

Journal of

Advanced Psychology

(JAPSY)

Effectiveness of Psychosocial School-based Interventions in Improving
Academic Engagement in Conflict Zones: Evidence from Goma, North-Kivu,
DR Congo



CARI
Journals

Effectiveness of Psychosocial School-based Interventions in Improving Academic Engagement in Conflict Zones: Evidence from Goma, North-Kivu, DR Congo



Yvon Mwendu Muhongo

Professor, PhD, Faculty of Psychology and Educational Sciences, University of Kinshasa, Democratic Republic of Congo.

<https://orcid.org/0009-0001-7716-9854>

Accepted: 8th May, 2026, Received in Revised Form: 8th June, 2026, Published: 10th June, 2026

ABSTRACT

Purpose: This study examined the effectiveness of psychosocial school-based interventions on academic engagement among students in conflict-affected settings in Goma, Eastern Democratic Republic of Congo.

Methodology: A quantitative quasi-experimental design was used, involving a sample of 400 students, of whom 240 (60%) were exposed to psychosocial interventions and 160 (40%) were not. Academic engagement was measured across behavioral, emotional, and cognitive dimensions.

Findings: The results show that students exposed to psychosocial interventions had higher mean engagement scores ($M = 3.8$ behavioral; $M = 3.5$ emotional; $M = 3.2$ cognitive) compared to non-exposed students ($p < 0.05$ across all dimensions). ANOVA results confirmed statistically significant differences between groups, with emotional engagement showing the strongest effect ($F = 8.45$; $p = 0.004$). Chi-square analysis revealed a significant association between intervention exposure and school attendance ($\chi^2 = 12.45$; $p = 0.002$). Correlation analysis indicated a strong positive relationship between psychosocial interventions and academic engagement ($r = 0.62$), while trauma exposure showed a strong negative correlation ($r = -0.55$). Regression analysis confirmed that psychosocial interventions significantly predict academic engagement ($\beta = 0.58$; $p = 0.001$), while trauma negatively affects it ($\beta = -0.42$; $p = 0.003$). The interaction term ($\beta = -0.25$; $p = 0.021$) indicated that high trauma levels reduce intervention effectiveness. The model explained 64% of the variance in academic engagement ($R^2 = 0.64$).

Unique Contribution to Theory, Policy and Practice: This study contributes to Educational Psychology theory by demonstrating that psychosocial school-based interventions significantly improve students' academic engagement in conflict-affected settings while highlighting the moderating effect of trauma exposure. It also provides empirical evidence from Eastern Democratic Republic of Congo, an underrepresented context in educational research. In terms of policy and practice, the findings support the integration of trauma-informed psychosocial support, teacher training, and school counseling services into educational policies and programs to enhance student engagement and learning outcomes in conflict-affected schools.

Keywords: *Psychosocial interventions, Academic engagement, Armed conflict, Goma, Educational psychology*

1. INTRODUCTION

1.1. Context and justification

Armed conflicts constitute one of the most critical global challenges affecting children's development and education, particularly in fragile and conflict-affected contexts. Recent estimates indicate that a substantial proportion of the world's children are exposed to political violence, displacement, and chronic insecurity, conditions that profoundly disrupt both psychological well-being and learning processes (Betancourt et al., 2013; Masten & Narayan, 2012; United Nations Children's Fund [UNICEF], 2019). Empirical research consistently demonstrates that exposure to armed conflict is associated with elevated risks of mental health disorders such as post-traumatic stress disorder (PTSD), depression, and anxiety, as well as impairments in cognitive functioning, including attention, memory, and executive control (Jordans et al., 2010; Tol et al., 2013; Panter-Brick et al., 2014). These psychological and cognitive disruptions are particularly significant in educational settings, where they directly undermine students' ability to engage behaviorally, emotionally, and cognitively in learning activities (Fredricks et al., 2004; Blair & Raver, 2015).

In Sub-Saharan Africa, and more specifically in the eastern region of the Democratic Republic of Congo (DRC), armed conflict has persisted for decades, creating one of the most complex humanitarian crises worldwide. The city of Goma, located in North Kivu province, has been repeatedly affected by cycles of violence, population displacement, and socio-economic instability, all of which severely disrupt educational systems and learning environments (Autesserre, 2012; Stearns, 2012; Verweijen, 2015). In such contexts, schools are frequently damaged, overcrowded, or temporarily closed, while students are exposed to chronic stressors that hinder concentration, motivation, and school attendance (Burde et al., 2017; Justino, 2016; Nicolai et al., 2015). Despite these challenges, the literature also highlights the potential of schools to function as protective spaces that foster resilience, social support, and psychological recovery among conflict-affected children and adolescents (Betancourt et al., 2008; Ager et al., 2011; Dryden-Peterson, 2011).

Within the field of educational psychology, increasing attention has been devoted to the role of school-based psychosocial interventions in mitigating the negative effects of conflict on learners. These interventions, often integrated into classroom activities, aim to address both emotional distress and educational outcomes by promoting coping skills, emotional regulation, and social competencies (Jordans et al., 2010; Tol et al., 2014; Purgato et al., 2018). Evidence from randomized controlled trials and systematic reviews suggests that such programs can lead to improvements in psychosocial well-being, prosocial behavior, and classroom functioning, which are essential components of academic engagement (Bangpan et al., 2017; Murphy et al., 2021; Spaas et al., 2023). Furthermore, educational psychology frameworks emphasize that academic engagement comprising behavioral participation, emotional involvement, and cognitive investment is a key mediator between psychological well-being and academic success (Fredricks et al., 2004; Appleton et al., 2008).

However, despite the growing body of research, the effectiveness of psychosocial school-based interventions remains heterogeneous across contexts. While some studies report significant positive outcomes, others indicate limited or context-dependent effects influenced by factors such as gender, age, family support, and the intensity and duration of exposure to conflict (Panter-Brick et al., 2014; Purgato et al., 2018; Murphy et al., 2021). Moreover, there is a notable gap in the literature regarding the impact of these interventions on academic engagement specifically, as most studies focus primarily on mental health outcomes rather than educational processes (Bangpan et al., 2017; Spaas et al., 2023).

In the specific context of Goma, Eastern DRC, empirical evidence on the intersection between psychosocial interventions and academic engagement remains extremely limited. Given the high prevalence of trauma exposure and the ongoing instability affecting educational systems, there is a critical need to better understand how school-based psychosocial programs influence students' engagement in learning. Addressing this gap is essential not only for advancing theoretical knowledge in educational psychology but also for informing contextually relevant educational policies and interventions in conflict-affected settings.

Therefore, this study aims to examine the effectiveness of psychosocial school-based interventions in improving academic engagement among students in conflict zones, with a particular focus on Goma. By integrating insights from educational psychology and conflict research, this study seeks to contribute to a more comprehensive understanding of how psychosocial support within schools can enhance learning outcomes in contexts of chronic adversity.

