

Identifying Entry Points for Multisystemic Resilience in South Sudan.

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Abstract

According to the 2019 Fragile States Index, South Sudan is the third most fragile state globally. Violent conflicts and economic shocks have led to a dramatic erosion of livelihoods and well-being of South Sudanese communities. In this context, the United Nations is focusing its in-country efforts to building multisystemic resilience, through an integrated “one UN” approach. However, there is limited evidence on which capacities – individual, material, communal or institutional – most contribute to resilience. We conducted a multilevel study, with 1379 South Sudanese participants from five regions of the country which have faced a diversity of conflict-related, environmental and economic shocks. Adaptive life outcome was also defined multidimensionally, to include psychological well-being, food security and a peaceful nonviolent orientation, despite adversities. Data collection for the study was completed in late 2020. Results showed that a number of resilience capacities contribute to different outcomes in the face of adversities. These are further discussed in the Results and Discussion sections of this paper. This research provides important implications for practice and policy. Findings will inform UN policy in South Sudan, whilst providing broader insights into processes of multisystemic adaptation in times of complex adversities.

Keywords: multisystemic resilience, adaptation, fragility, adversity, conflict.

Declarations

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Introduction

Resilience research first emerged in the early nineteen-seventies in the fields of psychology and ecology. Garmezy (1973) focused on explaining people's successful adaptation despite the experience of adversity and trauma, whilst Holling (1973) studied ecosystems' capacity to return to their equilibrium or steady state following disturbances and stressors. Various disciplines, including psychology, have shown interest in a flexible definition of resilience with the scope to integrate theory and research, as well as effectively respond to disasters and large-scale traumatic events (Masten, 2011, 2014).

Many states in the regions of Eastern and Southern Africa (ESA) and Western and Central Africa (WCA) are subjected to prolonged crises and shocks, with their existing national systems becoming incapable of coping, whilst those people who are already vulnerable are severely impacted. As a response to these emergencies and their consequences, discussions on resilient development emerged with the goal to help individuals, communities and states to better prepare, manage and recover from their crises (UNDG ESA & UNDG WCA, 2015). The United Nations (UN) has focused their attention on resilient development mainly for both contextual and programmatic reasons. Specifically, many countries in the ESA and WCA regions are facing multiple risks, including conflict and insecurity, economic shocks, climatic changes, livelihood insecurity, mass displacement, natural disasters, such as droughts and floods and disease outbreaks, such as the Ebola virus. Moreover, these shocks are further exacerbated by chronic stressors, such as chronic food insecurity and malnutrition, poverty, inequality, poor governance, corruption, fragile institutions and services, violence and conflict. Additionally, Africa has been experiencing an unprecedented population growth which further reiterates the need to invest in youth to minimise the risk of future shocks. As conflicts surge and become more protracted, the UN has emphasised the need to pay special attention to regions which have been impacted by violence, instability and conflict, as well as acknowledge climatic changes as drivers of conflict, especially in areas that the economy is highly dependent on agriculture and livestock. It has also been recognised that previous humanitarian and development interventions have not adequately addressed the causes of prolonged vulnerability and often failed to meet the magnitude of needs, whilst, more effective, efficient and sustainable ways to respond to crises are needed.

Conflicts and violence between non-state actors, such as militias, rebel groups and violent extremist and terrorist groups are considerably increasing globally, whilst many become more protracted and inextricable, even when standard conflict resolution strategies are implemented (United Nations, 2020). Between 2010 and 2016, there was a substantial increase in the number of conflicts, from less than 30 to more than 70, whilst the

average duration has soared from approximately five years for those ending in the seventies to approximately 20 for those ending in 2015 (United Nations & World Bank, 2018). There is substantial evidence demonstrating that many systems are significantly and detrimentally affected following armed conflict. On an individual and community level, civilians and particularly women and children usually suffer the most during conflict, whilst sexual and gender-based violence (SGBV) and human trafficking, have been reported as ubiquitous in conflict-affected settings (McAlpine, Hossain & Zimmerman, 2016). Experiencing or witnessing horrifying acts of violence and atrocities, but also separation from caregivers and loved ones, and disruption of social and communal relations, can cause severe psychological trauma which can further lead to mental health difficulties, such as flashbacks, nightmares, depression and aggression (Murthy & Lakshminarayana, 2006). Large numbers of people are forced to flee their homes and seek international protection elsewhere, whilst children are very often separated from their families. In the ESA and WCA regions of Africa, the number of displaced persons is considerably increasing, whilst, only a few manage to achieve a long-lasting solution (UNDG ESA & UNDG WCA, 2015). Conflict outbreaks can cause further insecurity by damaging critical infrastructure, social services, household welfare and precipitate economic shocks, such as price changes. In poorer and more fragile areas or households, the consequences of conflict further exacerbate any pre-existing difficulties and vulnerabilities. As a result, a plethora of factors can have direct or indirect impact on livelihoods and household welfare, like the destruction of human lives, assets (e.g., property, land, livestock, cattle, labour), social networks and the deprivation of people from their economic opportunities (Justino, 2011). The UN's "sustaining peace" agenda has stressed the importance of building local resilience against increasing uncertainty, whilst resilience has been already adopted by international organisations, such as the World Bank, the Organisation for Economic Co-operation and Development (OECD), as well as the UN as the main solution to past intervention failures (Coning, 2016; Juncos, 2018) and a number of resilient development frameworks have already been generated.

Consequently, concerns about responding to the far-reaching consequences and knock-on effects of humanitarian crises and emergencies, political violence, maltreatment, malnutrition, epidemics, financial crises and climatic changes have also shifted researchers' attention towards the study of resilience in individuals, families, communities, institutions, states, and financial and ecological systems (Masten & Obradović, 2008; Gunderson, 2010; Masten, 2014; Brown, 2014; Welsh, 2014). In light of this, resilience scholars have postulated that resilience in the face of adversity must be investigated by considering some concepts of adaptation or development, as well as the risks, hardships and disruptions that the system is subjected to (Garmezy, Masten & Tellegen, 1984; Luthar, 1991; Luthar, Cicchetti & Becker, 2000; Masten & Coatsworth, 1998). According to

Masten (2015), a system can be an individual, a family, an economy or other systems at small or large levels and its price meaning depends on the type of adversity and the type of outcome.

Multiple fields, including political science, architecture, genetics, human ecology and psychology demonstrated resilience as equally important in terms of individuals' culturally relevant resources in their social, built and natural environments, as well as in terms of their individual thoughts, feelings and behaviours, whilst it has been highlighted that systematic influences make a major contribution to resilience across the lifespan (Ungar & Theron, 2019). Specifically, Ungar (2008) has described resilience as "the capacity of individuals to navigate their way to the psychological, social, cultural and physical resources that sustain their well-being and their capacity to individually and collectively navigate for these resources to be provided and experienced in culturally meaningful ways". Resilience can be therefore understood as the resisting and recovering capacity of an individual, a household, a community, a region or a country. For this reason and in this context, three types of resilience are more salient; psychological, livelihood and conflict resilience.

Psychological Resilience

Despite the lack of consensus among scholars, in the field of psychology, psychological resilience is viewed as the ability of an individual to adapt to or recover from stressful and traumatic experiences (Crawford, Wright & Masten, 2005; Siriwaedhana, Sheik Ali, Roberts & Stewart, 2014; Masten, 2018). It has been previously stated that, exposure to conflict and adversity, including traumatic experiences (e.g., the destruction of one's home, a missing or dead loved one, physical attacks), daily stressors and poverty are associated with severe psychological distress and even psychiatric symptoms (Miller & Rasmussen, 2010), whilst war and terror attacks can have a detrimental effect on individual resilience (Eshel, Kimhi, Lahad & Leykin, 2017). In the face of conflict adversity, studies have identified potential sources or capacities of psychological resilience that might mitigate pathways from conflict exposure to negative outcomes. Specifically, in a more recent study, income and education were found to be predictors of individual, community and national resiliencies in an Israeli-Jewish sample (Marciano et al., 2019). This is consistent with the findings of a study with Turkish adolescents which conclude that low economic status was linked to poorer psychological resilience in adolescents facing adverse life circumstances due to social, cultural and economic adversity (Bulut et al., 2019). In a review of qualitative studies on young refugees, education was found to be contributing to youth's resilience (Sleijpen, Boeijs, Kleber & Mooren, 2015). In fact, it was perceived as the fundamental way of having control over their life and escape their disadvantaged positions, as well as essential for a higher status. A number of authors have recognised emotion regulation, one's ability to regulate an emotion or a set of emotions,

as potentially contributing to resilient outcomes (Southwick, 2011; Levey et al., 2016; Lordos & Hyslop, 2020). In their qualitative study, Levey et al. (2016) investigated factors impacting resilience in youth in post-conflict Liberia and argued that emotion regulation was found in participants who exhibited resilient outcomes. Consistent with this finding, in a more recent meta-analysis, attention was drawn on the protective factors in children exposed to violence and self-regulation which included measures of emotion regulation, impulse control and ego resilience were found to have a significant impact on children's resilience in longitudinal studies (Yule, Houston & Grych, 2019). More recent evidence shows that a number of different life skills and character strengths have been associated with resilience amidst conflict on the individual level (Lordos & Hyslop, 2020; Lordos, Symeou, Anastasiou, Morin, Fanti, Lemishka, Guest, Machlouzarides & Sikki, 2020). In particular, in the past, our research team demonstrated that a balanced life skills profile is associated with multisystemic resilience in conflict-affected adolescents (Lordos et al., 2020).

