up in the tumultuous years following the conflict are raised by parents who have been affected by violence and face their own unique challenges. This study therefore aims to investigate latent classes of depressive symptoms trajectories in a sample of Northern Uganda children across six years (2010-2016), who have grown up in the years following the exceptionally violent conflict between the Ugandan government and the Lord resistance army (LRA) from 1986-2006. This war strongly affected the civil population in the Acholi region, located in northern Uganda, with military raids and abductions by the LRA and government forces, which led to the forced internment of nearly 90% of the population in camps for internally displaced people (IDP; Bjorkhaug, Morten, Hatloy, & Jennings, 2007; International Crisis Group, 2006). Life in the IDP camps was characterized by high levels of psychopathology, especially PTSD, depression, and alcohol-related symptoms, as well as high levels of intimate partner violence and the erosion of familial and social relationships (Ertl, Pfeiffer, Schauer-Kaiser, Elbert, & Neuner, 2014; Hovil & Moorhead, 2002; Roberts, Ocaka, Browne, Oyok, & Sondorp, 2008; Uganda Bureau of Statistics & Macro International, 2007)

We hypothesized that the experience of family violence, war-trauma, and parental psychopathology measured at wave 1 will be able to predict trajectory class membership of depressive symptoms. In face of the importance of family relationships during the vulnerable period between the end of childhood and adolescence in the collectivist culture of Northern Uganda (Namuggala, 2018), we hypothesized that family violence would play a crucial role in predicting symptom trajectories. Cross-sectional analysis at wave one had confirmed a significant association between orphan status, trauma exposure, and family violence with depressive symptoms (Saile et al., 2016).

In addition to risk factors, this study also sought to identify a broad range of developmental outcomes associated with depressive symptom trajectories. Outcomes included engagement in risky behaviors, such as days absent from school and physical altercations. Perceived community support and integration at wave 3 were investigated since community support and integration are vital for dealing with hardships and developing career opportunities for young people in the traditionally collectivist society of Northern Uganda and have been linked with depressive symptoms in adolescents (Cole, 2011; El-Bushra & Sahl, 2005; Saupe et al., 2020; Vorhölter, 2014). Future expectations were examined as a further outcome measure to assess possible long-term consequences of detrimental depressive symptom trajectories on the ability of adolescents to transition smoothly into adulthood (Saupe et al., 2020). For a graphical description of the studies objectives, please refer to figure 1.

8.3.3 Methods

8.3.3.1 Setting and Participants

The sample of the present study is part of a larger research project focused on family life in a post-war society. The project consisted of three waves of interviews (2010, 2012 and 2016) with rural Ugandan students who were affected by the war between the Ugandan government and the LRA (Saile, Ertl, Neuner, & Catani, 2014; Saile et al., 2016; Saile, Neuner, Ertl, &

Catani, 2013; Saupe, Gößmann, Catani, & Neuner, 2019; Saupe et al., 2020). In 2010 (T1) 368 second grade students (46.7% female, M_{age}= 9.01, SD=1.25) as well as their primary female (M_{age}=38.37, SD=11.04) and male (M_{age}=41.46, SD=11.44) guardians were interviewed. Guardians were defined as the primary male or female caregivers and included biological parents as well as aunts, uncles, and grandparents. In the present sample, 39.7% (*n*=146) of the female guardians and 56.0% (*n*=206) of the male guardians were abducted by the LRA at least once. Only 2 (0.5%) of the students reported at least one abduction by the LRA. In 2012 (T2), 327 students (88.9% of the original sample; 46.2% female) were successfully contacted and re-interviewed, and 285 students (77.5% of the original sample, 44.2% female) participated in the study in 2016 (T3). The retention rate of 77.5% at T3 is similar to retrieval rates after six years in other studies (Betancourt, McBain, Newnham, & Brennan, 2013; Panter-Brick, Grimon, & Eggerman, 2014).

Dropouts between wave 1 and 3 were mainly due to the inability to relocate students again (*n* = 65, 17.6%), students had moved too far away to be interviewed again (*n* = 8, 2.2%), had passed away (*n* = 4, 1.1%), or were physically too sick to be interviewed (*n* = 6, 2.2%). There were no significant differences between those adolescents who participated in 2016 and those who dropped out. All adolescents who were reached at T2 and T3 agreed to participate in the present study. For a participant flow-chart please refer to figure 2.

8.3.3.2 Translation and data collection

All instruments were translated into Luo Acholi, the local language, following recommended procedures in transcultural research (Flaherty et al., 1988; van Ommeren et al., 1999) including translation, lexical back translation, blind back translation, and separate focus group discussions with bilingual local mental health counselors as well as study participants. To address the varying degrees of literacy in the sample, all questionnaires were administered as structured interviews in Luo Acholi by trained local counselors (5 male, 9 female; clinical and research

experience between 2-11 years, *M*=7.14) under the supervision of an international team of clinical experts with extensive experience in transcultural research. All theoretical concepts and measures were discussed with a panel of local counselors and international clinical experts to ensure the adequacy of the questions. The finalized version of the children's and the guardians' interviews included a socio-demographic section which captured individual and household characteristics, abduction and displacement at T1, as well as the instruments listed under "Measures and variables." Developmental indicators and risky behavior were only assessed at T3. All interviews were conducted on school-grounds within the village in either empty classrooms or secluded areas under trees in a one-on-one setting with only the interviewer and interviewee present. All interviewees were provided with graphical representations of the rating scales and could answer either verbally or by pointing to the graphical representation of the scale.

8.3.3.3 Ethical Approval

The study protocol was approved by the ethics committee of the German Research Foundation (DFG), the ethics committee of Gulu University in Uganda, and the National Council for Science and Technology in Uganda (UNCST). At each wave of data collection, all participating children and their primary guardians were invited to an information meeting where the study objectives and procedures were explained. In the case of the children, written consent by at least one guardian as well as by the child was obtained. No monetary incentives were given, but all participants received a snack during the interview. In cases of severe psychopathological outcomes, participants were referred to local counselors who provided treatment. After the completion of data collection at T3, all children and their female guardians who had participated in the study at any wave were invited to a community training concerning parenting skills (female guardians) and dealing with domestic violence and suicidal ideation (children).

8.3.3.4 Measures

8.3.3.4.1 Children

Instruments across all points of measurement (T1, T2, T3)

Traumatic exposure. Traumatic exposure was measured using the Violence, War and Abduction Scale (Ertl et al., 2014; Ertl, Saile, Schauer, Elbert, & Neuner, 2010). This scale is a trauma event checklist that lists different event types relevant to the Northern Ugandan context, including war-related and non-war-related potentially traumatic events. The present study used a 12-item version of the checklist, including exposure to natural disasters, accidents, interpersonal trauma outside of the family, and war-related traumatic events. War-related traumatic events were only included in the checklist at T1, since there were no more war-related traumatic experiences in the region during later waves. The level of traumatic exposure was reflected by a sum score of events endorsed. The T1 traumatic event sum score includes all experienced traumatic events up to T1, whereas the T2 and T3 sum scores include the traumatic events experienced between T1 and T2, and T2 and T3, respectively.

Family violence. Family violence was measured using a 24-item checklist for Family violence which had been previously employed with children in various cultural settings, including Northern Uganda (Catani, Jacob, Schauer, Kohila, & Neuner, 2008; Catani et al., 2009). The checklist includes items measuring physical violence (13), emotional violence (4), neglect (2), and items for witnessed violence in the family context (5). It measures both family violence over the lifetime, experienced family violence since the last data collection, and family violence during the past month. Additionally, a family violence change score was calculated by subtracting *family violence during the past month at T1* from *family violence during the past month at T3* in order to depict changes in family violence across all waves of measurement. A change score > 0 represents an increase in family violence, whereas a change score <0 represents a decrease in family violence across all times of measurement.

Depressive symptoms. Depressive symptoms were measured with the short version of the Children's Depression Inventory (CDI-S, Allgaier et al., 2012). The CDI-S is a 10-item instrument measuring cognitive, behavioral, and affective signs of depression in children between 6-17 years on a 3-point multiple-choice format that can be added to form a sum-score. A cut-off score of ≥ 3 has been proven to effectively detect cases of depression (Allgaier et al., 2012). Internal consistency (Cronbachs α) for the complete scale was .62 (T1), .61 (T2), and .75 (T3).