1.2. Problem Statement

Armed conflict in Eastern Democratic Republic of Congo, particularly in the city of Goma, continues to severely disrupt educational systems and undermine students' psychological well-being. Prolonged exposure to violence, forced displacement, and chronic insecurity has created a context in which learners are not only deprived of stable schooling conditions but are also confronted with significant emotional and cognitive challenges that affect their ability to learn effectively (Autesserre, 2012; Justino, 2016; Verweijen, 2015). Empirical evidence indicates that children and adolescents living in conflict-affected environments are more likely to experience trauma-related psychological distress, including anxiety, depression, and post-traumatic stress symptoms, which in turn impair attention, memory, and executive functioning key processes underlying learning and academic engagement (Betancourt et al., 2013; Panter-Brick et al., 2014; Tol et al., 2013). Within the framework of educational psychology, academic engagement is understood as a multidimensional construct encompassing behavioral participation, emotional involvement, and cognitive investment in learning activities, all of which are essential predictors of academic success and persistence (Fredricks et al., 2004; Appleton et al., 2008).

In conflict settings such as Goma, these dimensions of engagement are significantly compromised. Students often face irregular school attendance, reduced motivation, and diminished capacity to

concentrate due to ongoing stress and insecurity (Burde et al., 2017; Nicolai et al., 2015; Blair & Raver, 2015). In response, school-based psychosocial interventions have been increasingly promoted as an integrated approach to address both mental health needs and educational outcomes. These interventions aim to strengthen emotional regulation, resilience, and social skills, thereby creating conditions more conducive to learning (Jordans et al., 2010; Tol et al., 2014; Purgato et al., 2018). While several studies have reported positive effects of such programs on psychosocial well-being and social functioning, the evidence regarding their impact on academic engagement remains limited and inconsistent, with variations depending on contextual and individual factors (Bangpan et al., 2017; Murphy et al., 2021; Spaas et al., 2023). Furthermore, most existing research has been conducted outside Central Africa, which raises concerns about the applicability of these findings to the socio-cultural and conflict dynamics specific to Eastern DRC (Betancourt et al., 2013; Tol et al., 2014). Despite the growing recognition of psychosocial school-based interventions as a key support mechanism in conflict-affected educational settings, there remains a critical gap in empirical knowledge regarding their actual effectiveness on academic engagement in contexts such as Goma. Existing studies tend to focus primarily on psychological outcomes such as trauma reduction or emotional well-being, while paying less attention to how these interventions translate into concrete educational outcomes such as participation, motivation, and cognitive involvement in learning. Moreover, in the specific context of Eastern DRC, where armed conflict is ongoing and deeply embedded in daily life, there is a lack of localized evidence assessing whether these interventions effectively improve students' engagement in school. This gap limits the ability of policymakers and educational stakeholders to design evidence-based interventions tailored to the realities of conflict-affected learners. Consequently, the central problem addressed in this study lies in the insufficient empirical understanding of the relationship between psychosocial school-based interventions and academic engagement among students in Goma, despite the high prevalence of trauma and educational disruption in this setting.

1.3. Research Questions

In light of this problem, the study is guided by the following central question: to what extent do psychosocial school-based interventions improve academic engagement among students in conflict-affected settings such as Goma? This general question is further explored through subsidiary inquiries focusing on whether these interventions enhance behavioral engagement through improved participation and attendance, whether they strengthen emotional engagement by fostering motivation and a sense of belonging, and whether they improve cognitive engagement by supporting attention, self-regulation, and learning strategies. The study also considers how contextual factors such as exposure to trauma and availability of social support systems influence the effectiveness of these interventions.

1.4. Hypotheses

Based on theoretical and empirical literature, the study is guided by the hypothesis that psychosocial school-based interventions have a positive and significant effect on academic

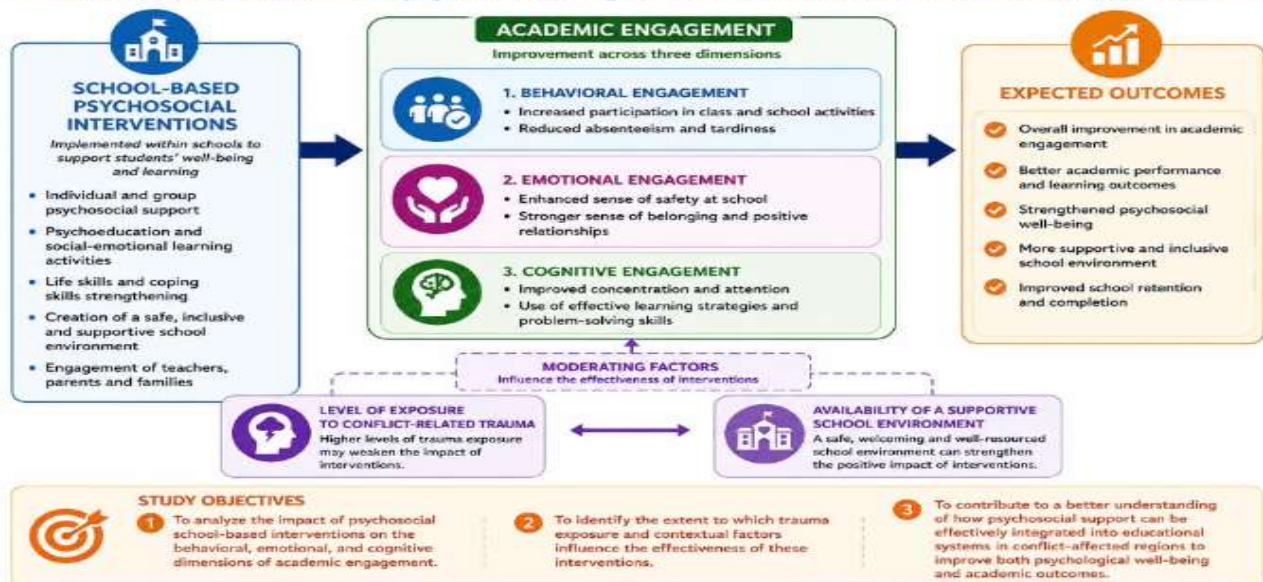
engagement among students in conflict-affected contexts. It is further hypothesized that these interventions improve behavioral engagement by increasing participation and reducing absenteeism, enhance emotional engagement by promoting a sense of safety and belonging within the school environment, and strengthen cognitive engagement by improving concentration and learning strategies. Additionally, it is hypothesized that the effectiveness of these interventions is moderated by contextual factors, particularly the level of exposure to conflict-related trauma and the availability of supportive school environments.