Livelihood Resilience

An equally significant aspect of multidimensional resilience is livelihood resilience. A livelihood is comprised of social and material assets, and activities required for a means of income (Scoones, 1998). It is sustainable when it can resist and recover from adversity whilst sustaining its assets and potential without compromising its basic natural resources. This approach takes into account people's socioeconomic, agroecological, political, technological and demographic context, their access to assets, including human, natural, physical and financial ones, the organisations and policies that decide upon people's access to assets and the profits they can attain; the priorities people set in tackling their problems and lastly, the different strategies they use to address the priorities (Ashley & Carney, 1999). These resources can be leveraged to cope with adversity and hence can be viewed as a source of resilience, however only if they are accessible and usable (Lordos & Hyslop, 2020). Similarly, in the food security field, resilience has been defined as "the capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences" (Constas, Frankenberger & Hoddinott, 2014). It is important to note however, that for those socioecological systems that are facing extreme adversities (e.g., persistent food insecurity, chronic poverty), resilience is not only viewed as their capacity of bouncing back to their initial state, but also to the processes of making the necessary changes to become successful (Fan, Pandya-Lorch & Yosef, 2014a). Threats and adversities to livelihood resilience include; complex crises, conflict, disease outbreaks, market shocks, droughts, floods, and earthquakes. In the aftermath of ongoing and protracted conflict, there can be a reduction in food imports, stocks and income, a rise in food prices, whilst, risks and threats in food production and buying can be increased (Brück, d'Errico & Pietrelli,

2019). Recurring crises and conflict deteriorate the efforts of countries to eliminate famine and malnutrition and put natural resources (e.g., forests, soils, water supplies) under considerable strain, whilst climatic changes aggravate the situation (FAO, 2015). The Food and Agriculture Organisation (FAO) (2015) has reported that approximately 75% of impoverished and food insecure individuals rely on natural resources and agriculture for their living, yet, they are the most impacted by disasters. When confronted with threats and adversities, those who depend on livestock and farming for their food and income are often forced to sell their assets, reduce their food portions and abandon their farms to look for other means of income (FAO, 2015). According to the FAO Resilience Index and Measurement Analysis (RIMA) framework, when a shock occurs, a household is the “buying centre” which makes decisions about maintaining a certain level of food security through various means and coping strategies, such as selling its assets and establishing “consumption smoothing” by ensuring that there is a correct balance between spending and saving (Alinovi, Mane & Romano, 2008; Alinovi, d’Errico, Mane, Romano, 2010; FAO, 2016).

There is a strong association between food security and household resilience capacity.

A household is food secure when its members have the capacity to obtain the food they need (Pinstrup-Andersen, 2009) and therefore, in the face of a negative shock, a more resilient household will experience a smaller reduction in food security compared to a less resilient household (Brück, d’Errico & Pietrelli, 2019). Dimensions that might help mitigate pathways from conflict exposure to negative outcomes include; access to basic services, assets, adaptive capacity and social safety nets (FAO, 2016; Smith & Frankenberger, 2018). A number of experts in the field provided evidence that access to services, including healthcare, water supply, sanitation, markets and schools is a vital household resilience capacity (Brück et al., 2019; Smith & Frankenberger, 2018). Furthermore, access to basic services can contribute in reducing the risk for disease due to insufficient sanitation and water provision (Dercon, Bold & Calvo, 2008). Other capacities reducing the negative outcomes of conflict include; social and human capital and the diversity of livelihoods (Brück et al., 2019; Smith & Frankenberger, 2018). More specifically, in their study on investigating households’ resilience capacities following a natural catastrophe in Northern Bangladesh, Smith and Frankenberger (2018) demonstrated that women’s empowerment, governance, exposure to information and psychosocial capabilities were found to be contributing positively on household food security. It has therefore been demonstrated that, a livelihoods system is resilient when it is equipped with the necessary resources (e.g., diversity of assets; political, institutional and governmental initiatives to foster learning, preparedness and innovation) (Saint Ville,

Hickey, Locher & Phillip, 2015) to respond to shocks and stressors (Béné, Headey, Haddad & Grebmer, 2016; Béné, Newsham, Davies, Ulrichs & Godfrey-Wood, 2014).

Conflict Resilience

Resilience for peaceful living amidst conflict is understood as the ability to resist to structural changes caused by conflict escalation that lead toward inter-group violence (Carpenter, 2012). Changes occur in psychological states, in the way groups function and in the large heterogeneous community (Pruitt, Kim & Rubin, 2004). In terms of psychological changes, exposure to conflict can inflict hostile attitudes and perceptions about the “other” group or outgroup, including blame and fear which further produce cycles of anger and desires to punish and defensive acts against the outgroup (Maiese, 2005; Carpenter, 2012). Previous literature pertaining to resilience in conflict suggests that adolescents exposed to conflict hardship are at risk of becoming more polarised through negative feelings towards outgroups (Lordos et al., 2020). It has also been emphasised that exposure to ethnocultural conflict and tensions and/ or lack of natural resources urge the community to give up strategies of collaboration and adopt violent stances (Lordos & Hyslop, 2020; Carpenter, 2012; Gurung, Bousquet & Trebuil, 2006; Ratner, Man & Halpern, 2014; Vivekananda, Schilling & Smith, 2014; Hellin, Ratner, Meinzen-Dick & Lopez-Ridaura, 2018). Additionally, those individuals who have been repeatedly exposed to armed conflict and experienced fear and anxiety may end up internalising violence (Robben & Nordstrom, 1994; Ray, 2017). Exposure to ongoing conflict and adversities can lead to people being forced to become desensitised and normalise everyday violence in order to cope (Nguyen-Gillham, Giacaman, Naser & Boyce; 2008; Hermez, 2012; Ray, 2017). An example of desensitisation to violence is the increased tendency of children and youth in engaging in violent acts in an effort to adjust their needs to their present-day reality (Chatty, 2007; Harris, 2000; Nguyen-Gillham et al., 2008).

Capacities that might help to mitigate pathways from conflict exposure and specifically polarised ethnocultural identities, include fostering other identities beyond sectarian, such as, familial heritage and identity or by creating non-sectarian, but community-level organisations (Lordos & Hyslop, 2020). Carpenter (2012) proposed that sectarian polarisation can be hindered with the help and active participation of community leaders in promoting respect across the community whilst also dissuade people from engaging in sectarian attacks. In addition, conflicts erupt due to lack of resources as a result of climatic changes and natural catastrophes. Resilience capacities which have been found to be mitigating the negative outcomes in the face of climate change hardship are processes and resources in multiple social and ecological systems (Lordos & Hyslop, 2020). For instance, it has been previously suggested that farmers can switch to more draught, pest and

disease resistant crops and seeds to be prepared and be food secure in the face of a climate hardship and subsequently prevent any community competition which may cause conflict (Hellin et al., 2018; Vivekananda et al., 2014; Lordos & Hyslop, 2020). In addition to processes and resources, scholars have acknowledged specific individual capacities which enhance resilience amidst conflict. Specific capacities include; adopting alternative perspectives, being able to learn effectively from experience, being flexible in new situations, possessing leadership skills through transformation processes (Butler et al., 2015; Folke et al., 2005; Gurung et al., 2006; Lordos et al., 2020). Previous empirical studies have identified several features of community life which are potential sources of resilience in conflict-affected populations. Specifically, connectedness, social warmth, social support and cohesion in the family, workplace or school are manifested as capacities which protect conflict-affected individuals from adversities (Ager et al., 2015; Betancourt & Khan, 2008; Cummings, Merrilees, Taylor & Mondri, 2017; Eggerman & Panter-Brich, 2010; Fazel, Reed, Panter-Brick & Stein, 2012; Levey et al., 2016; Lordos et al., 2019; Nguyen-Gillham, Giacaman, Naser & Boyce, 2008; Panter-Brick, Goodman, Tol & Eggerman, 2011; Siriwardhana, Ali, Roberts & Stewart, 2014; Slone & Shoshani, 2017; Zraly & Nyirazinyoye, 2010). In view of this, resilience is increasingly being incorporated in the agendas of international organisations specialising in international development, disaster risk reduction and humanitarian sector in an effort to mitigate risk and leverage evidenced-based practices to promote resistance and recovery against adversities and overcome fragilities.

South Sudan Context

According to the 2019 Fragile State Index, South Sudan is the third most fragile state worldwide (Fund for Peace, 2019). The ongoing violent conflict and insecurity have pushed millions of South Sudanese people into extreme poverty, with the state formally declaring famine in February 2017 (UN News, 2017). Literacy rates remain low, with 40% of men and only 29% of women able to read and write (UNESCO, 2018). After many decades of civil war between the Arab-led Khartoum government in the North and the rebels in the Christian-majority South, South Sudan gained its independence from the state of Sudan in 2011. Peace did not endure for long, as the country descended into civil war soon after independence. Persistent tensions within the ruling elites reached their peak in December 2013, when a number of key officials were either dismissed or imprisoned, leading to an outbreak of hostilities which resulted in the deaths of 190,000 people from the conflict directly, and another 193,000 indirect deaths due to disruption of food supply and health services (Checchi, Testa, Warsame, Quach & Burns, 2018). This led to the formation of the Sudan People's Liberation Movement-in-Opposition (SPLM-IO) which opposed the Government (Mbaku & Smith, 2012). Despite the signing of the

most recent peace agreement, the “Revitalised Agreement on the Resolution of the Conflict in South Sudan” (R-ARCSS) which builds on the previous failed one, South Sudan continues to experience incidents of conflict and violent outbreaks. It has been estimated that approximately 4.5 million people have been displaced in the aftermath of armed conflict, with 2.5 million to neighbouring countries and 2 million internally (Checchi et al., 2018).

Historically, the country has suffered from extreme lack of investment, destruction of infrastructure and education facilities, and inequalities due to limited and unequal access to services and resources, including healthcare, education, economic opportunities and oil-revenues (Spittales & Weyns, 2014; Omoloye & Joshua, 2018). Years of violent conflict, systematic inequality, hunger and economic hardship have had a devastating impact on the South Sudanese population on many levels. Many people have been subjected to human rights abuses, torture, sexual violence, forced displacement, arbitrary arrest and even killing (Amnesty International, 2016; Bernardo, 2019; Liebling, Barrett & Artz, 2020). It was also notable that men reported more cases of physical and psychological torture and less of SGBV, whereas women reported high levels of violence, including SGBV, however less of torture (Liebling et al., 2020). Specifically, in a qualitative study of 161 internally displaced South Sudanese individuals, participants reported symptoms of post-traumatic stress disorder (PTSD), depression and physical effects of stress, such as heart palpitations and headaches (Amnesty International, 2016). These symptoms have had a significant adverse impact on their daily function. Consistent with these findings, it has been previously reported that PTSD symptoms were considerably prevalent in six states and Abyei, as nearly 41% of the participants reported symptoms of PTSD (Ng, López, Pritchard & Deng, 2017). Mental health provision is extremely scant in the country and as a result of this, patients with mental health problems are often transferred to prison (Amnesty International, 2016). More recently, in a study of 98 South Sudanese refugees who participated in interviews and focus groups, Liebling et al. (2020) demonstrated that participants reported suffering both short and long-term emotional trauma from the extreme violations of human rights (e.g., captivity, torture, gang rape) they underwent, whilst the physical impact, such as body injuries and health complications due to torture was pervasive. Experiences of emotional trauma included flashbacks, feelings of helplessness, suicidal ideation, nightmares, substance use and anger which often resulted in violence, including domestic violence (Liebling et al., 2020). It is estimated that 47% of the South Sudanese population is currently experiencing acute food insecurity due to conflict-related disruptions in livelihoods, displacement, financial crisis, assets depletion and climatic shocks (FAO, 2020). Moreover, according to the latest Integrated Food Security Phase Classification (IPC) analysis, approximately 5.5 million people are

predicted to experience acute food insecurity during the first four months of 2020 (FAO, 2020). Since the eruption of the conflict in 2013, South Sudan is still in the grip of ongoing cycles of conflict, particularly local and low-level violence, and some fear of a collapse of the latest R-ARCSS peace deal (Lynch & Gramer, 2020), whilst unaddressed grievances smoulder. Nevertheless, representatives of the two main warring parties have agreed in February 2020 to form a unity government to work towards the implementation of the agreement. These developments underline the importance of investigating what makes institutions, communities and individuals resilient enough to solidify peace and to face the challenges of the future.