Instruments added at wave 3 (T3)

Future expectations. Future expectations were measured using the Ugandan version of the Future expectations scale for adolescents (FESA- Uganda; Saupe, Gößmann, Catani, & Neuner, 2019), a 19-item instrument measuring adolescent's future expectations on three sub-scales (family and children, work and education, and general future optimism, Cronbach*s* α between .85-.89). The total FESA sum score was calculated by adding up individual item scores.

Community support and integration. As no culturally adapted instrument to measure community integration and support in the Ugandan context has been established, community support and integration were operationalized as the combined measure of carefully selected items of two established questionnaires, the Interpersonal Support Checklist (ISEL; Cohen & Hoberman, 1983, 4 items) as well as the Perceived Community Support Questionnaire (PCSQ, Herrero & Gracia, 2007, 2 items). In addition, we added the item Betancourt and colleagues (2014) used to assess perceived support by elders of the community. All items were chosen after thorough discussion with focus-groups of clinical experts, local counselors, and school-teachers. A list of all items of the finalized scale can be found in the Appendix and Saupe et al., (2020). Participants were asked to rate the items on a 4-point Likert-like scale. A sum score was calculated by adding individual item scores. Cronbach's alpha for the combined community integration and support scale was α=.74.

Risky behavior. Risky behavior was measured using two items asking for the number of school days missed in the past 30 days (absenteeism) as well as the number of physical altercations outside the family during the past 30 days.

8.3.3.4.2 Guardians

Depressive Symptoms. Guardians' depressive symptoms were measured using the 15-item depression section of the Hopkins Symptom Checklist (DHSCL, Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). The DHSCL measures the perceived severity of depression in the week before the interview on a 4-point Likert scale. The scale has been extensively used in transcultural research, including Northern Uganda (Ertl et al., 2010; Roberts et al., 2008). Overall depressive symptom severity was calculated by adding all items to a sum score. Cronbach's alpha in the current study was $\alpha = .89$.

PTSD symptoms. The severity of PTSD symptoms was assessed using the Posttraumatic Diagnostic Scale (PDS; Foa, 1995). The PDS measures the frequency of occurrence of the 17 DSM-IV PTSD symptom items during the past month with coding ranging from 0 to 3. The Luo version of the PDS has proven good concurrent validity and has been validated with the Clinician-Administered PTSD Scale (CAPS,(Blake et al., 1995). A validation study in Northern Uganda suggests a PDS sum score cut-off of 16 in addition to the DSM-IV PTSD criteria to diagnose PTSD (Ertl et al., 2010). Cronbach's alpha for the PDS was $\alpha = .89$. For each of the guardians, z-standardized psychopathology composite scores were calculated by adding each guardian's z standardized DHSCL sum score and PDS sum score and dividing the resulting sum by two.

8.3.3.5 Data analysis

Data analysis consisted of four steps. First, linear latent class mixed models (LCMM) were used to identify trajectories across all three time points for depressive symptoms with the lcmm package 1.8.1 in the statistical environment R (Version 3.6.0) (Proust-Lima, Philipps, Diakite,

& Liquet, 2019;Proust-Lima, Philipps, & Liquet, 2017). LCMM are a form of LCA suited to find unobserved groupings within repeated measurement data by assuming that the population is heterogeneous and composed of a pre-fixed number of latent classes of subjects, which are characterized by the pre-fixed number of mean profiles of trajectories. The LCMM can be estimated within the maximum likelihood framework and calculates the probability that each subject belongs to a particular latent class, based on their observed longitudinal pattern of depressive symptoms. Class-membership for the individual is assigned based on the highest classification probability across trajectories (Proust-Lima et al., 2017). Within the LCMM framework, individual correlations between time points are taken into account. This procedure is similar to the analysis run by Betancourt et al. (2013) (see Duchesne, Larose, Vitaro, & Tremblay, 2010; Betancourt Mc Bain 2013).

To enable the trajectory slopes to vary between time points, time was entered as a factor in all models calculated. Additionally, a diagonal random-effects covariance matrix was chosen to restrain the number of parameters that needed to be estimated. Since the main goal of the model was to identify the latent trajectories, no further covariates were included. Mean probabilities within trajectories of .70 or higher imply a good model fit (Nagin, 2005). To choose the model of best fit, models of increasing complexity with two to six latent classes were calculated. The final model was selected based on the Akaike information criterion (AIC), the Bayesian information criterion (BIC), the sample-adjusted Bayesian information criterion (SABIC) as well as entropy to ensure adequate separation between classes. The model with the best fit can be identified by the lowest AIC/BIC and SABIC (compared to the other models), as well as an entropy value close to 1. To ensure the parsimony of the final model, each trajectory class had to contain at least 5% of the sample (Galatzer-Levy et al., 2013). For depressive symptoms, the level of missingness was 11.1% at T2 (n = 41) and 24.7% at T3 (n = 91). The missing data qualified as missing data at random (MAR), LCMM deals with MAR by

omitting missing values. A mean change score for depressive symptoms (T3-T1) was calculated for each class. T-tests were used to assess whether the change between T1 and T3 was statistically significant.

In the second step, frequencies, descriptive statistics (means, standard deviations), and class differences (one-way ANOVA and Chi^2 statistics) across all variables were calculated for each of the depressive symptom classes of the finalized latent class model using SPSS 26.

In the third step, two multinomial logistic regression analyses were conducted to identify predictors of depressive symptom trajectories. The first model included the hypothesized z-standardized T1 variables (family violence, trauma load, male and female guardian's psychopathology) to predict the class membership of the depressive symptoms trajectories. All predictors were entered simultaneously. The second model was added as a post-hoc analysis and included the family violence change score as the predictor for the depressive symptoms trajectories. For the independent variables, there were no missing values for family violence and trauma load at T1, the level of missingness (MAR) for male and female guardians' psychopathology were 1.4% (n = 5) and 17.8% (n = 66), respectively. The level of missingness (MAR) for the family violence change score was 23.9% (n = 88). MAR was dealt with by listwise deletion, resulting in n = 300 for the first regression model and n = 280 in the second model. All regression models included age, gender, and orphan status as control variables. As age and orphan status had no significant effect on the models they were dropped for later analysis to ensure parsimony.

Finally, a MANOVA and planned simple contrasts were used to analyze differences between the depressive symptom trajectory classes in the developmental indicators (future expectations; perceived social and community support) as well as risky behavior (physical altercations with someone other than a family member, missed school days during the past 30 days) measured at T3.

8.3.4 Results

8.3.4.1 Trajectories of depressive symptoms

Models with two to six classes were calculated with the lcmm package for R (Cécile Proust-Lima et al., 2017). Based on the AIC (4494), BIC (4569), SABIC (4509), and entropy (.80), the four-class solution had the best fit. Also, mean assignment probabilities of belonging to a certain class ranged between .83-.91, indicating a good fit of the four-class model (Nagin, 2005). For the detailed model-fit indices of all 2-6 class solutions, please refer to table 1. Figure 3 depicts the observed mean trajectories of the four classes (mean scores of the individuals within the class) as solid lines, whereas the predicted group trajectories, which are based on the estimated model coefficient, are represented as dashed lines. For the descriptive information of each class as well as class differences in all observed variables, please refer to table 2. The largest of the four classes represented 70.65% (n = 260) of the sample and was designated as the *low symptoms* class according to the trajectory, which was at all waves of measurement below the clinical cut-off of the CDI (> 3), mean change = .43, t (184) = 2.59, p > .05. The next two classes each represented 10.87% (n = 40) of the total sample and were designated as the *late-onset* class and the *recovery* class, according to their respective trajectories. The *late-onset* class exhibited a pattern with a low symptom score at T1 which increased between T2 and T3 to a symptom score well above the clinical CDI cut-off, mean change = 7.38, t (38) = 19.58, p > .00. The *recovery* class started at T1 with the highest intercept but dropped below the CDI cut-off by T2, mean change = -5.18, t(26) = 10.38, p > .00. The smallest class represented 7.61% (n = 28) of the sample and was named *chronic symptoms* class with a symptom trajectory above the CDI cut-off at all waves of measurement. The class trajectory increased relatively steeply between T1 and T2 and dropped moderately between T2 and T3, mean change = 2.83, t (22) = .46, p > .05. The *low symptoms* class was utilized as the reference group in the multinomial regression analysis.