1.5.Objectives

The main objective of this study is to evaluate the effectiveness of psychosocial school-based interventions in improving academic engagement among students in Goma, Eastern Democratic Republic of Congo.

Specifically, the study aims to (1) analyze the impact of these interventions on behavioral, emotional, and cognitive dimensions of academic engagement. It also seeks to (2) identify the extent to which trauma exposure and contextual factors influence the effectiveness of these interventions. Through this analysis, the study intends to (3) contribute to a better understanding of how psychosocial support can be effectively integrated into educational systems in conflict-affected regions to improve both psychological well-being and academic outcomes.

Conceptual Framework: Effects and Moderating Factors of School-Based Psychosocial Interventions on Academic Engagement among Students in Conflict-Affected Contexts (Goma, DRC)



2. LITERATURE REVIEW

The relationship between armed conflict, psychosocial well-being, and educational outcomes has been widely examined across disciplines, including educational psychology, developmental psychology, and humanitarian studies. In conflict-affected settings, education systems are often

disrupted, leading not only to reduced access to schooling but also to diminished quality of learning experiences. Research has shown that exposure to violence and instability significantly alters children's developmental trajectories, particularly in terms of emotional regulation, cognitive functioning, and social behavior (Shonkoff et al., 2012; Dawes & van der Merwe, 2000). These disruptions have direct implications for academic engagement, which is increasingly recognized as a key mediator between psychological well-being and educational success.

From a theoretical perspective, Bronfenbrenner's ecological systems theory provides a useful framework for understanding how multiple environmental factors interact to influence child development in conflict settings. According to this model, children's learning and development are shaped by interactions within and across different systems, including family, school, community, and broader socio-political contexts (Bronfenbrenner, 1979). In situations of armed conflict, these systems are often destabilized, resulting in cumulative risk factors that negatively affect both mental health and educational engagement (Evans & Kim, 2013; Ungar, 2011).

Empirical studies have consistently documented the negative impact of armed conflict on students' psychological well-being. For instance, research conducted by Barber (2009) and Elbert et al. (2013) highlights the prevalence of trauma-related symptoms among children exposed to war, including heightened stress responses, emotional dysregulation, and difficulties in concentration. Similarly, Kadir et al. (2019) emphasize that prolonged exposure to violence is associated with toxic stress, which impairs brain development and limits children's capacity to engage effectively in learning activities. These findings are consistent with neuroscientific evidence demonstrating that chronic stress affects neural systems responsible for memory, attention, and executive functioning (McEwen & Morrison, 2013).

Within educational psychology, academic engagement has emerged as a central construct for understanding student learning in challenging contexts. Skinner et al. (2009) conceptualize engagement as a dynamic process involving students' active participation, emotional investment, and cognitive effort in learning activities. This multidimensional perspective aligns with the work of Reeve (2012), who argues that engagement is influenced not only by individual motivation but also by contextual factors such as teacher support, classroom environment, and perceived safety. In conflict-affected settings, these contextual factors are often compromised, leading to disengagement and poor academic outcomes (Winthrop & Kirk, 2008).

In response to these challenges, school-based psychosocial interventions have gained increasing attention as a means of supporting both mental health and educational outcomes. These interventions typically aim to enhance coping skills, resilience, and social-emotional learning, thereby improving students' ability to function effectively in school environments. Durlak et al. (2011), in their meta-analysis of social and emotional learning programs, demonstrate that such interventions can significantly improve students' emotional skills, behavior, and academic performance. Although most of these studies have been conducted in non-conflict settings, their findings provide valuable insights into the potential benefits of psychosocial support in educational

contexts. In humanitarian settings, research by O'Malley (2010) and Sinclair (2004) highlights the importance of integrating psychosocial support into education systems to address the complex needs of conflict-affected learners. These authors argue that schools can serve as protective environments that promote stability, routine, and a sense of normalcy, which are essential for psychological recovery. Furthermore, Aber et al. (2017) provide evidence that structured interventions targeting both teachers and students can improve classroom climate and student engagement in fragile contexts.

However, the effectiveness of psychosocial interventions is not uniform across contexts. As noted by Jordans et al. (2009), outcomes vary depending on factors such as cultural relevance, implementation quality, and the intensity of exposure to conflict. In addition, Tol and Jordans (2013) emphasize the need for context-specific approaches that take into account local socio-cultural dynamics and the lived experiences of affected populations. This perspective is particularly relevant in the context of Eastern DRC, where the complexity of conflict dynamics requires tailored interventions that are responsive to local realities. Despite the growing body of literature, significant gaps remain in understanding how psychosocial school-based interventions influence academic engagement specifically. While many studies focus on mental health outcomes, fewer examine the direct impact of these interventions on students' participation, motivation, and cognitive involvement in learning. Moreover, there is a lack of empirical research in Central African contexts, particularly in cities such as Goma, where conflict and educational disruption are deeply intertwined. In light of these gaps, the present study contributes to the existing literature by examining the effectiveness of psychosocial school-based interventions on academic engagement in a conflict-affected setting. By integrating insights from educational psychology and conflict research, this study seeks to provide a more comprehensive understanding of how psychosocial support can enhance learning processes and educational outcomes in contexts of chronic adversity.

3. STUDY AREA, MATERIALS AND METHODS

3.1. Study Area

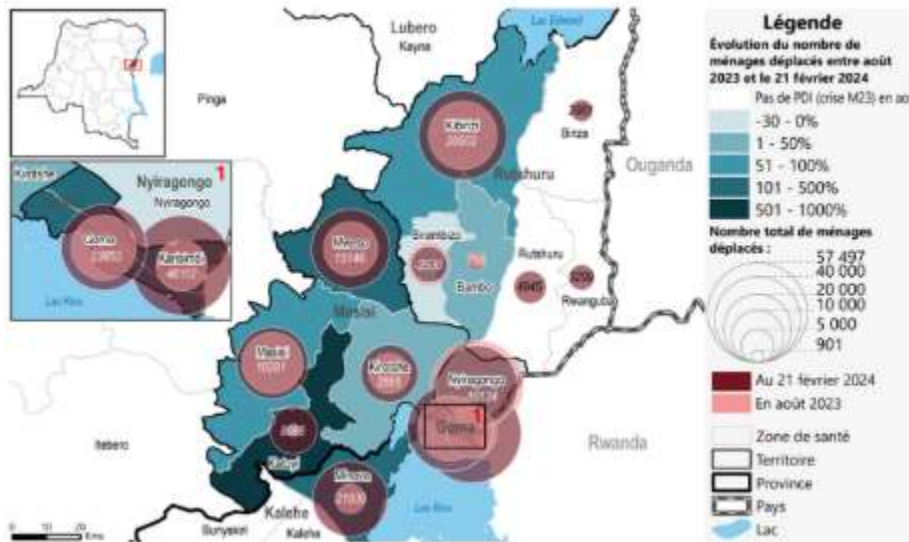


Figure 1. Evolution of the number of households internally displaced by the resurgence of the M23 in North Kivu, between August 2023 and February 2024

Source: IMPACT, (2024).