Efforts to Enhance Multisystemic Resilience in South Sudan

There are multiple efforts being made by international, not-for-profit and community-based organisations to enhance multidimensional resilience in South Sudan.

Psychological Resilience

Regarding psychological resilience, mental health and psychological support is provided by International Medical Corps through the implementation of community-based integrated mental health services in four states. The organisation runs two inpatient units, one in Juba and one in Akobo and offers education on mental health issues via radio shows, home visits and weekly health education sessions (International Medical Corps, 2017). Between 2013 and 2016, Goldsmith & Cockcroft-Mckay (2019) reported that more than 20 not-for-profit organisations provided psychological support in South Sudan, including psychological first aid, healing classrooms and child friendly. For instance, Handicap International, a not-for-profit organisation has implemented a four-year programme aiming to promote and enhance civil society organisations and state service providers such as, the Juba Central Prison and Juba Teaching Hospital. The programme improved their service provision by increasing their capacity, providing clinical training to staff and ensuring the rights of people with mental health difficulties (Goldsmith & Cockcroft-Mckay, 2019).

Livelihood Resilience

Due to the detrimental impact of decades of war and weak governance on the agro-pastoral communities which make up the majority of the South Sudanese population, the UN has committed to responding to the livestock crisis which has negatively affected food security and the economy in the country. Their efforts include providing productive inputs, assets and training to at-risk and affected communities, monitoring food security through the use of early warning systems and establishing systems to enhance resilience, support to mitigate disaster risk and adapt to climate change (UN South Sudan, n.d; United Nations, 2016). With the help of FAO, actions have been taken to strengthen local capacities, provide livelihood

assistance and secure access to sufficient and safe food, such as providing animal vaccination. Through the collective efforts of the UN and particularly the World Food Programme (WFP) and the European Union, sustainable infrastructure projects, such as building roads has enhanced the resilience of local communities by creating jobs and expanding local businesses for South Sudanese people (United Nations, 2016).

Conflict Resilience

The efforts of the UN Peacebuilding Fund are particularly salient in supporting dialogue and local reconciliation processes. Aiming at reducing intercommunal conflict due to competition over natural resources, the UN agencies in collaboration with the UN Mission in South Sudan are providing assistance to national and local authorities and communities in coping with pastoral migration through inclusive dialogue and peaceful means (The United Nations Country Team in South Sudan, n.d.). In a like manner, the United Nations Development Programme (UNDP) has implemented an Integrated Crisis Prevention and Recovery (ICPR) programme, designed to strengthen national capacities for early recovery, peace building and reconciliation so as to achieve a solid economy and build community resilience (Papavero, Reidy, Polidori & Regi, 2015). Importantly, efforts have been made to incorporate life skills and peace education in the first to be adopted since independence national education curriculum (Papavero et al., 2015).

In view of the ongoing conflict and shocks that South Sudan is facing, the partnership for Recovery and Resilience (PfRR) has been established as a multi-stakeholder group of UN Agencies, not-for-profit organisations (NGOs) and donors with the mission to reduce vulnerability and increase resilience in the country. The Partnership has adopted a “new way of working” by acknowledging the concept of resilience as a broad one and the importance of involving local stakeholders in achieving its objectives. Importantly, it has stressed the need to create evidence-based interventions based on the needs of communities and by producing resilience profiles (USAID, 2019). Although there have been efforts to reduce vulnerabilities and enhance the resilience of people, communities and institutions in South Sudan, like the abovementioned, challenges and gaps must be taken into consideration in the delivery of resilience frameworks. Organisational bottlenecks and lack of empirical insight into how resilience can be nurtured are some of the deficits of the partnership of organisations which work together to achieve the sustainable development goals (SDGs) in South Sudan. Given the global concerns for responding efficiently and effectively to the wide-ranging consequences of humanitarian crises, the Global Resilience Partnership (GRP) views resilience as a vital component in the process of understanding the aspects which drive complex issues and their consequences in an effort to help and support communities, governments and humanitarian and development organisations to identify and utilise innovative solutions

(Matthews, 2020). Considering the interconnectedness and interdependencies of systems (e.g., social, political, economic and ecological), identifying entry points for individual and community resilience will provide strategies to deal with uncertainty in South Sudan. Building resilience in individuals, socioeconomic and ecological systems can help ensure communities have the necessary skills and capacities to resist and recover from adversities which could potentially fuel or exacerbate social conflict and disputes (Lordos & Hyslop, 2020). Lastly, investing in resilience will help end the cycle of unsustainable and increasing spending on humanitarian response and create longer-lasting solutions, as well as pave the way for self-sufficient communities and self-regulating systems of governance.

Rationale for Current Research

Past findings have suggested that the concept of resilience can be understood through a multidimensional lens. For instance, this notion is demonstrated in findings which have shown that individuals remain resilient and regain, sustain or improve their mental health well-being amidst adversity due to multiple interacting systems. Consequently, intervening in individuals' social and physical ecologies has been demonstrated to be an equally significant pathway to resilience (Ungar & Theron, 2019). For instance, it has been previously reported that in the face of multiple conflict-related traumatic events, those women who had livestock or animal assets exhibited better mental health outcomes and hence the study provided evidence about the importance of livestock assets in rural households and their psychosocial impact on women's wellbeing (Glass, Perrin, Kohli & Remy, 2014). Such findings provide support for the use of an exploratory approach in this current research to identify entry points for resilience across multiple systems in South Sudan.

Although previous research and reports have reviewed different types of resilience in South Sudan, database searches were carried out using four databases, including EBSCOhost, Scopus, CINAHL and Cochrane Library and it was concluded that this is the first study within the literature identifying entry points for resilience across multiple systems - psychological, livelihoods and for conflict prevention - in South Sudan. This study will utilise an exploratory approach to identify promising entry points of multidimensional resilience which will inform future investigations and enable resilience practitioners from across these various domains by providing an evidence-basis for their work, which can be used to identify resilience enhancement priorities, as well as inter-linkages between the various domains. This will allow for more effective joined-up programming by UN Agencies with diverse missions, whilst more broadly informing the international literature on resilience in conflict-affected countries.

Aims

The present research aimed to address the following questions:

- (a.) To identify to what extent maladjustment in the three outcome dimensions (psychological, livelihood, peacefulness) is prevalent and co-occurs?
- (b.) To what extent are different adversities associated with different types of maladjustment?
- (c.) To identify what capacities at the individual, household or community and institutional or governance level contribute to resilience for each of the different outcomes, in the face of adversities?

Present Study

The present research was conducted in South Sudan in two phases, between November 2019 and December 2019 and March 2020 and June 2020. The study was conducted by the Centre for the Study of Life Skills and Resilience at the Department of Psychology at the University of Cyprus in collaboration with the Centre for Sustainable Peace and Democratic Development (SeeD) and the United Nations Development Programme (UNDP) to generate evidence and aid the provision of high-level policy advice to decision-makers in the government and donor community on effective peacebuilding and reconciliation initiatives in South Sudan. Three different types of questionnaires were administered to participants; an individual questionnaire, a community questionnaire and a chief questionnaire. Further information is provided in the Methods section below.

Methods*Participants*

Two thousand one hundred nine participants were recruited in five study areas; Bor, Aweil, Yambio, Rumbek and Bentiu. Participants were equally disaggregated by area with 465 participants from each, with the exception of Bentiu. Due to interstate travel restrictions imposed by the government in response to the COVID-19 pandemic, data collection in Bentiu was not completed. A total of 279 questionnaires were obtained from Bentiu. Participant demographics can be found in Table 1.

Procedures

Data collection in South Sudan was conducted by Forcier Consulting¹. Forcier has specialised knowledge and experience in conducting research in complex settings, such as in logistically challenging areas

¹ Forcier Consulting Website: <https://www.forcierconsulting.com/about>

in Africa, with a focus on livelihoods, food security, health, gender-based violence and education. The firm has previously conducted projects for Oxfam, UNFPA and Save the Children amongst others.

Table 1

Participant Demographics

	Aweil	Bor	Yambio	Bentiu	Rumbek
Individual survey					
Mean age	28.6	35.8	31.3	32.9	34.1
Percent female	71.8%	59%	46.8%	33.3%	34.3%
Chief survey					
Mean age	52.7	48.4	51.6	44.4	48.5
Percent female	13.3%	0%	20%	11.1%	0.0%
Percent chief	86.7%	80%	73.3%	55.6%	86.7%
Can read easily	20%	73.3%	86.7%	55.6%	13.3%
Can write easily	20%	66.7%	86.7%	44.4%	13.3%
Community survey					
Can afford a car	0%	1.3%	0%	0.0%	0.0%
Can afford household items	1.3%	2.7%	0%	4.4%	0.0%
Always money for food and clothes	28.2%	12%	7.3%	13.3%	6.9%
Some money for food	43.6%	41.3%	61.3%	62.2%	61.5%
No money for food	25.9%	42.7%	31.3%	20.0%	31.5%

A field supervisor was assigned to manage the data collection in each of the five locations. Prior to the study, a Forcier research officer provided a one-day training to the field supervisors on study tools, sampling methodology and research ethics. Each supervisor recruited six local and previously vetted enumerators who were also provided a two-day training on the study's questionnaires as well as the sampling approaches. The first phase of the data collection took place in Bor, Aweil and Yambio between November and December 2019, whilst the second phase took place in Rumbek and Bentiu between March and April 2020. During the second phase, data collection was interrupted due to travel restrictions imposed by the government in response

to the COVID-19 pandemic. Data collection was resumed and completed in Rumbek in June 2020; however, this was not possible for Bentiu where only 9 out of 15 clusters were completed.