8.3.4.2 Multinomial regression analysis

8.3.4.2.1 Class membership predicted by T1 variables

Multinomial regression was conducted to investigate whether child variables and guardians' psychopathology measured at T1 had any long-term effects on depressive symptom trajectory class membership. In order to interpret the results of the regression as Odd-Ratios (OR), all variables entered as predictors were z-standardized. The ORs can be interpreted as the likelihood ratio of belonging to a certain trajectory class compared to the low symptom class, depending on the value of the predictor variable measured at T1. All predictors were entered simultaneously. The final model was able to predict 72.1% of class memberships correctly. The statistical results of the multinomial regression analysis are reported in table 3.

Late-onset (vs. low symptoms). None of the entered variables were able to predict class membership in the *late-onset* class.

Recovery (vs. low symptoms). The probability of being in the *recovery* class was higher for females (OR = .28, p < .01), and individuals who had experienced more family violence (OR = 1.88, p < .01) and a higher number of other traumatic events (OR = 1.55, p < .05) at T1 and whose female guardians scored higher on the psychopathology measures (OR = 1.49, p < .05).

Chronic symptoms (vs. low symptoms). Results from the analysis revealed that membership in the *chronic symptoms* class was more likely for females (OR = .35, p < .05), and individuals who had experienced more family violence (OR = 1.67, p < .05) at T1.

Male guardian psychopathology did not predict class membership in any of the depressive symptom trajectory classes.

8.3.4.2.2 Post-hoc: Class membership predicted by family violence change score

A second multinomial regression model was calculated to predict the depressive symptom class membership by the z-standardized family violence change score between T1 and T3 (positive

scores reflected an increase in family violence over time). The final model was able to predict 70.4 % of class memberships correctly. The statistical results of the multinomial regression analysis are reported in table 4.

Late-onset (vs. low symptoms*).* An increase in family violence between T1 and T3 (*OR* = 2.55, $p < .001$) was associated with a higher probability to belong to the *late-onset* class.

Recovery (vs. low symptoms). The probability of being in the *recovery* class was higher for females (*OR* = .39, $p < .05$), and individuals who had experienced a decrease in family violence between T1 and T3 (*OR* = .53, $p < .05$).

Chronic symptoms (vs. low symptoms). Membership in the *chronic symptoms* class was more likely for individuals who had experienced an increase in family violence across the waves of measurement (*OR* = 1.74, $p > .05$).

8.3.4.3 Trajectory class differences in developmental indicators and risky behavior at T3

Finally, MANOVA revealed a statistically significant difference in the developmental indicators and risky behaviors measured at T3 based on depressive symptom class membership (F (12; 667.1) = 2.72, $p < .01$, *Wilks* Δ = .45). The MANOVA was followed up by planned simple contrasts with the *low symptoms* class as the reference class. Participants in the *recovery* class did not differ in any outcome variable from the *low symptom* class. However, participants in the *late-onset* class were significantly less optimistic towards their future (*mean difference* = -4.5, *SD* = 2.14, $p < .05$), scored lower on perceived community support and integration (*mean difference* = -.39, *SD* = .14, $p < .05$) and reported more missed school days during the past month (*mean difference* = .43, *SD* = .25, $p < .10$). Participants of the *chronic symptoms* reported less perceived community support and integration (*mean difference* = -.47, *SD* = .15, $p < .01$) and more missed schooldays during the past month (*mean difference* = .69; *SD* = .31, $p < .05$) than the *low symptom* class. Involvement in physical altercations did not differ between any of the depressive symptom classes.

8.3.5 Discussion

Symptoms of depression are common among children and adolescents in a post-war society such as Northern Uganda. The course of symptom development can be best described by assuming multiple trajectories rather than a unified course. The different symptom trajectories identified in the present study imply that the assumption of an overall reduction of depressive symptoms that accompanies recovery from war trauma in the transition from conflict to sustained peace may be oversimplified.

There were two trajectories identified with a positive valence which were followed by a majority of the young people in our study: a *low symptom* class that did not show symptoms above the cut-off at any of the three time points, and a *recovery* class of children who improved over time. However, a minority of children followed maladaptive trajectories, either with a *chronic* course of symptoms or a *late onset* of symptoms. Children and youths in these classes reported a broader range of negative outcomes, in particular more school absenteeism, less integration in their community, and more pessimistic expectations towards their future. The presence of these four classes is, to a large extent, consistent with the proposed distinct trajectories previously identified in the literature (Betancourt et al., 2013; Bonnaro & Mancini, 2008; Kronenberg et al., 2010). However, there were some notable differences. A much larger part (70% versus 41% (Betancourt et al., 2013) or versus 45.2% (Kronenberg et al., 2010) of our sample showed low symptoms across all waves of data collection than was found by other studies on depressive symptom trajectories. The presence of low symptoms across all waves of data in our study might be due to the fact that other studies examined populations who had directly experienced active combat (Betancourt et al., 2013). This difference between the studies in the number of resilient youth disappears when adding the class of symptom improvers: nearly 82% of the present study's sample proved to be comparably resilient at wave

three, which is similar to the findings of Betancourt and colleagues (89%) and Kronenberg (72.3 %).

Membership in the *recovery* trajectory class was associated with being female, a larger trauma exposure at T1, more family violence, and having a female guardian with higher psychopathology compared to the *low symptom* class. Bivariate comparison between the four classes revealed that the family violence level at T1 was significantly higher for the *recovery* class than the *late-onset* or *low symptoms* classes. These findings indicate that a large group of youth suffer from both traumatic events as well as an unfavorable family environments immediately after the war, but seem to adjust effectively over time such that they do not differ from the *low symptom* group in their likelihood to display risk behavior (school absenteeism) at T3.

We also identified a subgroup who may have developed depressive symptoms later as a reaction to post-conflict environmental factors, such as family violence. Participants in this group were found to display more risky behavior such as absenteeism, were less well-integrated in their community, and were more pessimistic about their future. Less than 10% of the sample were found to show a *chronic* symptom trajectory into adolescence, which was associated with female gender, higher exposure to family violence at T1. Those in this trajectory also reported lower community integration and support and more missed school days at T3. Symptom trajectories were not able to predict the level of physical altercations at wave three. This might have been due to the generally very low occurrence of externalizing behavior in the present sample.

Family violence was and remained a significant stressor for the development in Ugandan post-war society. An increase in family violence over time was associated with a more detrimental symptom development since it was associated with both the *chronic* and the *late-onset* class. These results are in line with findings from other studies that showed that it was not

the initial severity of trauma exposure, community violence, or family violence at T1 that was pivotal in predicting the unfavorable trajectory of youth's depressive symptoms, but the negative course of these variables over time (Kennedy et al., 2010; Klasen, Oettingen, Daniels, & Adam, 2010). This emphasizes the importance of ongoing family violence as a major risk factor for the chronification of depressive symptoms in children and adolescents in post-conflict societies. Previous studies described the protective effect of positive parent-child relationships in the face of war and terror (e.g., Barber, 2001; Kronenberg et al., 2010; Mandelli, Petrelli, & Serretti, 2015; Meadows, Brown, & Elder, 2006; Punamäki, Palosaari, Diab, Peltonen, & Quota, 2015; Qouta, Punamäki, & El Sarraj, 2008). Although the present study focused on family violence as a risk factor for detrimental symptom development, future studies should also examine the potential protective effect of family relations on individual depressive symptom development.

Additionally, our study was able to replicate the finding that the female gender seems to be a risk factor for an increase in depressive symptoms from childhood through adolescence (Bonanno & Mancini, 2008; Kronenberg et al., 2010; Leve et al., 2005; Masten & Narayan, 2016; Meadows et al., 2006; Okello et al., 2014). Girls were more likely to display high symptom scores at T1 and belong to the *chronic* trajectory class or the *recovery* class than the *low symptoms* class, pointing to potentially higher vulnerability faced by girls in the face of immediate post-war stressors. One possible explanation for this gender difference in our sample, which was exposed to high levels of family violence, is the greater susceptibility of girls and young women to stressors linked to the quality of the parent-child relationship (Lewis et al., 2015). This may point to a gendered experience of war-trauma and post-war stressors, which might, in turn, lead to gender-specific depressive symptom trajectories. Unfortunately, the current study's sample is too small to calculate separate latent class models for boys and

girls. Future studies should aim to investigate whether girls and young women differ on account of their gender in their symptom development courses.