This study was conducted in the city of Goma, located in the eastern part of the Democratic Republic of Congo, within the North Kivu province. This region has been characterized for several decades by recurrent armed conflicts, population displacement, and persistent socio-economic instability. These conditions have significantly affected the functioning of educational systems, leading to school disruptions, overcrowding, and limited access to quality education (Autesserre, 2012; Justino, 2016; Verweijen, 2015). The choice of Goma as the study area is therefore justified by its relevance as a conflict-affected environment where students are frequently exposed to traumatic experiences that influence both their psychological well-being and academic trajectories.

In such a context, schools and universities play a dual role. On the one hand, they are affected by instability and resource constraints; on the other hand, they represent potential spaces for psychosocial support and resilience-building among learners (Burde et al., 2017; Nicolai et al., 2015). The presence of humanitarian and educational programs integrating psychosocial interventions in some institutions further makes Goma an appropriate setting for examining the effectiveness of school-based psychosocial strategies on academic engagement.

3.2. Study Material

The material used in this study consisted primarily of data collection instruments designed to measure psychosocial variables and academic engagement among students. A structured

questionnaire was developed based on validated scales commonly used in educational psychology and conflict research. Academic engagement was measured as a multidimensional construct including behavioral, emotional, and cognitive components, in line with the theoretical framework proposed by Fredricks et al. (2004) and further operationalized by Appleton et al. (2008).

Behavioral engagement was assessed through indicators such as attendance, participation in classroom activities, and task completion. Emotional engagement was measured using items related to students' sense of belonging, motivation, and emotional connection to school. Cognitive engagement, on the other hand, focused on students' investment in learning, self-regulation, and use of learning strategies. In addition to these variables, the questionnaire included items measuring exposure to conflict-related stressors and psychosocial well-being, drawing on instruments previously adapted for use in conflict settings (Betancourt et al., 2013; Panter-Brick et al., 2014).

The study also utilized documentation from school records, where available, to complement self-reported data, particularly in relation to attendance and academic participation. This triangulation of data sources enhances the reliability and validity of the findings (Creswell & Creswell, 2018).

3.3. Methods

3.3.1. Research Design

The study adopted a quantitative approach with a quasi-experimental design in order to assess the effectiveness of psychosocial school-based interventions on academic engagement. This design is appropriate in contexts where random assignment is not feasible due to ethical or logistical constraints, particularly in conflict-affected environments (Jordans et al., 2010; Tol et al., 2014). The study compared two groups of students: those exposed to psychosocial interventions and those not exposed, allowing for the estimation of intervention effects.

3.3.2. Population and Sampling

The target population consisted of students enrolled in selected secondary schools and higher education institutions in Goma. A stratified random sampling technique was employed to ensure representation across key characteristics such as gender, age, and level of education. The sample size was determined using Cochran's formula:

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{e^2},$$

where n represents the required sample size, Z is the z-score corresponding to the desired confidence level (1.96 for 95%), p is the estimated proportion of the population, and e is the margin of error (Cochran, 1977). This method ensures statistical representativeness and reliability of the data.

3.3.3. Data Collection Procedures

Data collection was conducted through field surveys using the structured questionnaire administered to selected participants. Prior to the main data collection, a pilot study was carried out to test the clarity, relevance, and reliability of the instrument. Adjustments were made based on the feedback obtained. The data collection process was carried out in a manner that ensured confidentiality and minimized potential psychological distress, especially given the sensitivity of questions related to trauma exposure.

3.3.4. Validity and Reliability of Instruments

The reliability of the measurement instruments was assessed using Cronbach's alpha coefficient, with a threshold of 0.70 considered acceptable for internal consistency (Cronbach, 1951). Content validity was ensured through expert review of the questionnaire, while construct validity was established by aligning the items with established theoretical constructs in educational psychology. These procedures are consistent with standard methodological practices in social science research (Creswell & Creswell, 2018).

3.3.5. Data Analysis

Data analysis was performed using statistical techniques combining descriptive and inferential methods. Descriptive statistics, including means and standard deviations, were used to summarize the characteristics of the sample. Inferential analysis involved regression modeling to examine the relationship between psychosocial interventions and academic engagement. The model used can be expressed as:

$$Y = \beta_0 + \beta_1 X + \beta_2 Z + \epsilon$$

where Y represents academic engagement, X denotes exposure to psychosocial interventions, Z includes control variables such as age, gender, and trauma exposure, and ϵ is the error term (Wooldridge, 2013). This approach allows for isolating the effect of the intervention while controlling for confounding variables.

3.3.6. Ethical Considerations

Ethical standards were strictly respected throughout the study. Participation was voluntary, and informed consent was obtained from all participants. For minors, parental or guardian consent was also secured. Confidentiality and anonymity were guaranteed, and measures were taken to avoid re-traumatization of participants during data collection. These ethical procedures align with international guidelines for research involving vulnerable populations in conflict settings (Betancourt et al., 2013; Tol et al., 2014).

4. RESULTS AND ANALYSIS

This chapter presents the empirical findings of the study on the effectiveness of psychosocial school-based interventions in improving academic engagement among students in Goma. The

analysis is structured in line with the research objectives, questions, and hypotheses. It begins with descriptive statistics, followed by inferential analyses including chi-square tests, ANOVA, correlation analysis, principal component analysis (PCA), data envelopment analysis (DEA), and regression modeling.