For the individual questionnaires, participants were randomly selected using a random walk. Each boma (enclosure) was divided into one or more clusters depending on its population size and each cluster was allocated 20 individual questionnaires. The Kish selection grid was used to randomly select the household respondent to be interviewed in each household. For the community questionnaires, cluster sampling was used to allocate 10 community questionnaires; 3 to males between 15-35 years old, 3 to females between 15-35 years old, 2 to males between 40 or older and 2 to females between 40 or older. For the chief questionnaires, the field supervisor interviewed one community authority figure (e.g. a chief, sub-chief or headman) in each cluster. Importantly, the first choice was the chief, however in situations where the chief was not available, his deputy or delegated representative was interviewed.

Ethical Considerations

Local permissions were obtained from the State Secretary General's office in each location. Importantly, additional permissions were obtained from county commissioners, Payam administrators and Boma chiefs as instructed by the State Secretary General's office. Participation was voluntary and participants had the right to refuse to participate or withdraw at any time. Participants provided consent prior to administering the questionnaire, parents provided consent when their child was selected to participate in the study. All data remained confidential and stored on an encrypted drive. No identifying information will be published or shared. The study was conducted in accordance to the ethical standards of the 1964 Declaration of Helsinki and its later amendments.

Measures

Expert consultation and review were utilised in creating the measures which were used for the purpose of this study. In particular, specialised knowledge was obtained from professionals and consultants with expertise in the fields of peacebuilding, food security and livelihoods and mental health as well as from human rights activists and civil society organisations. Importantly, expert involvement was provided by the United Nations Development Programme (UNDP) as the main local specialist in building resilience to shocks and crises in order to design the study indicators. Specialist interviews with the South Sudan Peace and Reconciliation Commission (SSPRC) were also conducted to obtain information which would further assist in designing the questionnaire. SSPRC is the leading national institution for peacebuilding in South Sudan which aims to contribute in promoting peace toward implementing the peace agreement. Consultation on the creation of the questionnaire was also

provided by Forcier Consulting given its considerable expertise in governance, stability, food security and livelihoods.

Finally, the evidence-based peacebuilding SCORE (Social Cohesion and Reconciliation) methodology (SeeD & UNDP-ACT, 2013) was adopted to identify the drivers of conflict dynamics and adversity in South Sudan, as well as the resilience capacities which mitigate the effects of conflict-related adversities on the three outcomes; mental health, peacefulness and food security. In particular, SeeD's Resilience Assessment Framework was implemented with the aim to identify which personal assets (e.g., task-specific competencies, civic traits, household assets) and community resources (e.g., community assets, civic trust, institutional support and services) will most effectively reduce risk. The Resilience Assessment Framework consists of risk exposure indicators (e.g., conflict exposure, economic insecurity, climatic changes, victimisation), resilience indicators (e.g., assets, resources, social tolerance, task-specific competencies, civic traits) and outcome indicators (e.g., mental health, peacefulness, food security).

Three different types of questionnaires (i.e., individual, community, chief) were administered to participants. The questionnaires were pilot-tested in the town of Bor prior to the data collection. Pilot data were reviewed, and minor changes were made to the tools in terms of their content and length. Questionnaires measured the following dimensions;

Adversities

The following risk exposure indicators were used to measure adversity.

Exposure to Economic Shocks

The dimension of "Exposure to economic shocks" was comprised of 5 items which measured shocks due to livestock disease, droughts and floods. Participants were asked to think about themselves, close family and close friends and respond to statements relevant to economic shocks (e.g., "inability to get food due to high prices", "crops affected by floods", "crops affected by drought") by indicating whether each one of the events occurred or did not occur in their household. Participants were also given the option to either respond with "Don't know" or not respond at all to each of the statements.

Conflict Exposure

Conflict exposure was comprised of 10 items which measured whether a number of events (e.g., "destruction of/ or displacement from house", "destruction of crops", "slaughter or theft of livestock", "serious physical injury or disability due to a raid or combat situation") happened to the responder or someone else in their household as a result of conflicts in South Sudan. Item responses included "No, this didn't happen to my

household”, “This happened in my own household” and “Don’t know/No response”. Importantly, participants were asked to consider post-independence conflicts since 2011.

Community Insecurity

Community insecurity was comprised of 17 items which measures whether a number of problems (e.g., burglaries, robberies, violent disputes, uncontrolled militias, prostitution, etc) existed in the responder’s community. Response options were “No”, “Yes” or “Don’t Know/No Response”.

Resilience Capacities

Resilience capacities consisted of three different dimensions; human capital, material capital and the social capital. Resilience indicators were constructed through an inclusive in-country calibration process, which included focus groups and interviews with multiple stakeholders. The next phase involved developing distinct questionnaires to measure these capacities at three different levels, individual, community and chief. Items were validated by stakeholders as correctly reflecting their understanding of the specific capacity. Items were then pilot tested with a sample of 50 participants, to verify appropriateness, and comprehensibility. Each dimension consisted of different resilient capacities which grouped accordingly.

The human capital consisted of four sub-sections; health, education and employment, adaptive and maladaptive life skills, task-specific competencies and civic traits. Material capital consisted of three sub-sections; physical capital (i.e., household building materials and facilities), natural capital (i.e., land ownership and cattle) and financial capital (i.e., income estimate and employment). Lastly, social capital consisted of four sub-sections; social cohesion (i.e., family connectedness, civic cooperation, positive relationship with neighbouring communities), civic trust (i.e., political security, personal security, trust in state institutions), institutional support and services and community assets. A detailed presentation of capacities according to capital can be found in table 1, table 2, table 3.

Table 1

Human capital resilience capacities

Health and education	Education
	Health
Life skills	Prosocial orientation
	Self-regulation
	Growth mindset

	Transformative leadership
	Inclusive collaboration
Task-specific competencies	Basic farming
	Advanced farming and animal husbandry
	Building, carpentry and infrastructure
	Literacy, numeracy and IT skills
	Arts, crafts and tailoring
	Driving and maintaining cars
	Providing security guard services
	Providing psychosocial support
Civic traits	South Sudanese identity
	Inclusive civic identity
	Trust in outgroups
	Positive feelings to outgroups
	Civic dialogue
	Civic agency
	Civic awareness
	Civic adherence
	Active citizenship

Table 2

Material capital resilience capacities

Physical capital	Structural quality dwelling
	Well borehole
	Water storage
	Pit latrine
	Modern toilet
	Hand tools

	Animal farm equipment
	Mechanical farm equipment
	Transport
Natural capital	Land ownership (feddans)
	Number of cattle
	Number of goats
	Number of sheep
	Number of pigs
	Number of chickens
	Number of ducks
	Distance to water source
Financial capital	Income estimate
	Employment: farming
	Employment: herding cattle
	Employment: small business trader
	Employment: unskilled manual
	Employment: skilled manual
	Employment: security
	Employment: mid-level professional
	Employment: upper-level professional

Table 3

Social capital resilience indicators

Social cohesion	Household size
	Family connectedness
	Economic cooperation
	Civic cooperation
	Intergenerational norm
	Positive relations to neighbouring communities

	Government infrastructure for peace
	NGO infrastructure for peace
	Community infrastructure for peace
	Family and friends infrastructure for peace
	Government infrastructure for peace for neighbouring communities
	NGO infrastructure for peace for neighbouring communities
	<hr/> Community infrastructure for neighbouring communities
	Family and friends infrastructure for neighbouring communities
	Peace committee: inclusivity
	Peace committee: effectiveness
	Peace committee: resources
	Peace infrastructure: participation
	<hr/> Community assets: police station
	Community assets: court building
	Community assets: clinic
	Community assets: primary school
	Community assets: secondary school
	Community assets: church
Institutional support and services	Community assets: mosque
	Community assets: market
	Community assets: service delivery
	Service delivery: education
	Service delivery: police
	Service delivery: market
	Service delivery: water access
	<hr/>

	Service delivery: health care
	Service delivery: road
	Distance to school
	Age of chief
	Female chief
	Literacy
	Education
	Duration of chiefship
	Democratic selection
	Leadership norms: inclusivity
	Leadership norms: peacefulness
	Intergenerational norm
	Gender equality mindset
	Contact frequency with community
	Cooperation quality with community
Support by chief	Contact frequency with authorities
	Cooperation quality with authorities
	Prosocial orientation
	Self-regulation
	Growth mindset
	Transformative leadership
	Inclusive collaboration
	Efficacy of chief
	Political independence of chief
	Chief skill: advocating
	Chief skill: counselling
	Chief skill: inclusivity
	Chief skill: negotiation

	Chief's attitude to peace
	Conflict resolution capacity
	Community assets: second floor building
	Community assets: tarmac asphalt road
	Community assets: good dirt roads
	Community assets: electricity poles
Community assets	Community assets: tools and materials for roads
	Community assets: tools and materials for construction
	Community assets: materials for farming
	Community assets: transport to other cities
	Personal security
	Political security
	Trust in state institutions
	Trust international and UN organisations
Civic trust	Trust in civil society organisations (CSOs), women and youth leaders
	Authority of chief
	Authority of chief (self-assessment)

Outcomes

This study looks at resilience through three resilience outcomes: psychological resilience, conflict resilience and livelihood resilience. Arguably, each resilience outcome is inextricably linked to a development outcome since resilience is a process designed to underpin development results. It was contended that psychological resilience is linked to individual quality of life; conflict resilience connects to conflict transformation and livelihood resilience is connected to poverty reduction. Each outcome has its own measurable indicator; mental health (psychological resilience), peacefulness (conflict resilience) and food consumption (livelihood resilience).

Mental Health

Mental health was measured in two different ways; positive mental health, through the World Health Organisation (WHO) – Five Well-Being Index (WHO-5), and mental distress, through a symptoms checklist. This innovative approach allowed us to measure the full continuum, from salutogenesis to pathogenesis of mental health. Current mental well-being and distress (i.e., anxiety, depression, post-traumatic stress, quality of life) were measured using items from the WHO-5 (WHO, 1998). The measure has been found to display adequate validity in screening for depression (Topp, Søndergaard & Bech, 2015).