When considering developmental outcomes, we found that *delayed onset* and *chronic* depressive symptom trajectories were associated with participants' greater levels of risky behavior such as absenteeism, less integration in their community, and more pessimistic expectations regarding their future. This is in line with findings from previous studies (Betancourt et al., 2013; Catani, 2018; Newnham, Pearson, Stein, & Betancourt, 2015). The impairment in children's social and scholastic functioning may put children at risk to become enmeshed in a vicious cycle of failure, rejection, and increasing psychopathology (Catani, 2010). The involvement and support from communities and schools to care for vulnerable children may foster resilience in children and support their healthy development. The existence of the *delayed* symptoms class also confirms adolescence as a developmental phase with a heightened risk for the development of depressive disorders and might reflect the interaction between the effect of the exposure to war and harsh parenting and an increased vulnerability for depressive disorders due to biological changes at this specific point in development (Giedd, Keshavan, & Paus, 2008; Kessler et al., 2005).

Interpreting these results within an ecological model of the mental health costs of war for children and adolescents (Miller & Rasmussen, 2017) the present study's results offer first insights into crucial diagnostic and intervention windows for children and adolescents after war and conflict: Concentrating solely on the assessment and treatment of depressive symptoms directly after the end of armed conflict might bear the risk of underestimating the need for long-term psychological and psychosocial diagnostics and interventions for a large portion of war-affected children. Good clinical practice in post-conflict societies should, therefore, aim to assess individual war-trauma and guardians' psychopathology both directly after the conflict and a few years later to ensure the appropriate distribution of humanitarian aid and mental health

support resources to the individual and their families beyond the emergency response. It is important to note that the *recovery* class showed the highest symptoms of all trajectory classes at wave 1. It would be ill-advised to assume that this group of children would not need psychosocial support: The occurrence of depressive symptoms during a very sensitive developmental period should be addressed independent of the duration of the symptoms above the diagnosis cut-off, bearing in mind the heightened risk of relapse as well as of experiencing family and peer violence by children with psychopathological symptoms (Catani, 2010; Giedd et al., 2008). Additionally, our result that only a small number of adolescents suffered from a chronic course of depression encouragingly makes the allocation of funds for psychotherapeutic interventions after conflict all the more feasible.

The findings in the present study indicate that low-level support should be applied to monitor and treat symptoms and address the high prevalence of family violence. One possible example of a stepped care approach recognizing different symptom development trajectories is the *Family Check-Up* (Fosco, Van Ryzin, Connell, & Stormshark, 2016). The *Family Check-Up* program is a family-centered and school-based prevention program that uses a multilevel, gated approach. This approach provides low-level general parenting information as well as regular check-ups and family services for children and adolescents at risk (e.g., strategies to improve family communication, problem-solving skills). This approach may hold promise for the post-conflict environment of rural Uganda as it makes use of existing community structures (schools provide a center of community life) and allows for an efficient way to regularly monitor students' symptoms and family problems with the optimized allocation of services based on individual needs. Future studies should attempt to pilot such approaches in societies with scarce resources to address the need for stepped-care interventions that honor the differential developments of depressive symptoms in children and adolescents after conflict.

8.3.5.1 Strength and Limitations

Although a significant body of work has emphasized the potential of positive parental and familial relationships to protect children from the negative consequences of war trauma from early childhood into early adolescence, there are only a few established and evaluated interventions that utilized long-term monitoring of potentially vulnerable families residing in low-resource countries such as rural Uganda. A strength of the current study lies in its hard-to-reach sample as well as the large retrieval rate of participants across all three waves of measurement. Additionally, our sample had a comparably low age-range at wave 1 ensuring that participants were all in a similar developmental stage. This potential developmental homogeneity allows for an easier interpretation of results. The study also explored the predictive value of variables measured directly following the conflict (guardians' mental health, trauma-load) as well as the predictive value of the development of post-conflict risk-factors (family violence) on depressive symptom trajectories. To the best of our knowledge, this is also the first longitudinal study linking depressive symptom trajectories with adolescent future expectations.

However, certain limitations have to be noted. First, baseline symptoms were only assessed after the civil war concluded. As a result, we were unable to conclusively identify the impact of pre-conflict mental health status or family problems on symptom development after the war. Secondly, the present study did not monitor guardians' psychopathology or community integration and support across all waves of measurement. It seems plausible that the development of guardians' psychopathology might both directly affect children's depressive symptom trajectory as well as indirectly via an increase in family violence. It is also possible that children's emotional and behavioral difficulties could influence their guardians' psychopathology. Further studies should apply a cross-lagged model approach to analyze the interaction of these factors with depressive symptoms across each point of measurement. Such

an approach would offer the opportunity to assess whether an additional path between an increase in depressive symptoms causing an increase in family violence as a result of children's more problematic behavior comes into play in post-conflict family life (Catani, 2010). Such an improved model would also benefit from the inclusion of other typical post-conflict environmental stressors such as financial struggles or discrimination within the community, as suggested by Miller & Rasmussen (2017). A more comprehensive model would also provide the opportunity to further understand the resilience- and risk-promoting factors for *recovery* or *late-onset* trajectories in post-conflict environments. Furthermore, our study only assessed community support and integration at wave three as a developmental outcome. It seems plausible that the level of community support and integration at wave one and two might also work as a predictor for depressive symptom development.

8.3.5.2 Conclusion

Growing up in conflict-affected societies poses multiple conflict and post-conflict risks for children's and adolescents' mental health, which lead to distinct depressive symptom trajectories connected to children's developmental adjustment in early adolescence. Although most of the sample showed a resilient development over time, family violence seemed to be the main contributor to more detrimental depressive symptom trajectories, surpassing both war-trauma and parental psychopathology directly after the conflict. The occurrence of both a *recovery* and a *late-onset* trajectory class suggests the importance of long-term monitoring of depressive symptoms after conflict as well as stepped-care approaches to support affected children and families when and how they could benefit the most. Future studies should apply a cross-lagged model approach including parental psychopathology, post-conflict environmental factors, and family violence to assess the long-term interaction of these risk factors on the development of children's depressive symptoms over time.

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8.3.7 Tables and figures

Table 1.
Model-fit Indices for the 2-6 class solutions in the lcmm for depressive symptoms.

No. of classes	AIC	BIC	SABIC	Entropy	Percentage of sample per class based on most likely class membership
2	4663,74	4706.73	4671.83	0.6689	14/ 85
3	4565.00	4623.62	4576.04	0.7675	11/72/17
4[1]	4494.74	4569.00	4508.72	0.8000	11/11/71/7
5	4502.74	4592.63	4519.66	0.5418	69/0/12/9
6	4510.74	4616.26	4530.60	0.4431	0/66/10/0/13

Note. AIC = Aikaike information criterion; BIC= Bayesian information criterion; SABIC = sample-adjusted Bayesian information criterion The four class solution (marked in bold) reveal the best model fit. [1]The four-class solution provided the best model fit across all indices.

Table 2. *Descriptive information of the sample according to depressive symptoms trajectory class membership.*