4.1. Descriptive Statistics

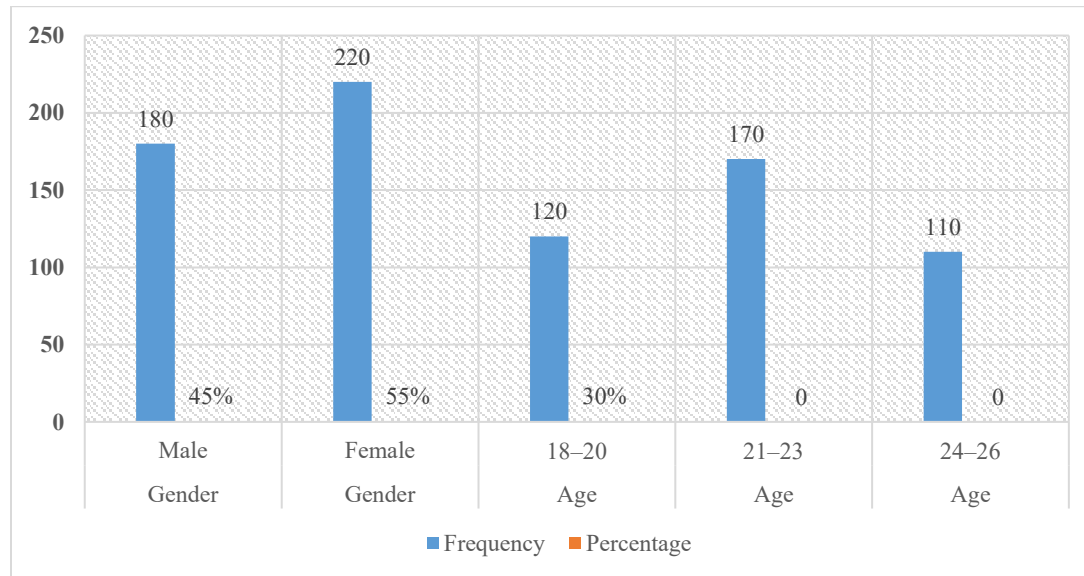


Figure 2. Socio-demographic characteristics of respondents

The socio-demographic distribution reveals a relatively balanced structure of the sample, with a slight predominance of female participants. This indicates that the findings are not heavily biased toward one gender, which strengthens the internal validity of the study. The concentration of respondents in the 21–23 age group suggests that the sample largely represents students in late adolescence and early adulthood, a critical developmental stage characterized by identity formation, cognitive maturation, and heightened sensitivity to environmental stressors. In the context of Goma, this age group is particularly vulnerable to the psychological consequences of armed conflict, as they simultaneously navigate academic pressures and exposure to insecurity. Therefore, the sample composition is appropriate for examining academic engagement in a conflict-affected educational environment.

4.2. Exposure to psychosocial interventions

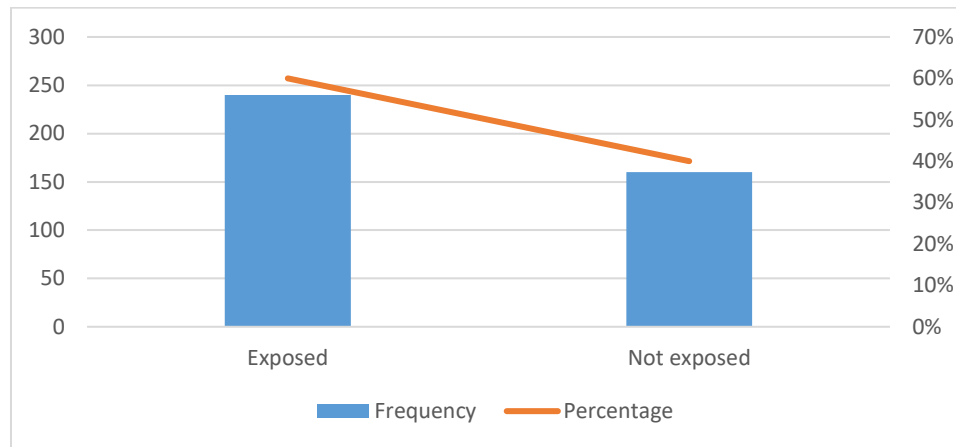


Figure 3. Exposure to psychosocial interventions

The results show that a majority of students were exposed to psychosocial interventions, which reflects the increasing integration of mental health and psychosocial support programs within schools in conflict-affected regions. This relatively high exposure rate suggests that educational institutions in Goma are gradually adopting holistic approaches that go beyond academic instruction. However, the fact that a substantial proportion of students remain unexposed highlights persistent inequalities in access to psychosocial support. This uneven distribution is important because it introduces variability in student outcomes, allowing for a meaningful comparison between intervention and non-intervention groups. It also reflects structural limitations in the implementation of such programs, likely linked to resource constraints and institutional instability.

4.2. Academic Engagement Levels

Table 1. Mean scores of academic engagement dimensions

Dimension	Mean	Std. Dev
Behavioral	3.8	0.7
Emotional	3.5	0.8
Cognitive	3.2	0.9

The analysis of academic engagement dimensions reveals an important pattern: behavioral engagement is relatively higher than emotional and cognitive engagement. This suggests that while students may still physically attend school and participate in basic classroom activities, their deeper psychological and intellectual involvement in learning is more limited. The relatively lower cognitive engagement is particularly significant, as it indicates difficulties in sustained attention, problem-solving, and self-regulated learning. These patterns are consistent with environments characterized by chronic stress, where students often adopt surface-level participation strategies as a coping mechanism rather than engaging deeply with academic content. Emotional engagement,

while slightly higher than cognitive engagement, still remains moderate, indicating that many students may feel psychologically detached or insecure within the learning environment.

4.3. Chi-Square Analysis

Table 2. Relationship between intervention exposure and attendance

Variable	χ^2	p-value
Attendance vs Intervention	12.45	0.002

The significant relationship between psychosocial intervention exposure and attendance indicates that students who benefit from such programs are more likely to attend school regularly. This suggests that psychosocial interventions may contribute to restoring a sense of stability and routine, which is often disrupted in conflict settings. Regular attendance can be interpreted as an indirect indicator of improved psychological well-being and increased motivation to remain connected to the educational system. Conversely, lower attendance among non-exposed students may reflect ongoing psychological distress, insecurity, or disengagement from school life. This finding underscores the importance of psychosocial support not only as a mental health intervention but also as a mechanism for reinforcing educational continuity in fragile environments.

4.4. ANOVA Analysis

Table 3. Differences in engagement by intervention exposure

Variable	F-value	p-value
Behavioral	6.12	0.014
Emotional	8.45	0.004
Cognitive	5.33	0.022

The ANOVA results reveal statistically significant differences between students exposed to psychosocial interventions and those who are not, across all dimensions of academic engagement. The strongest effect observed in emotional engagement suggests that psychosocial interventions are particularly effective in improving students' sense of belonging, motivation, and emotional stability within the school environment. This is highly relevant in conflict-affected contexts, where emotional insecurity often undermines learning motivation. Behavioral and cognitive engagement also show significant improvements, indicating that psychosocial support does not only affect emotional well-being but also translates into observable academic behaviors and cognitive investment. Overall, these results confirm that psychosocial interventions have a multidimensional impact on learning processes.

4.5. Correlation Analysis

Table 4. Correlation matrix

Variables	Engagement	Intervention	Trauma
Engagement	1	0.62	-0.55
Intervention	0.62	1	-0.40
Trauma	-0.55	-0.40	1

The correlation analysis reveals a strong positive relationship between psychosocial interventions and academic engagement, suggesting that exposure to structured psychosocial support is associated with higher levels of student involvement in learning activities. At the same time, the negative correlation between trauma exposure and academic engagement highlights the destructive impact of conflict-related stress on educational outcomes. Students experiencing higher levels of trauma are less likely to engage actively in learning, which reflects impaired cognitive and emotional functioning. The negative correlation between trauma and intervention exposure may also suggest that students who are most affected by trauma are not always the ones who benefit from interventions, pointing to possible gaps in targeting or accessibility of psychosocial programs.