Food Consumption

Food security and consumption was measured by employing the Food and Agriculture Organisation (FAO) approach to resilience analysis, specifically, the Resilience Index Measurement and Analysis (RIMA) methodology. This approach estimates the household level resilience to food insecurity, by utilising five resilience pillars; access to basic services, assets, social safety nets, sensitivity and adaptive capacity (FAO, 2016). In this case, food consumption and dietary diversity was measured using 21 items. Five items of the Food Security Consumption Coping Strategy Index (CSI) were used to measure the frequency (i.e. number of days) from 0 to 7 a specific coping strategy was used (from 0 to 7) in times when they did not have enough food or money to buy food. Examples of coping strategies include; “rely on less preferred and less expensive foods?”, “limit portion size at mealtimes”, “restrict consumption of adults in order for small children to eat?”. A “Food Consumption Score and Household Dietary Diversity” score was also obtained by inquiring participants to describe the foods (meals and snacks) that they ate or drank the day before during the morning, day and night, whether at home or outside the home.

Peacefulness

Peacefulness was constructed using scenarios relevant to readiness for violence, to measure behavioural propensity for peacefulness Vs. violent responding. The first scenario examined the extent to which it is acceptable to do the following actions against a community or tribe that is hostile to one’s community and has attacked it on numerous occasion; “attack their community in revenge”, “defend our community from future attacks”, “engage in dialogue to overcome the hostility”, “build ties of peace through inter-marriage and trade, to overcome the hostility”, “ask the government to take action to stop the attacks”. Participants responded on a scale from “not at all acceptable” to “possibly acceptable” to “definitely” acceptable. The second scenario examined how likely participants would be to do each of the following if a group of young people from their own community attacked another village, raided their cattle and killed one person, leading to the other

community asking for restitution and wanting to take revenge; “I would stand with our own young people, and take up the fight against the other community”, “I would counsel our own youth to return the stolen cattle, pay restitution for the killing, and apologise”, “I would support handing over our young people to the police, to face justice over what they have done”, “I would encourage a process of dialogue between our community and the other community, to reduce tensions and rebuild trust” and “I would do nothing and focus on my own private issues”. Participants responded on a scale from “not at all acceptable” to “possibly acceptable” to “definitely” acceptable.

Analytic Strategy

After extensively reviewing the literature on resilience analysis, it was verified that there is no gold standard in operationalising resilience in psychology research and there are a number of approaches used to measure resilience. Approaches to resilience analysis are broadly classified as either “variable-centred” or “person-centred” (Miller-Lewis, Searle, Sawyer, Baghurst, Hedley, 2013). For the data analysis of this study, both approaches were adopted. Statistical analyses were carried out using the Statistical Package for the Social Sciences (SPSS) version 24 and the Mplus statistical package version 8. Initially, the first step involved the “residuals” variable-centred approach. In order to utilise a continuous vulnerability-to-resilience score (i.e., standardised residual score) for each participant case, three regression analyses, one for each of the three different outcomes (i.e., psychological resilience, conflict resilience and livelihood resilience) were carried out to calculate the difference between a participant’s actual adjustment score and their adjustment score predicted by adversity. This methodology has been identified in literature as an innovative approach (Luthar & Cohen, 2006) and various studies have previously utilised it (Elder & Conger, 2000; Baldwin, Baldwin, Kasser, Zax, Sameroff & Seifer, 1993; Borman, & Overman, 2004; Kim-Cohen, Moffitt, Caspi & Taylor, 2004; Bowes, Maughan, Caspi, Moffitt, Arseneault, 2010). The next step involved the formation of groups after establishing cut-off scores for both resilience and fragility. The third step involved conducting an Analysis of Variance (ANOVA) in order to identify the different characteristics and resilient capacities of each of the groups.

Results

Adversity and Fragility Analysis

Three multiple linear regression analyses were conducted using SPSS version 24 to identify the extent to which maladjustment in the three outcome dimensions (i.e., mental health, peacefulness, food consumption) is prevalent and co-occurs. Initially, the residuals scatterplot and the normal probability plot were inspected to

check for the assumptions of the outliers, normality, linearity, homoscedasticity and independence of residuals. From the results of the normal probability plots, it was clear that the assumption of normality was not violated. After inspecting the scatterplots of the standardised residuals to check for the assumption of homoscedasticity, it was again clear that there were no outliers.

Mental Health

In the first model, demographics (i.e., gender, town, urbanity and age) explained 23% of the total variance in mental health and this result was found to be statistically significant. To minimise the risk for Type I error, a false discovery rate (FDR) of 5% was applied using the Benjamini-Hochberg significance. Urbanity ($\beta = 0.14$) and the town of Aweil ($\beta = 0.21$) have been found to be significantly and positively predicting mental health. On the contrary, the towns of Yambio ($\beta = -0.21$) and Rumbek ($\beta = -0.30$) have been found to be significant negative predictors of mental health. Thirty-two percent (32%) of the variance in mental health was explained when adversities (i.e., economic shock due to livestock disease, economic shock due to drought, economic shock due to floods, conflict exposure and community insecurity) were added into the model. After controlling again for Type I error and then inspecting the coefficients table, it was clear that community insecurity made the strongest negative contribution to explaining mental health ($\beta = -.40$) which was found to be statistically significant, whilst conflict exposure ($\beta = -.26$) and economic shock due to floods ($\beta = -0.14$) have also been negative predictors of mental health.

Peacefulness

In the first model, demographics (i.e., gender, town, urbanity, age) explained 23% of the total variance in peacefulness and this result was also found to be statistically significant. To minimise the risk for Type I error, a false discovery rate (FDR) of 5% was again applied using the Benjamini-Hochberg significance. The town of Bor ($\beta = 0.64$) was the strongest significant predictor of peacefulness, whilst Rumbek ($\beta = .60$) made the second strongest contribution. Aweil ($\beta = 0.49$) and Yambio ($\beta = 0.41$) made smaller significant contributions in predicting peacefulness. Finally, age ($\beta = 0.06$) made the weakest significant contribution in this model. Twenty-five (25%) of the variance in peacefulness was explained when adversities were added into the model. After controlling again for Type I error and then inspecting the coefficients table, it was clear that economic shock due to floods ($\beta = -0.15$) made the strongest negative contribution to predicting peacefulness, whilst economic shock due to droughts ($\beta = -0.11$) made the second strongest negative contribution to predicting the outcome. On the contrary, economic shock due to livestock disease ($\beta = 0.07$) made a positive contribution to predicting peacefulness.

Food Consumption

Thirteen percent (13%) of the variance in food consumption was explained by the first model and has reached statistical significance. Again, to minimise the risk for Type I error, a false discovery rate (FDR) of 5% was applied using the Benjamini-Hochberg significance. The towns of Aweil ($\beta = 0.51$), Bor ($\beta = 0.44$), Yambio ($\beta = 0.35$) and Rumbek ($\beta = 0.31$) have been found to be predicting food consumption, whilst urbanity ($\beta = 0.07$) was also found to be predicting food consumption to a lesser extent. Seventeen percent (17%) of the variance in food consumption was explained when adversities were added into the model. After controlling again for Type I error and then inspecting the coefficients table, it was again clear that conflict exposure ($\beta = -0.17$) has had the strongest negative contribution, whilst economic shock due to floods ($\beta = -0.15$) has had the second strongest negative contribution in food consumption. Finally, economic shock due to droughts ($\beta = -0.10$) had also negatively predicted food consumption.

For the variable-centred analysis, separate regressions for each resilience capacity were conducted to determine which of the three resilience scores (i.e., resilient mental health, resilient peacefulness, resilient food consumption) is associated with it. From the results, it was revealed that a number of resilience capacities were found to be significant predictors of the three resilience scores. These resilience capacities are presented in tables 4, 5 and 6.

Table 4

Association of resilient mental health, resilient peacefulness and resilient food consumption with resilience capacities in the Human Capital system

	Resilient Mental health β	Resilient Peacefulness β	Resilient Food consumption β	Regression r^2	Regression p value
Education	0.05*	0.03 (ns)	0.13**	0.02	0.00
Physical Health	0.16**	0.12**	0.00 (ns)	0.04	0.00
Growth mindset and leadership	0.13**	0.26**	0.09**	0.10	0.00
Interpersonal competence	0.01 (ns)	0.33**	0.19**	0.17	0.00
Basic farming	-0.14**	0.02 (ns)	-0.04 (ns)	0.03	0.00
Arts, crafts and tailoring	-0.14**	-0.01 (ns)	0.18**	0.04	0.00
Driving and maintaining cars	-0.07*	0.02 (ns)	0.06*	0.01	0.01

	Resilient Mental health	Resilient Peacefulness	Resilient Food consumption	Regression r ²	Regression p value
	β	β	β		
Providing security guard services	-0.02 (ns)	-0.10**	0.16**	0.03	0.00
Providing psychosocial support	0.11**	0.20**	-0.02 (ns)	0.05	0.00
Strength of south Sudanese identity	0.11**	0.06*	-0.05 (ns)	0.01	0.00
Inclusive civic identity	0.07**	0.15**	-0.05 (ns)	0.03	0.00
Trust in outgroups	0.01 (ns)	0.16**	-0.03 (ns)	0.02	0.00
Positive feelings towards outgroups	0.06*	0.15**	-0.19**	0.05	0.00
Gender equality mindset	0.04 (ns)	0.20**	0.02 (ns)	0.04	0.00
Civic adherence	0.11**	0.29**	0.16**	0.13	0.00
Civic agency	0.10**	0.24**	0.10**	0.08	0.00
Civic awareness	0.08**	0.18**	-0.03 (ns)	0.04	0.00
Civic dialogue	0.01 (ns)	0.15**	0.09**	0.04	0.00
Active citizenship orientation	0.08**	0.22**	-0.02 (ns)	0.05	0.00

Note. * stands for $p < 0.05$, ** stands for $p < 0.01$ and “ns” stands for non-significant. Resilience capacities which were found to be not significant include; advanced farming and animal husbandry; building, carpentry and infrastructure; literacy, numeracy and IT skills.