	Total sample (N = 368)	"Late- onset" (n = 40)	"Recovery" (n = 40)	"Low symptoms" (n = 260)	"Chronic symptoms" (n = 28)	Group comparison[1]
T1 variables						
Age, mean (SD)	9.01 (1.25)	9.13 (1.24)	8.89 (1.05)	9.00 (1.28)	9.04 (1.37)	$F (3; 364) = .13^{ns}$
Gender (female), n (%)[2]	168 (45.7)	20 (50%) $\chi_{1vs2}^2 (1) = 1.27^{ns}$ $\chi_{1vs3}^2 (1) = 6.66^{*}$ $\chi_{1vs4}^2 (1) = .88^{ns}$	25 (62.5%) $\chi_{2vs3}^2 (1) = 1.21^{ns}$ $\chi_{2vs4}^2 (1) = .76^{ns}$	106 (40.8%) $\chi_{3vs4}^2 (1) = 4.11^{*}$	17 (60.7%)	
Orphan (lost at least one parent), n (%)[2]	106 (28.8)	13 (32.5%) $\chi_{1vs2}^2 (1) = .22^{ns}$ $\chi_{1vs3}^2 (1) = 2.07^{ns}$ $\chi_{1vs4}^2 (1) = .21^{ns}$	15 (37.5%) $\chi_{2vs3}^2 (1) = .62^{ns}$ $\chi_{2v43}^2 (1) = .98^{ns}$	69 (26.5%) $\chi_{3vs4}^2 (1) = .40^{ns}$	9 (32.1%)	
Family violence, mean (SD)	4.02 (3.37)	$3.28 (1.88)^{acd}$	$6.43 (4.56)^{bd}$	$3.69 (3.03)^{acd}$	$4.64 (3.82)^{abcd}$	$F (3; 364) = 9.17^{***}$, $\eta^2=.07$
Trauma load, mean (SD)	2.47 (2.02)	$2.35 (1.88)^{abcd}$	$3.50 (2.33)^{abd}$	$2.34 (1.96)^{acd}$	$2.43 (1.97)^{abcd}$	$F (3; 364) = 4.00^{*s}$ $\eta^2=.03$
Female guardian PDS sum (SD)	2.92 (4.75)	3.56 (4.7)	3.95 (5.5)	2.65 (4.57)	3.00 (5.2)	$F (3; 361) = 1.15^{ns}$
Female guardian DHSCL sum (SD)	.80 (.66)	.84 (.64)	.87 (.67)	.78 (.67)	.82 (.55)	$F (3; 361) = .27^{ns}$
Male guardian PDS sum (SD)	2.81 (4.42)	2.16, (4.14)	3.36 (5.17)	2.78 (4.28)	3.21 (5.07)	$F (3; 300) = .47^{ns}$
Male guardian DHSCL sum (SD)	.41 (.49)	.52 (.55)	.46 (.50)	.38 (.47)	.46 (.49)	$F (3; 300) = .91^{ns}$
T3 variables						
FESA, mean (SD)	62.31 (11.44)	58.10 (13.60)	65.21 (8.3)	62.77 (10.88)	62.00 (13.87)	$F (3; 275) = 2.51^{ns}$
Community integration, mean (SD)	43.97 (8.71)	$39.36 (9.89)^{ad}$	$46.59 (5.64)^{bc}$	$45.12 (8.35)^{bc}$	$39.17 (8.70)^{ad}$	$F (3; 261) = 7.46^{***}$ $\eta^2=.08$
Missed school days, mean (SD)	1.93 (1.33)	2.15 (.14)	1.93 (1.39)	1.85 (1.30)	2.32 (1.44)	$F (3; 279) = 1.31^{ns}$
Physical altercations, mean (SD)	.24 (.57)	.28 (.78)	.32 (.61)	.23 (.52)	0.20 (0.50)	$F (3; 280) = .29^{ns}$

Note.[1] Continuous variables were compared across trajectory classes using one-way ANOVA with Hochbergs' GT2 post-hoc test to account for the different class-sizes. Superscripts (^{abcd}) indicate significant class differences (class 1 =^{a}, class 2=^{b}, class 3=^{c}, class 4= $^{d.}$). [2] Dichotomous variables were compared across trajectory classes using Chi [2] Statistics, with Bonferroni-Holm corrected p-values. *= p<.05, **p<.005,*** p<.001, ns=non-significant

Table 3. *Multinomial regression predicting CDI trajectory class membership (DV) with T1variables of children and their guardians.*

	Model fit statistics		Group specific odds ratio estimates		
	Likelihood ratio test (df)	p	Late onset	Recovery	Chronic symptoms
Intercept	.0	.			
Gender	14.10 (3)	<.01	.53 ^{ns}	.28**	.35*
Family violence (T1)	13.50 (3)	<.01	1.01^{ns}	1.88**	1.67*
Trauma load (T1)	4.66 (3)	ns	1.06 ^{ns}	1.55*	.94 ^{ns}
Mother Psychopathology (T1)	4.32 (3)	ns	1.08 ^{ns}	1.49*	1.24 ^{ns}
Father Psychopathology (T1)	0.62 (3)	ns	.86 ^{ns}	1.02 ^{ns}	1.02 ^{ns}

Note. Females served as the reference group for gender, the low symptoms group served as the comparison group for model tests and odd ratios. Age and orphan status were also included as a covariate in the model but were nonsignificant and therefore not included in the final model. ***p<.001; **<.010, *.<.05, ns= non-significant

Table 4. *Multinomial regression predicting CDI trajectory class membership (DV) with family violence change score*.

	Model fit statistics		Group specific odds ratio estimates		
	Likelihood ratio test (df)	p	Late onset	Recovery	Chronic symptoms
Intercept	.0	.			
Gender	6.46 (3)	<.10	.80 ^{ns}	.39*	.54^{ns}
Family violence change score (T3-T1)	42.14 (3)	<.01	2.55***	.53*	1.74*

Note. Females served as reference group for gender, the low symptoms group served as the comparison group for model tests and odd ratios. Age and orphan status were also included as a covariate in the model but were nonsignificant and therefore not included in the final model. ***p<.001; **<.010, *.<.05, ns= non-significant

8.3.8 Figures

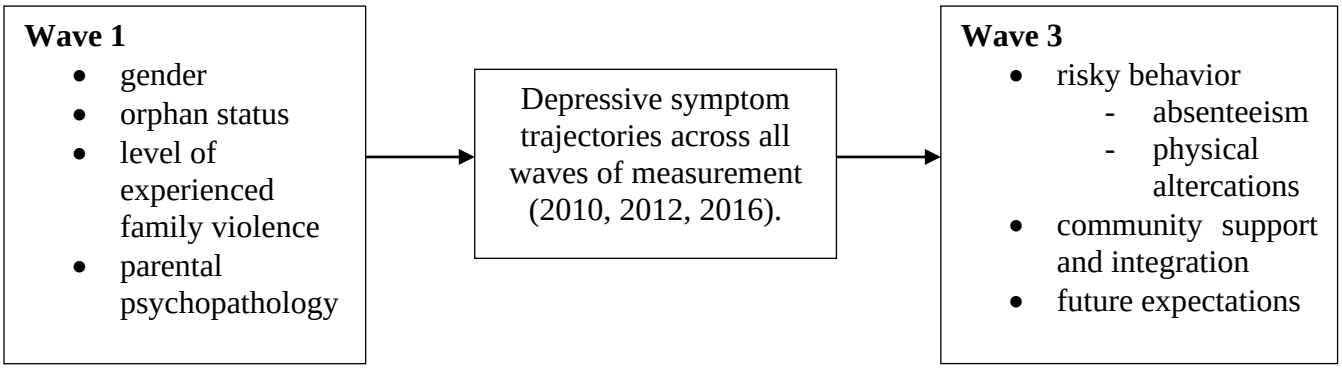


Figure 1. Graphical depiction of the study objectives.

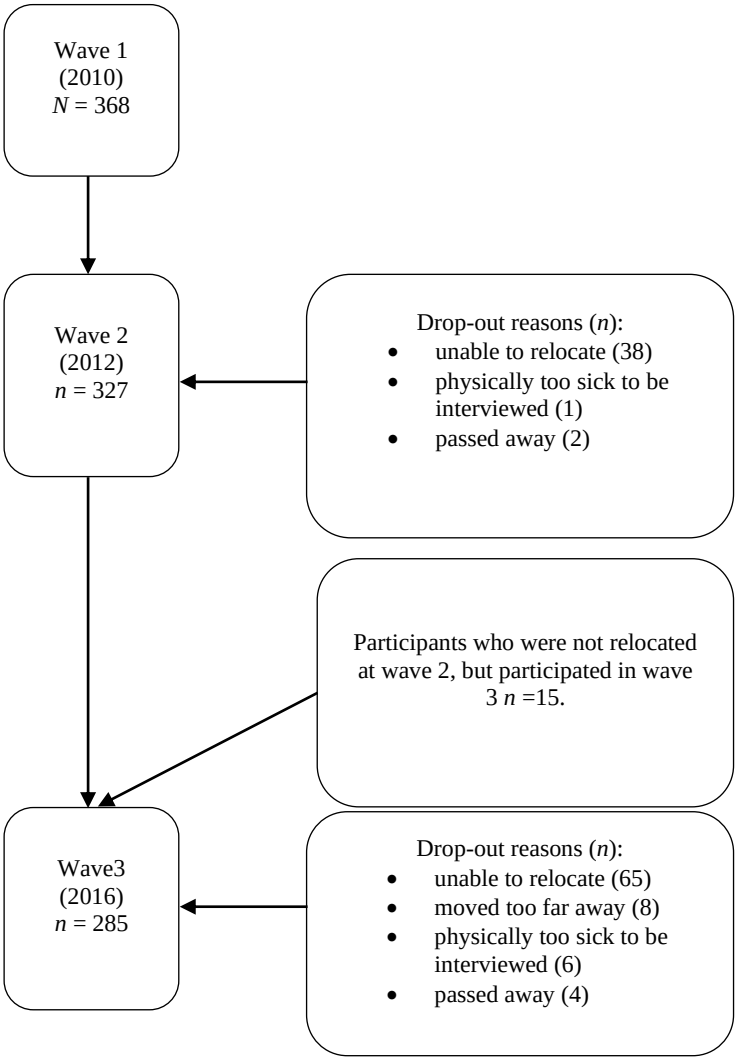


Figure 2. Participant flow-chart depicting participant attrition between wave 1 and wave 3 of the data collection