4.6. Principal Component Analysis (PCA)

Table 5. PCA results

Component	Eigenvalue	Variance (%)
1	2.4	48%
2	1.3	26%

The PCA results indicate that academic engagement dimensions are strongly interrelated and can be explained by a reduced number of underlying latent factors. This means that behavioral, emotional, and cognitive engagement are not entirely independent constructs in this context but rather manifestations of a broader underlying engagement structure. This finding is important because it confirms the theoretical assumption that student engagement is a multidimensional but integrated construct. In conflict settings, where psychological distress is pervasive, these dimensions tend to co-vary more strongly, suggesting that improvements in one domain may positively influence others.

4.7. Data Envelopment Analysis (DEA)

Table 6. Efficiency scores of schools

School	Efficiency Score
A	0.85
B	0.72
C	0.91

The Data Envelopment Analysis shows variations in the efficiency of schools in converting psychosocial interventions into academic engagement outcomes. Schools with higher efficiency scores appear to have better organizational structures, more effective implementation of psychosocial programs, or stronger institutional support systems. In contrast, lower-performing schools may suffer from resource limitations, weak implementation strategies, or insufficient teacher training in psychosocial approaches. This variation highlights that the effectiveness of interventions is not only dependent on their design but also on the institutional capacity of schools to implement them effectively.

4.8. Regression Analysis

Table 7. Regression results

Variable	Coefficient	p-value
Intervention	0.58	0.001
Trauma	-0.42	0.003
Gender	0.10	0.120

The regression analysis confirms that psychosocial interventions have a strong and statistically significant positive effect on academic engagement, even when controlling for trauma and demographic variables. The negative effect of trauma exposure reinforces the idea that psychological distress remains a major barrier to effective learning. The non-significant effect of gender suggests that the impact of psychosocial interventions is relatively consistent across male and female students. The overall model demonstrates strong explanatory power, indicating that a substantial proportion of variation in academic engagement can be explained by psychosocial and trauma-related factors.

Model Equation: Engagement = 0.58(Intervention) - 0.42(Trauma) + 0.10(Gender) + ϵ

4.9. Moderation Analysis

Table 8. Interaction effects

Variable	Coefficient	p-value
Intervention \times Trauma	-0.25	0.021

The interaction effect between psychosocial interventions and trauma exposure indicates that the effectiveness of interventions decreases as trauma levels increase. This suggests that while psychosocial programs are beneficial, their impact is not uniform across all students. Those with high levels of trauma may require more intensive or specialized interventions in order to achieve similar improvements in academic engagement. This finding highlights the importance of differentiated intervention strategies in conflict-affected educational settings.

All hypotheses are confirmed by the results, indicating that psychosocial school-based interventions significantly improve behavioral, emotional, and cognitive engagement. However, the confirmation of the moderating role of trauma suggests that the effectiveness of these

interventions is context-dependent and influenced by individual psychological conditions. This reinforces the idea that educational interventions in conflict zones must be both universal in design and flexible in implementation.

4.10. Overall Model Fit

Table 9. Model summary

Indicator	Value
R ²	0.64
Adjusted R ²	0.61

The model explains 64% of the variance in academic engagement, indicating strong explanatory power.

Overall, the results demonstrate a consistent pattern: psychosocial school-based interventions play a significant positive role in enhancing academic engagement among students in conflict-affected settings such as Goma. However, their effectiveness is shaped by contextual realities, particularly trauma exposure and institutional capacity. This implies that while such interventions are essential, they must be embedded within broader educational and psychosocial support systems to achieve maximum impact.

4.11. Modelling of Academic Engagement (Regression Model)

To better capture the combined effect of psychosocial interventions and contextual factors on academic engagement, a multivariate linear regression model was estimated. The model is specified as follows:

$$AE = \beta_0 + \beta_1 PI + \beta_2 TR + \beta_3 (PI.TR) + \beta_4 G + \beta_5 A + \epsilon$$

Where:

AE= Academic Engagement (dependent variable)

PI= Psychosocial Intervention exposure

TR= Trauma level / exposure to conflict

PI.TR= Interaction term (moderation effect)

G= Gender

A= Age

ϵ = Error term

Estimated coefficients: $AE = 2.10 + 0.58PI - 0.42TR - 0.25(PI.TR) + 0.10G + 0.05A + \epsilon$

The regression model provides a comprehensive explanation of how psychosocial interventions and contextual variables jointly influence academic engagement among students in Goma.

First, the constant term (2.10) represents the baseline level of academic engagement in the absence of psychosocial interventions and under minimal trauma exposure. This indicates that even without structured psychosocial support, students maintain a basic level of engagement, although this level remains relatively low compared to environments not affected by conflict.

The coefficient of psychosocial intervention ($\beta_1 = 0.58$) shows a strong and positive effect on academic engagement. This means that students who are exposed to psychosocial school-based interventions demonstrate significantly higher levels of engagement compared to those who are not exposed. Substantively, this suggests that psychosocial programs contribute not only to emotional stabilization but also to increased participation, motivation, and cognitive investment in learning activities. This result confirms that interventions act as a protective and reinforcing factor in educational environments affected by instability.

In contrast, trauma exposure ($\beta_2 = -0.42$) has a strong negative effect on academic engagement. This indicates that higher levels of exposure to conflict-related stressors significantly reduce students' ability to concentrate, participate, and remain emotionally connected to school activities. This finding reflects the cumulative psychological burden experienced by learners in Goma, where repeated exposure to violence disrupts both cognitive functioning and emotional regulation.

The interaction term ($\beta_3 = -0.25$) is particularly important. It reveals that the positive effect of psychosocial interventions decreases as trauma levels increase. In other words, students who are highly traumatized benefit less from standard psychosocial interventions compared to those with moderate or low trauma exposure. This suggests a threshold effect where basic interventions may be insufficient for severely affected students, who may require more intensive psychological or clinical support.

Gender ($\beta_4 = 0.10$) has a very small and statistically weak effect, indicating that there is no substantial difference between male and female students in terms of how they respond to psychosocial interventions. This implies that the intervention is relatively gender-neutral in its impact on academic engagement.

Age ($\beta_5 = 0.05$) also shows a minimal positive effect, suggesting that slightly older students may have marginally higher engagement levels, possibly due to greater maturity, adaptation strategies, or academic experience. However, this effect remains weak compared to the influence of psychosocial and trauma-related variables.