Table 5

Association of resilient mental health, resilient peacefulness and resilient food consumption with resilience capacities in the Material Capital system

	Resilient Mental health	Resilient Peacefulness	Resilient Food consumption	Regression r ²	Regression p value
	β	β	β		
Structural quality of dwelling	-0.07*	0.10**	0.05 (ns)	0.02	0.00
Household assets					
Well	-0.09**	-0.12**	0.16**	0.04	0.00
Water tank	0.00 (ns)	-0.03 (ns)	0.11**	0.01	0.00
Pit latrine	0.06*	0.01 (ns)	0.13**	0.02	0.00
Modern toilet	0.00 (ns)	-0.05 (ns)	0.08**	0.01	0.01

Hand tools	0.14**	0.14 (ns)	0.19**	0.09	0.00
Animal-drawn farming equipment	0.08**	0.08**	0.00 (ns)	0.01	0.00
Mechanical farming equipment	-0.01 (ns)	-0.03 (ns)	0.08**	0.01	0.05
Bicycle or vehicle	0.02 (ns)	0.01 (ns)	0.17**	0.03	0.00
Food storage equipment	0.15**	0.15**	0.16**	0.08	0.00
Land ownership	0.08**	-0.01 (ns)	-0.09**	0.01	0.00
Number of goats	0.10**	0.04 (ns)	0.12**	0.03	0.00
Number of sheep	0.04 (ns)	-0.04 (ns)	0.12**	0.02	0.00
Number of chickens	0.07*	0.01 (ns)	0.16**	0.03	0.00
Number of ducks	-0.04 (ns)	0.04 (ns)	0.14**	0.02	0.00
Distance to water source (in minutes)	0.06*	-0.10**	-0.02 (ns)	0.01	0.00
Income estimate	0.09**	-0.05 (ns)	0.16**	0.04	0.00
Employment					
Farming	0.03 (ns)	-0.09**	0.04 (ns)	0.01	0.00
Herding cattle	0.09**	-0.08**	-0.05 (ns)	0.02	0.00
Small business/petty trader/trader in marketplace/retail/shopkeeper	-0.10**	-0.13**	0.05*	0.03	0.00
Unskilled manual worker (e.g. firewood collection, cleaner, labourer)	-0.08**	0.16**	-0.08**	0.04	0.00
Artisan/trade man/skilled manual worker (e.g. electrician, car mechanic)	-0.02 (ns)	0.06*	0.04 (ns)	0.01	0.04

Note. * stands for $p < 0.05$, ** stands for $p < 0.01$ and “ns” stands for non-significant. N/A stands for non-applicable. Resilience capacities which were not significant include; number of cattle; number of pigs; security services (e.g., police, army, private security); mid-level professional (e.g., teacher, nurse, government officer).

Table 6

Association of resilient mental health, resilient peacefulness and resilient food consumption with resilience capacities in the Social Capital system

	Resilient Mental health	Resilient Peacefulness	Resilient Food consumption	Regression r^2	Regression p value
	β	β	β		
Number of people in household	-0.12**	0.06*	0.10**	0.03	0.00
Family connectedness	0.11**	0.20**	0.02 (ns)	0.05	0.00
Economic cooperation within the community	0.03 (ns)	0.09**	-0.05 (ns)	0.01	0.01
Resolution of conflict					
Use of family and friends	-0.09**	0.01 (ns)	0.05 (ns)	0.01	0.01
Peace committee inclusivity (assessed by chief)	-0.05 (ns)	0.07*	0.05 (ns)	0.01	0.01
Community assets					
Police station	N/A	N/A	N/A	0.01	0.04
Secondary school	N/A	N/A	N/A	0.01	0.04
Market	0.08**	-0.06*	-0.03 (ns)	0.01	0.00
Service Delivery					
Marketplaces	0.16**	-0.03 (ns)	-0.06*	0.03	0.00
Water infrastructure	0.16**	0.02 (ns)	-0.03	0.03	0.00
Healthcare	0.11**	0.02 (ns)	-0.04	0.01	0.00
Road infrastructure	N/A	N/A	N/A	0.01	0.03
Distance to closest school	0.02 (ns)	-0.16**	0.09**	0.03	0.00
Number of years as a chief	N/A	N/A	N/A	0.01	0.02
Leadership norms of chief					
Inclusivity	-0.07**	0.06*	-0.03 (ns)	0.01	0.01
Transform leadership	N/A	N/A	N/A	0.01	0.04
Inclusive collaboration	N/A	N/A	N/A	0.01	0.04
Chief skills					
Advocating	N/A	N/A	N/A	0.01	0.02

	Resilient Mental health β	Resilient Peacefulness β	Resilient Food consumption β	Regression r^2	Regression p value
Conflict resolution capacity of the chief	0.09**	-0.04 (ns)	-0.03 (ns)	0.01	0.00
Community assets					
Good dirt roads without large potholes	0.08**	-0.07**	-0.04 (ns)	0.01	0.00
Transportation to other cities	0.08**	0.01 (ns)	-0.07**	0.01	0.01
Personal security	0.18**	0.01 (ns)	0.19**	0.08	0.00
Political security	0.06*	0.06 (ns)	0.03 (ns)	0.01	0.01

Note. * stands for $p < 0.05$, ** stands for $p < 0.01$ and “ns” stands for non-significant. N/A stands for non-applicable. Resilience capacities which were found not to be significant include; civic cooperation within the community; intergenerational norm: young and old collaborate; positive relations with neighbouring communities; use of government officials; use of non-governmental organisations (NGOs); use of community officials and organisations; effectiveness of peace committee (assessed by chief); peace committee availability of resources (assessed by chief); chief participation in the peace committee; court building; health clinic; primary school; mosque; church; education; policing; age of chief; female chief; literacy chief; education of chief; democratic selection of chief; peacefulness; young and old collaborate; gender equality mindset; chief engagement with the community; chief engagement with the authorities; prosocial orientation; self-regulation; growth mindset; counselling.

Due to the large number of scales that were used to conduct the analysis, to control for Type I error, the false discovery rate (FDR) method was utilised due to its greater power compared to other more conservative methods, such as familywise error rate (FWER) (i.e. Bonferroni correction) (Benjamini & Hochberg, 1995). FDR controls for the expected proportion of falsely rejected hypotheses (Benjamini & Hochberg, 1995). The Benjamini-Hochberg (1995) procedure was used to control for the FDR. For the individual data, a q-value threshold of 0.05 was used to allow for a FDR of 5% among the indicators which were found significant. For the community and chief data, a q-value threshold of 0.1 was used to allow for a FDR of 10% among the indicators which were found significant. A stricter q-value threshold was utilized for the individual data, to counter the elevated risk of Type 1 error due to the endogeneity of the analysis, i.e. the fact that outcomes as well as predictors were all measured through reports by the same set of informants.

The next step of the person-centred resilience analysis involved the formation of groups after establishing cut-off scores for both resilience and fragility. To form the groups, the three continuous resilience variables were each recoded into fragility ($SD < -0.5$), resilience ($SD > 0.5$) with all remaining cases labelled as average. All possible combinations of the three discrete variables became the basis for a specific profile, thus leading to 27 profiles. Profiles were rank-ordered based on their frequency. Higher frequency suggests a

tendency for the dataset to be structured around that profile, since if the dataset was random, 3.7% (100% divided by the 27 groups) would be expected to be in each group. Profiles which mix resilience and fragility are less frequent, whilst the most common profiles are those which combine several resiliencies or several fragilities. The deductive approach to group formation is more consistent with clinical approaches, which require cut-off scores to be met, whilst it avoids the pitfalls of automated clustering algorithms, such as misclassification and unidentified groups. Hence, the group formation process revealed several interesting profiles which occur more frequently than would be expected at random. The more complex and multidimensional among these were chosen for ANOVA-based comparisons. Resilience groups yielded from this analysis can be found in table 7 and in figure 1.

Table 7

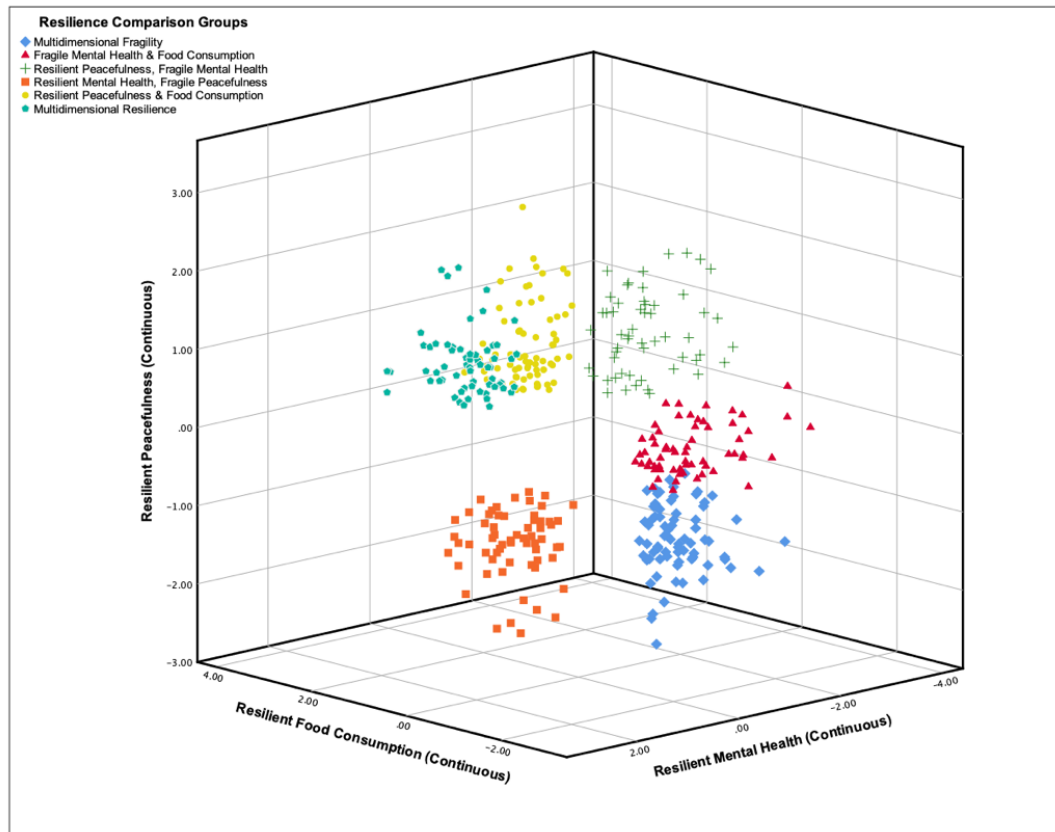
Resilience groups formed in person-centred resilience analysis