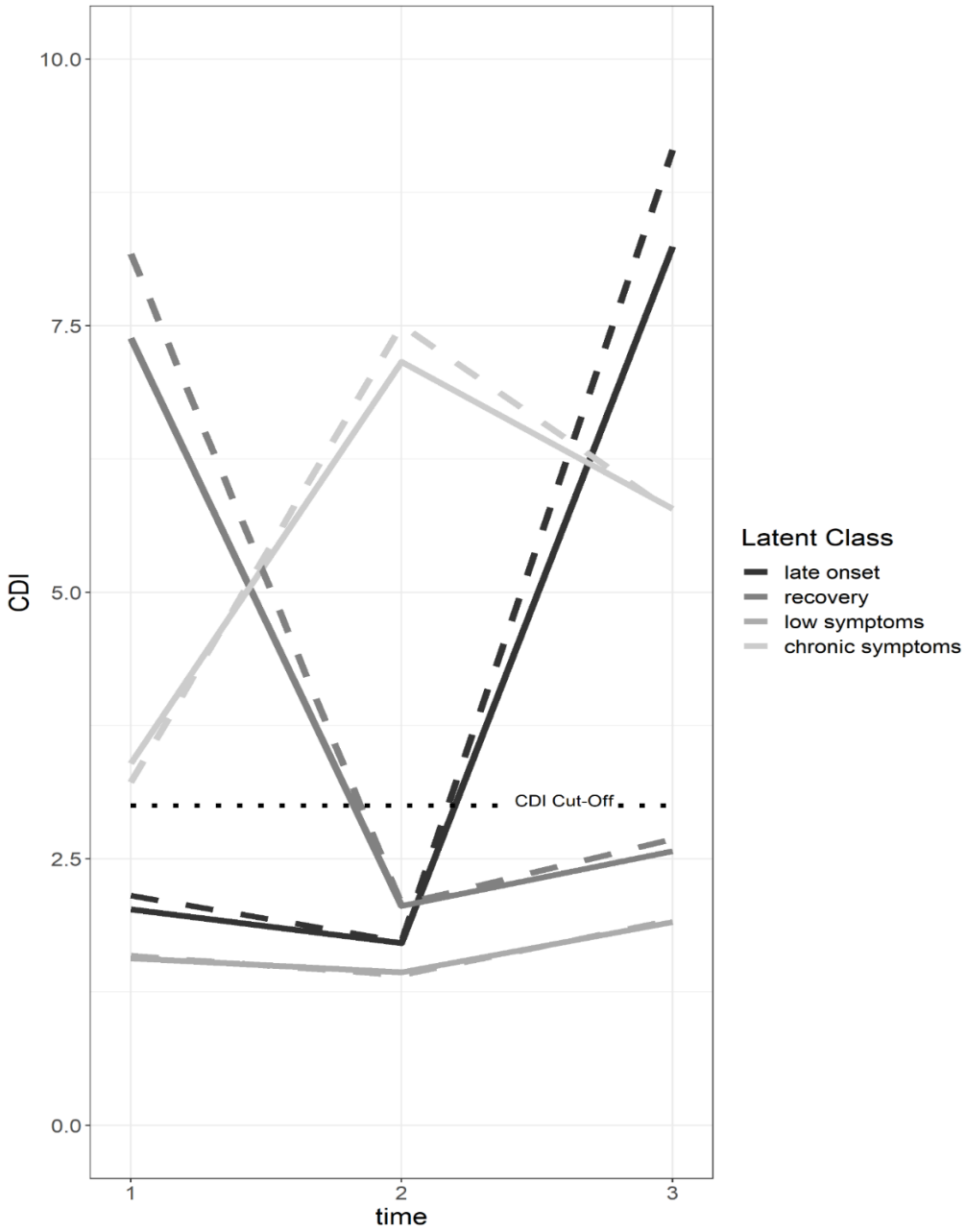
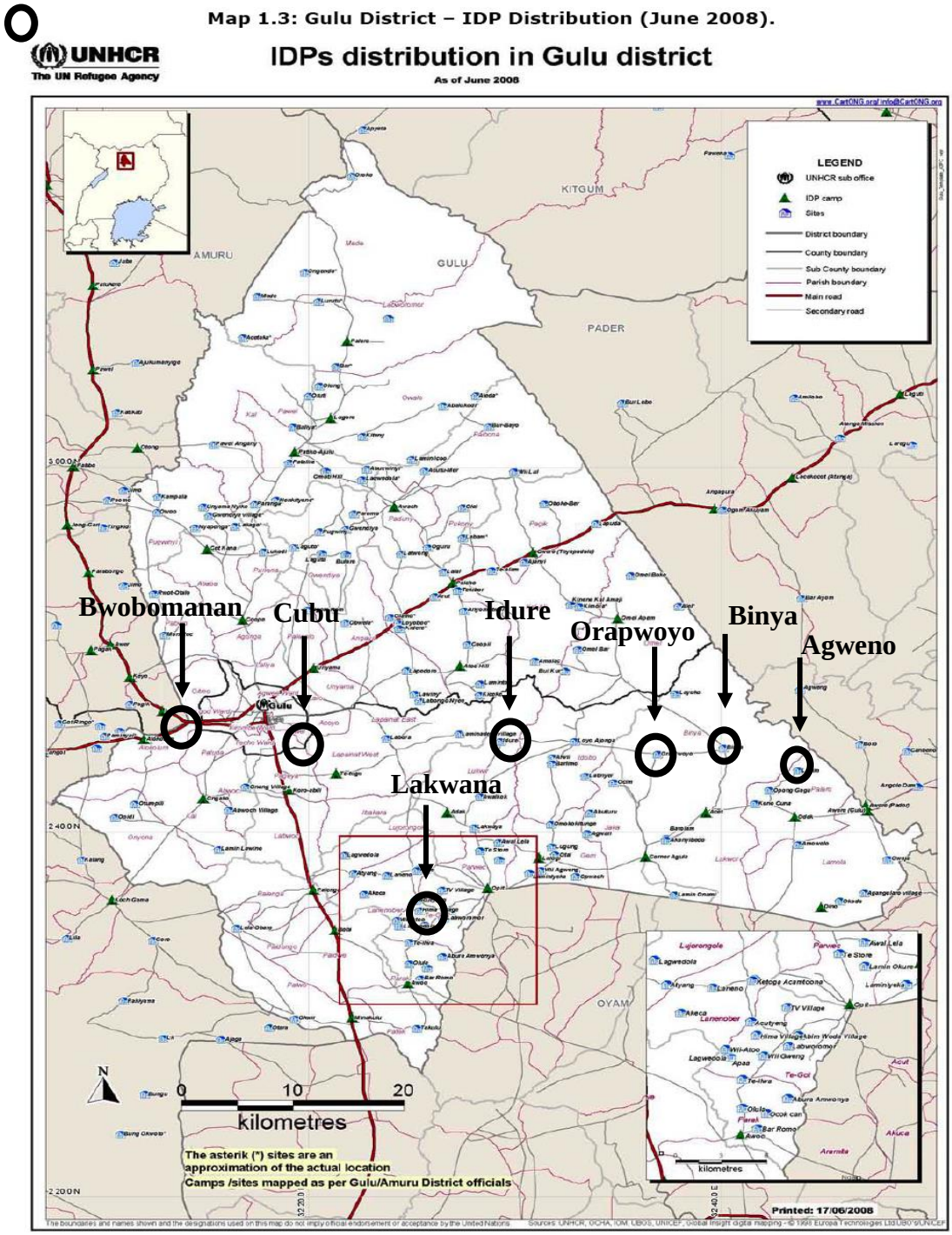


Figure 3. Estimated mean and predicted trajectories of depressive symptoms in Northern Ugandan youth across three time points. Bold solid lines represent the observed and bold dashed lines indicate the estimated latent class trajectories.