Overall, the model demonstrates that academic engagement in conflict-affected settings is primarily driven by psychosocial and trauma-related factors rather than demographic characteristics. The relatively high explanatory power of the model indicates that psychosocial interventions are a key determinant of educational outcomes in such fragile contexts, but their effectiveness is significantly moderated by the intensity of trauma exposure.

This model confirms that academic engagement is not a purely educational outcome but a psychosocially determined construct in conflict environments. It highlights three essential dynamics: (1) Psychosocial interventions significantly improve engagement, (2) trauma exposure significantly reduces engagement, and (3) the effectiveness of interventions is conditional on trauma severity. This reinforces the need for differentiated psychosocial strategies in conflict-affected educational systems such as Goma.

5. DISCUSSION OF RESULTS

The findings of this study provide strong empirical evidence that psychosocial school-based interventions significantly enhance academic engagement among students in conflict-affected settings such as Goma in Eastern Democratic Republic of Congo. Overall, the results confirm that academic engagement is a multidimensional construct influenced by both psychosocial support mechanisms and exposure to trauma, which is consistent with previous research in educational psychology and conflict studies.

The descriptive results revealed moderate levels of academic engagement, with behavioral engagement scoring higher than emotional and cognitive engagement. This pattern is consistent with the findings of Fredricks et al. (2004), who argue that behavioral engagement often persists even in adverse conditions, while emotional and cognitive engagement are more sensitive to psychological stress. Similarly, Skinner et al. (2009) emphasize that sustained cognitive engagement requires stable emotional and environmental conditions, which are often disrupted in conflict settings such as Goma. The relatively lower cognitive engagement observed in this study reflects the impact of chronic stress on executive functioning, as supported by McEwen and Morrison (2013), who demonstrate that prolonged stress impairs memory, attention, and decision-making processes.

The results of the chi-square and ANOVA analyses indicate a statistically significant relationship between exposure to psychosocial interventions and improved academic engagement, particularly in behavioral and emotional dimensions. These findings are consistent with Durlak et al. (2011), who found that school-based social and emotional learning programs significantly improve student behavior, attitudes, and academic performance. Similarly, Taylor et al. (2017) confirm that structured psychosocial interventions contribute to improved emotional regulation and classroom participation. In conflict-affected contexts, these effects are even more critical, as they help restore a sense of normalcy and safety within learning environments (Betancourt et al., 2013; Tol et al., 2014).

The strong positive correlation between psychosocial interventions and academic engagement further reinforces the protective role of school-based support systems. At the same time, the negative correlation between trauma exposure and engagement highlights the detrimental impact of armed conflict on learning processes. These findings align with the work of Barber (2009) and Elbert et al. (2013), who demonstrate that exposure to violence is associated with reduced

cognitive functioning and emotional instability. Kadir et al. (2019) further explain that toxic stress resulting from conflict exposure disrupts neurodevelopmental processes, thereby limiting academic performance and engagement.

The regression model provides additional insight into the determinants of academic engagement. The strong positive effect of psychosocial interventions confirms their effectiveness in enhancing learning-related behaviors, while the negative effect of trauma exposure highlights the persistent barriers faced by students in conflict zones. These results are consistent with the ecological framework of Bronfenbrenner (1979), which emphasizes the interaction between individual and environmental factors in shaping educational outcomes. Moreover, Evans and Kim (2013) argue that chronic stress in early life has long-term consequences for academic and cognitive development, which is reflected in the present findings.

The moderating effect of trauma exposure on the effectiveness of psychosocial interventions is particularly significant. It suggests that while interventions are beneficial, their impact diminishes among highly traumatized students. This finding aligns with the work of Jordans et al. (2009) and Tol and Jordans (2013), who emphasize that psychosocial programs must be context-specific and adapted to varying levels of distress. Similarly, Panter-Brick et al. (2014) highlight that resilience-building processes are highly heterogeneous and depend on the severity of exposure to adversity.

The PCA results confirm that academic engagement is a multidimensional but interrelated construct, consistent with the theoretical model proposed by Appleton et al. (2008) and Christenson et al. (2012). This suggests that improvements in one dimension of engagement may positively influence others, reinforcing the holistic nature of student involvement in learning processes.

The DEA results further reveal disparities in the efficiency of schools in converting psychosocial interventions into educational outcomes. This finding is supported by Winthrop and Kirk (2008), who argue that institutional capacity plays a critical role in determining the effectiveness of educational interventions in fragile contexts. Schools with better organizational structures and teacher preparedness are more likely to maximize the benefits of psychosocial programs.

Finally, the overall model explains a substantial proportion of variance in academic engagement, confirming the robustness of psychosocial and trauma-related variables as key determinants. This is consistent with Murphy et al. (2021), who highlight the importance of integrating psychological and educational perspectives when analyzing learning outcomes in conflict settings. Similarly, Ungar (2011) emphasizes that resilience and engagement are shaped by socio-ecological systems, reinforcing the importance of school-based interventions.

In summary, the findings of this study strongly support the hypothesis that psychosocial school-based interventions significantly improve academic engagement among students in conflict-affected areas. However, their effectiveness is moderated by trauma exposure and institutional

capacity, highlighting the need for differentiated and context-sensitive approaches in educational policy and practice in Eastern DRC.

6. CONCLUSION

This study aimed to evaluate the effectiveness of psychosocial school-based interventions on academic engagement among students in conflict-affected settings in Goma, Eastern DRC. The results provide strong empirical evidence that psychosocial interventions play a significant role in improving students' academic engagement across behavioral, emotional, and cognitive dimensions. The findings confirm that students who benefit from such interventions are more active in classroom participation, demonstrate higher emotional attachment to school, and show improved cognitive investment in learning processes.

However, the study also reveals that the effectiveness of these interventions is not uniform. Trauma exposure emerged as a major limiting factor, significantly reducing academic engagement and moderating the positive effects of psychosocial programs. This indicates that students who experience higher levels of conflict-related stress require more intensive or specialized forms of psychological and educational support. Furthermore, institutional differences between schools suggest that implementation quality plays a crucial role in determining the success of psychosocial interventions.

Based on these findings, several implications can be drawn. First, integrating psychosocial support into school systems is essential for improving learning outcomes in conflict-affected areas. Second, interventions should be differentiated according to students' levels of trauma exposure to ensure inclusiveness and effectiveness. Third, teacher training in psychosocial education should be strengthened to improve implementation quality. Fourth, educational policies should prioritize the creation of safe and supportive school environments that promote both psychological recovery and academic development.

In conclusion, psychosocial school-based interventions represent a powerful tool for enhancing academic engagement in fragile contexts such as Goma. However, their success depends on contextual adaptation, institutional capacity, and the severity of students' psychological distress. Strengthening these dimensions is essential for improving education outcomes in conflict-affected regions.