Resilience groups	Frequency	Percent	ANOVA-based comparisons
Groups that have higher number of cases than would be expected at random			
Multidimensional fragility	75	5.4	√
Resilient peacefulness and food consumption	74	5.4	√
Fragile mental health and food consumption	63	4.6	√
Average controls	62	4.5	
Multidimensional resilience	62	4.5	√
Resilient mental health, fragile peacefulness	62	4.5	√
Resilient food consumption	61	4.4	
Fragile food consumption	61	4.4	
Fragile peacefulness	61	4.4	
Resilient peacefulness	60	4.4	
Resilient mental health and food consumption	57	4.1	
Resilient peacefulness, fragile mental health	55	4.0	√
Resilient mental health	53	3.8	
Fragile mental health	52	3.8	

Resilience groups	Frequency	Percent	ANOVA-based comparisons
Fragile mental health and peacefulness	52	3.8	
Groups that have lower number of cases than would be expected at random			
Resilient mental health, fragile peacefulness and food consumption	50	3.6	
Resilient mental health and food consumption, fragile peacefulness	49	3.6	
Fragile peacefulness and food consumption	49	3.6	
Resilient peacefulness, fragile food consumption	44	3.2	
Resilient peacefulness, fragile mental health and food consumption	43	3.1	
Resilient peacefulness and food consumption, fragile mental health	42	3.0	
Resilient mental health, fragile food consumption	42	3.0	
Resilient mental health and peacefulness	36	2.6	
Resilience food consumption, fragile peacefulness	33	2.4	
Resilient mental health and peacefulness, fragile food consumption	31	2.2	
Resilient food consumption, fragile mental health and peacefulness	27	2.0	
Resilient food consumption, fragile mental health	23	1.7	
Total	1349	100	

Figure 1

Grouped 3D scatter plot of resilient peacefulness by resilient mental health by resilient food consumption



The last step involved conducting an Analysis of Variance (ANOVA) to compare the resilience groups. A number of factors have been found to play a statistically significant role ($p < .05$) for the six resilience groups (Group 1: Fragile mental health and food consumption, Group 2: resilient peacefulness and fragile mental health, Group 3: resilient mental health, fragile peacefulness, Group 4: multidimensional fragility, Group 5: Multidimensional resilience and Group 6: Resilient peacefulness and food consumption). A Tukey-HSD test was carried out to run post-hoc comparisons between the six resilience groups.

From the human capital category, the following factors have been found to have a statistically significant difference ($p < .05$) between the six groups; education; physical health, growth mindset and leadership; interpersonal tolerance; basic farming; literacy, numeracy and IT skills; arts, crafts and tailoring; providing psychological support; civic adherence; civic agency; and civic dialogue.

From the material capital, the factors which have been identified to be contributing significantly to the difference between the six groups are; structural quality of dwelling and having household assets, such as, pit latrine, hand tools, bicycle or vehicle and food storage equipment; number of goats, chicken and ducks; income

estimate and finally having a small business or being a petty trader or trader in marketplace or retail or being shopkeeper.

Finally, from the biggest category of indicators, the social capital, a number of factors have been identified as significant and particularly; family connectedness; civic cooperation within the community; intergenerational norm, in other words the collaboration between young and old; positive relations with neighbouring communities; the use of family and friends in the resolution of conflict; the effectiveness of the peace committee as assessed by the chief; the existence of market as a community asset, the presence of service provision (i.e., education, policing, marketplaces, water infrastructure, healthcare and road infrastructure); distance to school; chief characteristics, such as being female, literate and educated; the collaboration of young and old as a chief quality.

Regarding the role of the chief, factors which have been found to be contributing significantly include; the chief's engagement with the community and authorities; chief's efficacy, inclusivity, political independence, peaceful attitude, authority advocating skills, as well as other life skills such as prosocial orientation, self-regulation, growth mindset, transforming leadership and inclusive collaboration. Community assets have been found to be contributing significantly, including; the existence of at least one building with 2 floors, tarmac road, good dirt roads without large potholes, access to modern tools and materials for building roads and farming. Lastly, personal security, trust in state institutions, UN system, international organisations, local civil society organisations (CSOs), youth and women leaders were also found to play a significant role in the difference between the resilience groups. Tukey post-hoc results for human capital indicators can be found in table 8, for material capital indicators in table 9 and for social capital indicators in table 10.

Table 8

Tukey post-hoc results for human capital indicators.

	Group 1 (N = 63)	Group 2 (N = 55)	Group 3 (N = 62)	Group 4 (N = 75)	Group 5 (N = 62)	Group 6 (N = 74)
Education	1.11 ^a	1.23 ^a	1.85 ^{a,b}	1.93 ^{a,b}	2.28 ^b	2.45 ^b
Physical health	6.24 ^a	7.82 ^b	7.74 ^{a,b}	6.36 ^{a,b}	7.85 ^b	6.58 ^{a,b}
Growth mindset and leadership	7.16 ^a	8.58 ^b	8.10 ^b	7.16 ^a	8.45 ^a	8.78 ^b
Interpersonal tolerance	5.80 ^a	8.28 ^c	6.27 ^a	5.87 ^a	7.41 ^b	8.32 ^c

Basic farming	4.68 ^{a,b}	6.55 ^c	4.44 ^{a,b}	5.00 ^b	3.47 ^a	4.19 ^{a,b}
Literacy, numeracy and IT skills	1.62 ^{a,b,c}	0.73 ^a	1.10 ^{a,b}	2.27 ^c	1.98 ^{b,c}	1.89 ^{b,c}
Arts, crafts and tailoring	1.01 ^{a,b}	1.12 ^{a,b,c}	0.81 ^a	1.87 ^{b,c}	1.64 ^{a,b,c}	1.91 ^c
Providing psychological support	2.20 ^b	1.36 ^{a,b}	1.83 ^{a,b}	1.22 ^a	2.12 ^b	2.07 ^{a,b}
Civic adherence	6.38 ^a	9.15 ^c	7.63 ^b	6.33 ^a	9.11 ^c	8.47 ^{b,c}
Civic agency	6.60 ^a	8.16 ^{b,c}	7.19 ^{a,b}	6.74 ^a	8.23 ^c	8.78 ^c
Civic dialogue	8.00 ^a	8.99 ^c	8.86 ^{b, c}	8.16 ^{a,b}	8.93 ^{b,c}	9.15 ^c

Note. Superscripts indicate the subset group. Means for groups in homogenous subsets are displayed. Group 1: Fragile mental health and food consumption, Group 2: Resilient peacefulness, fragile mental health, Group 3: Resilient mental health, fragile peacefulness, Group 4: Multidimensional fragility, Group 5: Multidimensional resilience, Group 6: Resilient peacefulness and food consumption.

Table 9

Tukey post-hoc results for material capital indicators

	Group 1 (N = 63)	Group 2 (N = 55)	Group 3 (N = 62)	Group 4 (N = 75)	Group 5 (N = 62)	Group 6 (N = 74)
Hand tools	4.60 ^a	7.64 ^b	8.23 ^a	3.07 ^a	8.39 ^b	9.32 ^b
Bicycle or vehicle	1.90 ^a	3.27 ^a	3.71 ^{a,b}	2.27 ^a	4.03 ^{a, b}	5.81 ^b
Food storage equipment	1.43 ^a	6.73 ^b	7.26 ^b	1.07 ^a	5.48 ^b	6.76 ^b
Number of goats	1.46 ^{a,b}	1.27 ^a	2.50 ^{a,b}	1.96 ^{a,b}	7.24 ^b	5.41 ^{a,b}
Number of chickens	1.25 ^a	1.11 ^a	2.56 ^a	2.36 ^{a,b}	5.52 ^b	5.99 ^b
Number of ducks	0.05 ^a	0.05 ^a	0.00 ^a	0.20 ^a	0.21 ^a	1.78 ^b
Income estimate	1.99 ^{a,b}	1.23 ^a	2.50 ^{b,c}	2.05 ^{a,b}	3.18 ^c	2.58 ^{b,c}

Note. Superscripts indicate the subset group. Means for groups in homogenous subsets are displayed. Group 1: Fragile mental health and food consumption, Group 2: Resilient peacefulness, fragile mental health, Group 3: Resilient mental health, fragile peacefulness, Group 4: Multidimensional fragility, Group 5: Multidimensional resilience, Group 6: Resilient peacefulness and food consumption.

Table 10

Tukey post-hoc results for social capital indicators

	Group 1 (N = 63)	Group 2 (N = 55)	Group 3 (N = 62)	Group 4 (N = 75)	Group 5 (N = 62)	Group 6 (N = 74)
Family connectedness	7.74 ^{a,b}	9.09 ^c	8.51 ^{b,c}	7.24 ^a	8.94 ^c	8.65 ^c
Positive relations with neighbouring communities	6.94 ^{a,b}	6.42 ^a	6.86 ^{a,b}	7.40 ^b	7.04 ^b	7.10 ^b
Resolution of conflict: use of family and friends	6.81 ^a	8.37 ^c	7.69 ^{a,b,c}	7.94 ^{b,c}	7.08 ^{a,b}	7.26 ^{a,b}
Effectiveness of peace committee (assessed by chief)	8.76 ^{a,b}	8.57 ^{a,b}	8.22 ^a	8.72 ^{a,b}	9.07 ^b	7.95 ^a
Healthcare	4.07 ^{a,b}	4.32 ^b	4.12 ^b	3.63 ^{a,b}	4.41 ^b	3.12 ^a
Road infrastructure	2.88 ^a	3.79 ^c	3.61 ^{b,c}	3.60 ^{b,c}	3.39 ^{a,b,c}	3.01 ^{a,b}
Female chief	0.32 ^a	0.91 ^{a,b}	0.32 ^a	0.67 ^a	0.48 ^a	2.03 ^b
Literacy of chief	6.75 ^{b,c}	3.27 ^a	4.84 ^{a,b}	5.27 ^{a,b}	4.68 ^{a,b}	7.70 ^c
Chief engagement with authorities	7.95 ^c	7.87 ^{b,c}	7.59 ^{a,b,c}	6.93 ^{a,b}	7.57 ^{a,b,c}	6.83 ^a
Chief life skill: prosocial orientation	7.62 ^{a,b}	7.24 ^a	7.39 ^a	8.27 ^b	8.26 ^b	7.57 ^a
Chief life skill: growth mindset	8.78 ^{a,b}	8.55 ^a	9.09 ^{a,b,c}	9.51 ^{b,c}	8.67 ^a	9.60 ^c
Access to modern tools and materials for farming	1.75 ^{a,b}	3.45 ^b	3.39 ^b	2.27 ^{a,b}	1.13 ^a	3.65 ^b
Personal security	4.14 ^{a,b}	3.49 ^a	4.80 ^b	4.13 ^{a,b}	6.11 ^c	4.94 ^b
Trust in UN system and international organisations	8.33 ^c	7.63 ^{a,b}	7.70 ^{a,b,c}	8.01 ^{a,b,c}	8.22 ^{b,c}	7.50 ^a
Trust in local CSOs, youth and women leaders	8.12 ^b	7.74 ^{a,b}	7.65 ^{a,b}	8.03 ^b	8.12 ^b	7.37 ^a

Note. Superscripts indicate the subset group. Means for groups in homogenous subsets are displayed. Group 1: Fragile mental health and food consumption, Group 2: Resilient peacefulness, fragile mental health, Group 3: Resilient mental health, fragile peacefulness, Group 4: Multidimensional fragility, Group 5: Multidimensional resilience, Group 6: Resilient peacefulness and food consumption.