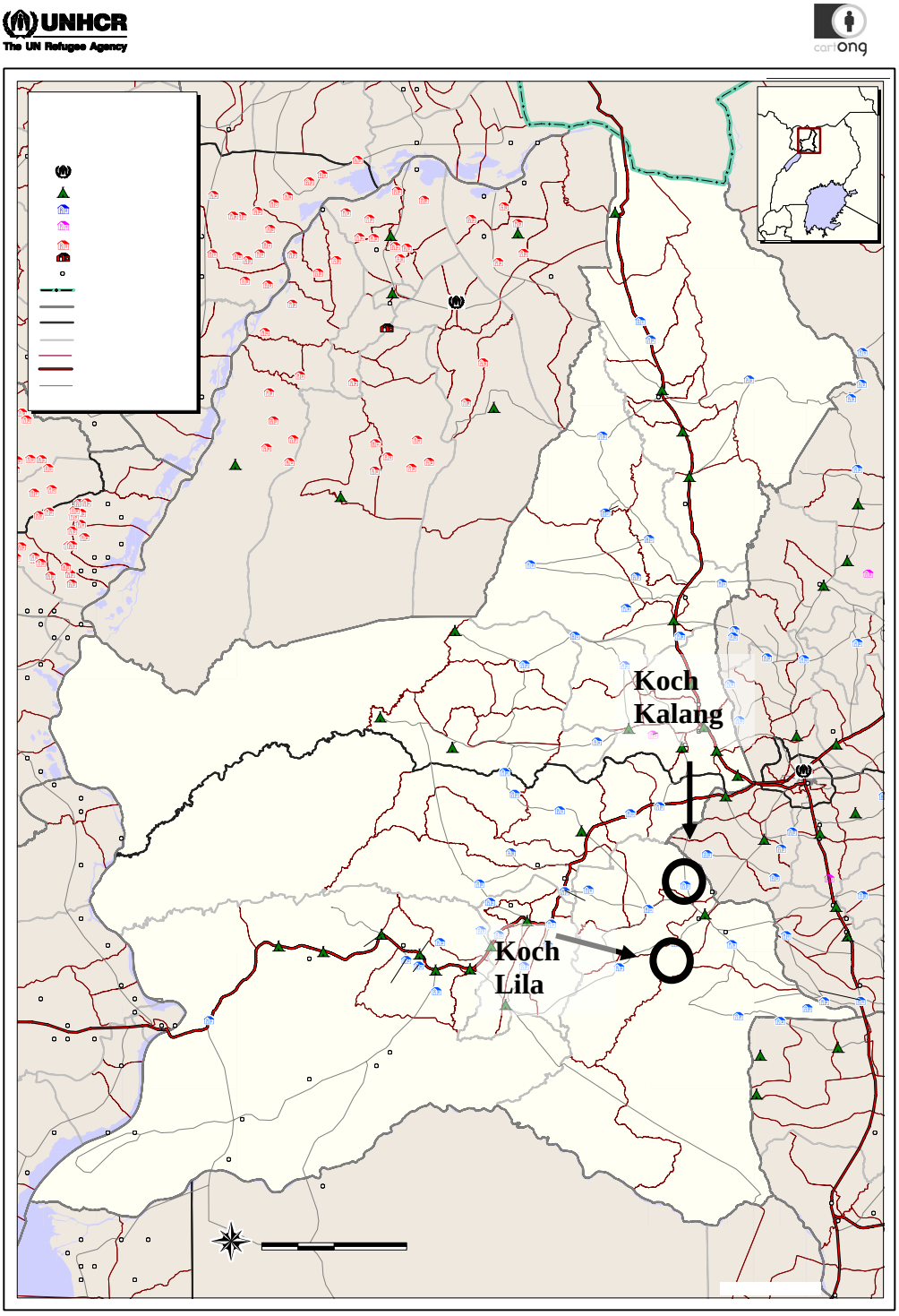
9 Appendix

9.1 Map of Gulu district



Appendix

9.2 Map of Nwoya district



Appendix

9.3 Overview adolescents workshop

Day 1 Time	Activity	Material
9–10am	Arrival of participants Registration	School lists Masking tape and Eddings for nametags Consent forms
11am–1pm	Introduction of the team Workshop overview Ground rules & questions Introduction of the Moodmeter -> fill out for morning mood Evaluation (pre-test) Part 1 – How war affects communities Warming up (story) & discussion Social Interaction Learning Modell Conflicts at home Warning signs Situations at-risk & Coercion Modell What to do in situations at risk Short summary of morning activities Moodmeter for morning activities	Flipchart: Workshop overview Groundrules Moodmeter day 1 Evaluation symbols Consequences of war Social Interaction Learning Modell Warning signs Situations at risk Coercion Modell „What to do in Situations at risk“: DO! / DO NOT! / HOW TO GET HELP! Other Material: Questions box and paper Flyer “Dealing with conflicts” Pre-evaluation questionnaires Consent forms Pens Clear bags for questionnaires
1pm–2pm	Lunch Break	
2pm–2.10pm	Energizer: The human web	
2.10pm–4pm	Short repetition of morning activities Role play “What would you do?” Discussion about role play Transfer of anger Anger management Homework: Practise anger management!	Flipchart: Transfer of anger Anger management

Appendix

Day 2 Time	Activity	Material
9–11am	Arrival of participants Registration Energizer: Robot-Testing	School lists Masking tape and Eddings for nametags
11am–1 pm	Short repetition day 1 Homework check & discussion Overview about day activities Part 2 – Dealing with consequences of stress Conflicts at home (story) & discussion Suicidality (definitions) What to do –when it is you Emergency plan What to do when it is a friend Role-play “suicidal friend” Summary morning activities Moodmeter for afternoon activities	Flipchart: "Consequences of chronic stress“ Downward spiral „Suicidality (definition: idea/ prep/attempt...) „What to do when suicidal – YOU“ „Emergency Plan“ „What to do when suicidal – A FRIEND“ Other Material: Emergency plan cards script Upward-Spiral cards Pens
1pm–2pm	Lunch break	
2pm–2.10pm	Energizer: Lifeboat	
2.10pm–5pm	Part 2 What to do when it is a friend Role-play “suicidal friend” Summary day 2 & open questions Moodmeter for afternoon activities Evaluation day 1 & 2 (post-test) Summary whole workshop Handing out certificates & flowers	Flipchart: „What to do when suicidal- A FRIEND“ Material Pens Evaluation post-tests Role-play 2 (suicidal friend) Certificates Flowers

Appendix

9.4 Overview female guardians workshop

The female guardians workshop was less structured than the adolescents workshop to allow more flexibility to accommodate participants' other duties (e.g., taking care of accompanying small children).

Day 1

1. Ground rules
2. General information on the topics and schedule of training;
3. Main message: raising a child is wonderful, but at times also challenging/Our children need and deserve the best possible care/All of us can learn to become better parents or caregivers
4. Questions/hopes/concerns (participants' own challenges in raising their children)
5. Building on strength: Resources of female guardians and their children
6. Interplay of contextual and individual factors as well as aspects of the dyadic interaction (based on the social interaction learning model)
    a. Influencing your child/Be a role model
    b. Influence of contextual stressors on guardians, children and the dyadic relationship
7. Managing emotions
    a. Anger
    b. Homework: practice anger management (JUKU KINIGA)