Discussion and Implications for Policy and Practice

Results from the adversity and fragility analysis demonstrated that adversities have played a significant role in predicting maladjustment in the three outcome dimensions (i.e., mental health, peacefulness, food consumption). Specifically, mental health has been to a great extent negatively impacted by community insecurity and conflict exposure. These findings provide further evidence for already existing findings which have demonstrated that both conflict exposure and community insecurity along with their sequelae can cause mental health difficulties, such as depression and aggression (Murthy & Lakshminarayana, 2006; Miller & Rasmussen, 2010). Economic shocks due to floods and droughts have also been found to be negatively predicting peacefulness. These findings are consistent with previous studies which postulated that the lack of natural resources due to floods and droughts discourages the community from using strategies of collaboration and instead urges them to adopt more violent stances (Lordos & Hyslop, 2020; Carpenter, 2012; Gurung, Bousquet & Trebuil, 2006; Ratner, Man & Halpern, 2014; Vivekananda, Schilling & Smith, 2014; Hellin, Ratner, Meinzen-Dick & Lopez-Ridaura, 2018). On the contrary, economic shocks due to livestock disease have had the opposite effect, hence positively predicting peacefulness. It could therefore be argued that when livestock disease occurs, communities show sympathy and compassion to the plight of others as livestock plays an important role in people's food consumption and security, as well as mental health. In line with Justino (2011), results from this study demonstrated that conflict exposure, as well as economic shocks due to floods and droughts have negatively predicted food security and consumption. Additionally, in agreement with previous findings (Brück et al., 2019; FAO, 2015), this suggests that food security is at stake in the midst of ongoing and protracted conflict, whilst efforts to combat hunger are undermined. Economic shocks due to floods and droughts could further exacerbate food insecurity as the vast majority of food insecure individuals depend on agriculture and natural resources.

Results from the variable-centred analysis postulated that a number of resilience capacities have been found to be significant for each of the dimensions. Hence, specific insights are provided that will optimise the coordination of different agencies within pfRR, to maximise resilience-enhancing impact. More specifically, for the human capital dimension, growth mindset and leadership, civic adherence and civic agency have been found to be important drivers for resilient mental health, peacefulness and food consumption. In this case, it would be beneficial for the responsible pfRR agency to invest in civic participation and engagement activities to address issues of public concern and strengthen peace in the community. More specifically, vocational training should include transferable skills and citizenship-relevant elements and components which would put emphasis on the

importance of resilience capacities, such as growth mindset and leadership, prosocial orientation, civic adherence and dialogue. Importantly, to further enhance children's peaceful citizenship and civic engagement capacities, it would be worthwhile to expand and in due course ensure their access to school environments and aid the development of a citizenship value from an early age. Another recommendation for policy and practice would be the implementation of a comprehensive transferable skills programme which could further strengthen children's resilience capacities and task-specific competencies. Particularly, life skills have been found to decrease anxiety and stress (Mohammadzadeh, Awang, Ismail & Shahar, 2019), positively impact emotional and behavioural problems in adolescents in Kenya (Mutiso et al., 2017), and contribute to peacefulness in adolescents living in conflict (Lordos et al., 2020). Positive feelings towards outgroups was found to be a strong driver for both peacefulness and mental health. A recommended implication for practice would be to invest in community cooperation projects which bring together different ethnic groups to enhance positive feelings and inclusive peace and hence further foster hope in the peace process.

Regarding the material capital, having food storage equipment is significantly predicting all three outcomes. Hence, the establishment of storage facilities within the community, including fridges, cold storages and grain, rice and paddy silos would play a vital role in enhancing resilient food consumption by decreasing insecurity and hunger, whilst also increasing resilient mental health and peacefulness. Taking into account that having a well has been found to be significantly predicting food consumption, clean water facilities and hygiene infrastructure are of outmost importance for the survival and development of communities. Additionally, results postulate that small businesses and working trade increase food security, whilst being an unskilled manual worker was found to be negatively predicting food consumption. Providing employment and job training, as well as funds would help small businesses grow big and ensure income, whilst also offer professional development and employment opportunities to young people.

Finally, for the social capital dimension, the number of persons in a household has been found to be positively predicting food consumption and peacefulness, but negatively affecting mental health. An explanation for this finding could be that the higher the number of persons in a household, the more income, therefore ensuring food consumption which in turn predicts peacefulness due to securing fundamental needs and minimising conflict. Despite that people in the same household score high on peacefulness and food consumption, living in a crowded household may have a negative impact on each person's mental health.

Results from the person-centred analysis revealed six clusters of people based on their outcomes on the three dimensions. Clusters that were revealed include; those who exhibited fragile mental health and food

consumption (group 1), those with resilient peacefulness and fragile mental health (group 2), those with resilient mental health, but fragile peacefulness (group 3), those with multidimensional fragility on all three outcomes (group 4), people with multidimensional resilience on all three outcomes (group 5) and finally those who exhibited resilient peacefulness and food consumption (group 6). This assignment of participants to groups allowed us to compare them on their resilience capacities in the context of adversity and fragility.

Specifically, multidimensionally resilient participants scored the highest on capacities across a range of systems, thus highlighting the importance of adopting a multisystemic perspective on resilience. In particular, they scored highest on several human capital indicators, such as physical health, access to healthcare, interpersonal tolerance, and civic adherence; material capital indicators, such as number of goats and income estimate; as well as social capital indicators, such as effectiveness of peace committee as assessed by the chief, personal security and finally, trust in local CSOs, youth and women leaders. It has also been previously reported that access to fundamental services (e.g., healthcare), as well as assets (e.g., number of goats and income) are vital sources of resilience (FAO, 2016; Smith & Frankenberger, 2018; Brück et al., 2019; Glass et al., 2014; Bulut et al., 2019). Physical health and access to healthcare have both been found to be significant capacities for multidimensional resilience in the face of adversities, therefore suggesting that sufficient healthcare provision along with resulting optimal health status, can empower individuals to meet a range of adversities head-on and maintain positive outcomes in dimensions of mental health, peacefulness and food security. These results provide further support for strengthening the role of women in the peace process and eliminating any obstacles to the appointment of female chiefs, given that multidimensionally resilient participants acknowledged women as trusted and effective peace agents within the community. On the contrary, multidimensionally fragile participants scored the lowest on human capital indicators such as growth mindset and leadership, possessing skills to provide psychological support, and civic adherence; material capital indicators such as possession of hand tools and food storage equipment; as well as scoring lowest in family connectedness, a key social capital indicator. The lack of family connectedness in multidimensionally fragile individuals strengthen the findings of studies which have previously postulated that connectedness and cohesion in the family are capacities which enhance resilience in the midst of conflict (Lordos et al., 2019).

Individuals with fragile mental health and food consumption - but who are not displaying problematic attitudes in relation to peacefulness – exhibited the lowest levels on a number of measures, including; education, physical health, growth mindset and leadership, interpersonal tolerance, civic agency, civic dialogue, bicycle or vehicle, food storage equipment, use of family and friends in conflict resolution, road infrastructure and female

chief. In the past, it was demonstrated that education was positively related to having control over one's life and hence indicated as characteristic of psychological resilience (Sleijpen et al., 2015; Marciano et al., 2019).

Consistent with this finding, current results point out that individuals who are psychologically fragile have scored the lowest on education. On the other hand, those with resilient mental health but fragile peacefulness reported the highest levels of food storage equipment compared to the fragile mental health group, however the lowest levels on measures of arts, crafts and tailoring, female chief and number of ducks. Moreover, participants with resilient peacefulness, but fragile mental health exhibited the highest scores on basic farming, civic adherence, family connectedness, use of family and friends in conflict resolution and road infrastructure which are in line with previous findings supporting the importance of family connectedness and social warmth as resilience capacities in the face of conflict-related adversities (Ager et al., 2015; Betancourt & Khan, 2008; Cummings, Merrilees, Taylor & Mondri, 2017; Eggerman & Panter-Brich, 2010; Fazel, Reed, Panter-Brick & Stein, 2012; Levey et al., 2016; Lordos et al., 2019; Nguyen-Gillham, Giacaman, Naser & Boyce, 2008; Panter-Brick, Goodman, Tol & Eggerman, 2011; Siriwardhana, Ali, Roberts & Stewart, 2014; Slone & Shoshani, 2017; Zrally & Nyirazinyoye, 2010).

Participants who exhibited resilient peacefulness and food consumption scored the highest on a number of indicators. Particularly those individuals scored the highest on education, growth mindset and leadership, interpersonal tolerance, arts, crafts, and tailoring, civic agency, civic dialogue, hand tools, bicycle or vehicle, food storage equipment, number of chickens and ducks, access to healthcare, female chief, literacy of chief, growth mindset of chief and access to modern tools and materials for farming. These results are in agreement with findings which have shown that service provision, assets, adaptive capacity and social safety nets mitigate pathways from conflict adversities to negative outcomes (FAO, 2016; Smith & Frankengerger, 2018).

Additionally, the diversity of livelihoods (e.g., number of different animals, access to modern tools and materials for farming) has been found to be an important capacity (Brück et al., 2019; Smith & Frankengerger, 2018). In line with a number of scholars (Butler et al., 2015; Folke et al., 2005; Gurung et al., 2006; Lordos et al., 2020), these results highlight the importance of individual capacities, such as growth mindset and leadership in enhancing resilience amidst conflict. Provision of means of transportation such as bicycles or other vehicles as well as small animals are important resilient capacities which should be included in the efforts of the responsible authorities and agents within pfRR in enhancing peacefulness and food consumption. In addition to these, providing arts, crafts and tailoring, as well as hand tools and access to modern tools and materials for farming would further improve people's livelihoods and hence tackle hunger and optimise food consumption.

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