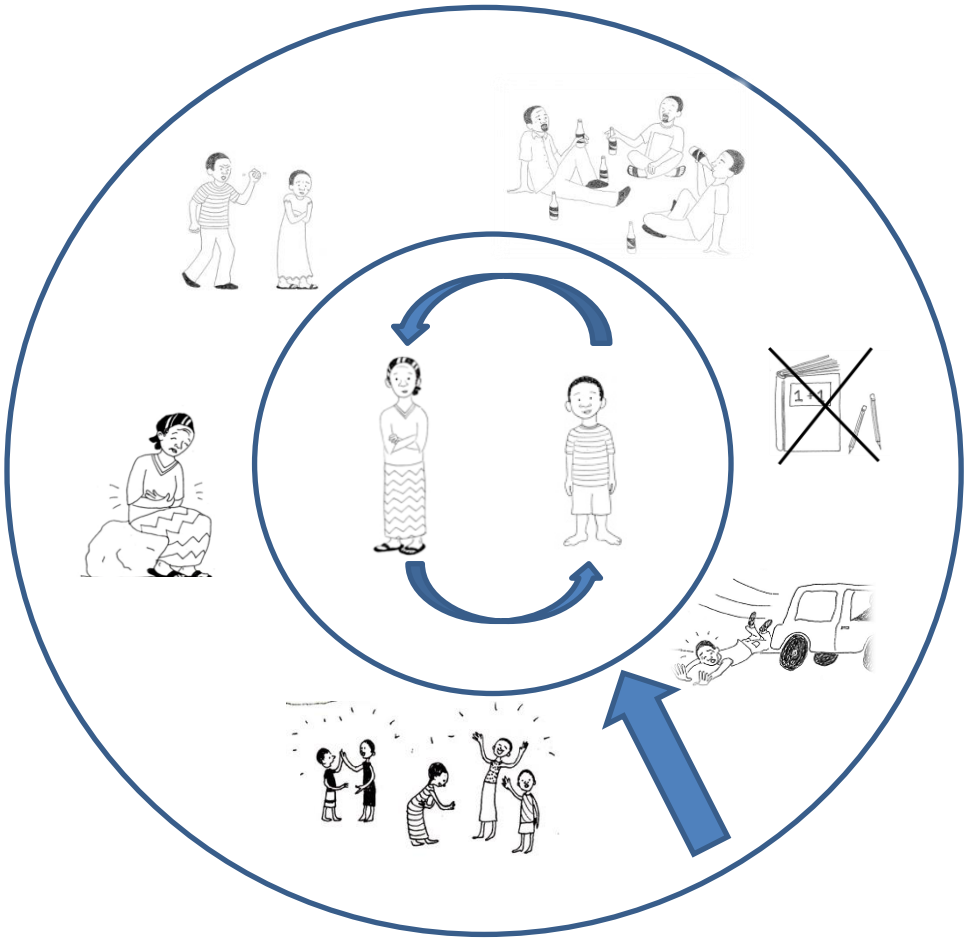
Day 2

1. Managing emotions
    a. Differentiating anger and anxiety
    b. Dealing with anxiety and sadness
    c. Homework: practice anger management (JUKU KINIGA)
2. Parenting skills: Encourage cooperation (role plays, participants' examples)
    a. Aversive instructions
    b. Too many words
    c. Drive-by
    d. How to address non-compliance
3. How to approach children
    a. How to address non-compliance
    b. Positive discipline (praising/role model/withholding privileges/grounding/time out/extra chores)
    c. Appropriate consequences for unwanted behavior (discipline versus punishment)
4. Communicating with children (role plays)
5. Understanding my child's misbehavior
6. Setting limits
7. Discussion about workshop content and personal parenting challenges

Appendix

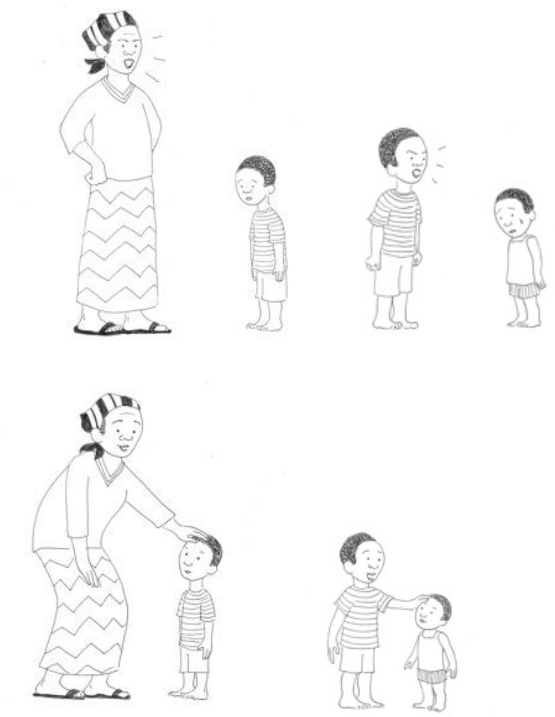
9.5 Examples of workshop material

9.5.1 Social Interaction learning model

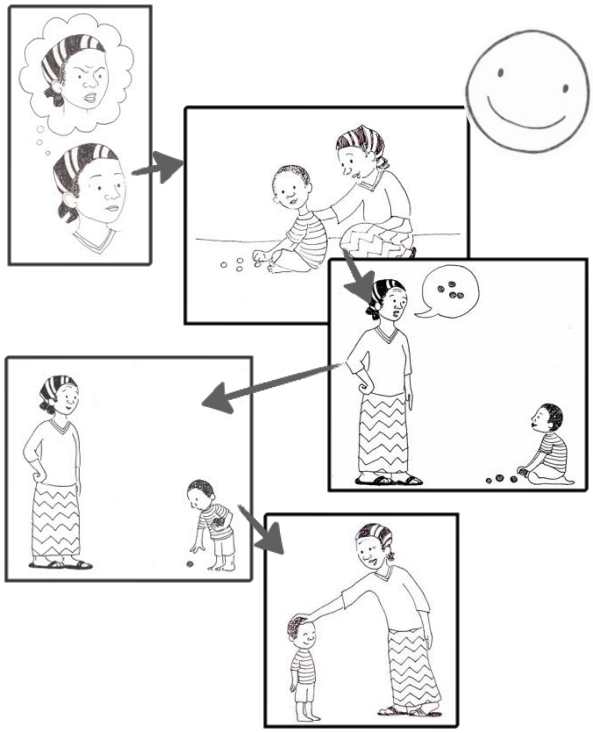


Appendix

9.5.2 Be a role model



9.5.3 Addressing children’s misbehavior



Appendix

9.6 Narrative to discuss study results with participating communities

How war may affect communities

Warming up:

Introduce Opiyo's and Anena's family by showing participants the flipchart with the family picture. Explain who the different people in the picture are, and their relationship to each other. Tell participants that Opiyo and his family live in a small village in northern Uganda. Let them also know that this family will accompany us throughout the whole workshop.

Tell the participants that they will now hear a story of how life has been for Opiyo's and Anena's family since the war.

Many cultures especially in Africa have strong family lines and family ties. They usually live in homesteads with a clear command structure within the homes. The elders guide the children and youth; they also undergo many 'apprenticeships' with the elders in which the elders teach them various life skills. The families work together to produce food and ensure that there is enough for all family members. When family members fall ill, the family members support the sick person and if resources are not enough in the family, the neighbors are ready to help.

Extended families also ensure that children who lost their parents are taken up into other families of relatives and life continues. Young girls are often protected from sexual violence and the villages have community structures that deal with gender-based violence. Some of these include councils of elders and village courts. Families also struggle to take their children to school, so that they obtain longer-term skills for their personal development. These positive things made many African families stable and proud, even when they were not that well-off economically. This situation is what it used to be in Opiyo's and Anena's village, until the year that the village was hit by war. 20,000 people in the sub-county were displaced and they had to stay in Uganda's displaced peoples' camps. There was a total breakdown of social systems and support networks within the communities. Family structures were affected because many children lost their parents and some could not trace their relatives. Those who were going to school had to stop their schooling. There was reduced food production and families had to have one meal a day. There was an increase in poverty at household level because families that were dependent on selling agricultural produce in the markets could now not produce adequate food. There was an increase in malnutrition in children. The children also changed. Parents in the area reported that many children in their homes were now difficult to manage because they had become more rebellious. There has been an increase in fights, stubbornness, aggressiveness, naughtiness and isolation among the children and youth. Even after the conflict, there were still many problems. There was an increase in poverty at household levels. Parents could not afford to take their children to school or to provide scholastic materials. As a result, many children and youth dropped out of school. Because of this, there was an increase in early marriages, teenage pregnancies and deaths of mothers due to complications of childbirth. Many young girls were raped by older men, or 'given away' for marriage to older men when they were still young. Many victims of rape feared to report because society would 'stigmatize' them and in any case, nothing much was done even when they reported. Parents were very stressed out

because of the things they had experienced during the war und their daily struggle to provide enough food and money for the family to live on. Some parents started drinking more alcohol to deal with their memories from the war and their daily stress and fears. Sometimes that would lead to fighting between the parents or to severe beatings of their children, when they had acted against their parents' wishes or even without a clear reason.