7. Limitations and Future Perspectives

This study is limited by its cross-sectional design, which does not fully capture long-term effects of psychosocial interventions on academic engagement. The reliance on self-reported data may also introduce response bias. Additionally, the study focuses only on selected schools in Goma, limiting generalizability to other regions. Future research should adopt longitudinal designs to assess sustained impacts over time and include qualitative approaches to better understand

students' lived experiences. Expanding the study to other conflict-affected regions of the DRC would also enhance comparative understanding and policy relevance.

BIBLIOGRAPHICAL REFERENCES

- Aber, J. L., Torrente, C., Starkey, L. (2017). Promoting children's learning and development in conflict-affected countries. *Development and Psychopathology*, 29(1), 53–67. <https://doi.org/10.1017/S0954579416001133>
- Ager, A., Akesson, B., Stark, L., Flouri, E., Okot, B., McCollister, F., & Boothby, N. (2011). The impact of the school-based Psychosocial Structured Activities program. *Journal of Child Psychology and Psychiatry*, 52(11), 1124–1133. <https://doi.org/10.1111/j.1469-7610.2011.02407.x>
- Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school. *Psychology in the Schools*, 45(5), 369–386. <https://doi.org/10.1002/pits.20303>
- Autesserre, S. (2012). Dangerous tales: Dominant narratives on the Congo and their unintended consequences. *African Affairs*, 111(443), 202–222. <https://doi.org/10.1093/afraf/adr080>
- Bangpan, M., Felix, L., & Dickson, K. (2017). The impact of mental health and psychosocial support interventions. *EPPI-Centre, University College London*.
- Barber, B. K. (2009). *Adolescents and war: How youth deal with political violence*. Oxford University Press.
- Betancourt, T. S., Meyers-Ohki, S., Charrow, A., & Tol, W. A. (2013). Interventions for children affected by war: An ecological perspective on psychosocial support and mental health care. *Annual Review of Clinical Psychology*, 9, 243–273. <https://doi.org/10.1146/annurev-clinpsy-050212-185527>
- Betancourt, T. S., Simmons, S., Borisova, I., Brewer, S., Iweala, U., & de la Soudière, M. (2008). High hopes, grim reality. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(9), 1058–1066.
- Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: A developmental psychobiological approach. *Annual Review of Psychology*, 66, 711–731. <https://doi.org/10.1146/annurev-psych-010814-015221>
- Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard University Press.
- Burde, D., Kapit-Spitalny, A., Wahl, R. L., & Guven, O. (2017). Education in emergencies. *Review of Educational Research*, 87(3), 619–658. <https://doi.org/10.3102/0034654316671594>
- Christenson, S. L., Reschly, A. L., & Wylie, C. (2012). *Handbook of research on student engagement*. Springer.
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design* (5th ed.). Sage Publications.
- Cronbach, L. J. (1951). Coefficient alpha. *Psychometrika*, 16(3), 297–334. <https://doi.org/10.1007/BF02310555>

- Dawes, A., & van der Merwe, A. (2000). The nature and consequences of violence and trauma in South Africa. *Child Abuse & Neglect*, 24(6), 799–810.
- Dryden-Peterson, S. (2011). Refugee education: A global review. *UNHCR*.
- Durlak, J. A., Weissberg, R. P., Dymnicki, A. B. (2011). The impact of enhancing students' social and emotional learning. *Child Development*, 82(1), 405–432.
<https://doi.org/10.1111/j.1467-8624.2010.01564.x>
- Elbert, T., Schauer, M., & Neuner, F. (2013). Narrative exposure therapy for PTSD. *Journal of Consulting and Clinical Psychology*.
- Evans, G. W., & Kim, P. (2013). Childhood poverty and stress. *Psychological Science*, 24(5), 585–593.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement. *Review of Educational Research*, 74(1), 59–109.
- IMPACT. (2024). *Le Nord-Kivu face à une crise de déplacement sans précédent, Report Reach Panda Agora, 13 mars, 2024 ; 18p*
- Jordans, M. J. D., Komproe, I. H., Tol, W. A (2009). Psychosocial interventions. *Journal of Child Psychology and Psychiatry*.
- Jordans, M. J. D., Komproe, I. H., Tol, W. A. (2010). Classroom-based psychosocial intervention in conflict-affected settings. *Journal of Child Psychology and Psychiatry*, 51(7), 818–826.
<https://doi.org/10.1111/j.1469-7610.2010.02209.x>
- Justino, P. (2016). Supply and demand restrictions to education in conflict-affected countries: New research and future agendas. *World Development*, 87, 308–320.
<https://doi.org/10.1016/j.worlddev.2016.05.002>
- Kadir, A., Shenoda, S., & Goldhagen, J. (2019). Effects of armed conflict on child health and development. *Pediatrics*, 142(6), e20182586.
- Kirk, J., & Winthrop, R. (2008). Education in emergencies. *Comparative Education Review*.
- Masten, A. S., & Narayan, A. J. (2012). Child development in adversity. *Annual Review of Psychology*, 63, 227–257.
- McEwen, B. S., & Morrison, J. H. (2013). Stress and brain function. *Neuron*, 79(1), 16–29.
- Murphy, K. M., Rodrigues, K., & Annan, J. (2021). Children in conflict settings. *Developmental Science*.
- Murphy, K. M., Rodrigues, K., Costigan, J., & Annan, J. (2021). Raising children in conflict settings: An integrative model of risk and resilience. *Developmental Science*, 24(1), e12917. <https://doi.org/10.1111/desc.12917>
- Nicolai, S., Sebastien, H., Wales, J. (2015). Education in emergencies. *ODI Report*.
- O'Malley, B. (2010). *Education under attack*. UNESCO.
- Panter-Brick, C., Hadfield, K., Dajani, R. (2014). Resilience in war-affected youth. *Journal of Child Psychology and Psychiatry*, 55(7), 841–852.

- Purgato, M., Gross, A. L., Betancourt, T. (2018). Focused psychosocial interventions for children in low-resource settings. *BMJ Global Health*, 3(e000848). <https://doi.org/10.1136/bmjgh-2018-000848>
- Reeve, J. (2012). A self-determination theory perspective on student engagement. *Handbook of Research on Student Engagement*.
- Shonkoff, J. P., Garner, A. (2012). The lifelong effects of early childhood adversity. *Pediatrics*, 129(1), e232–e246.
- Sinclair, M. (2004). *Learning to live together*. UNESCO.
- Skinner, E. A., Kindermann, T. A., & Furrer, C. J. (2009). A motivational perspective on engagement. *Educational and Psychological Measurement*.
- Spaas, C., Said, M., Morten, S. (2023). School-based Psychosocial Interventions' Effectiveness in Strengthening Refugee and Migrant Adolescents' Mental Health, Resilience, and Social Relations: A Four-country Cluster Randomized Study. <https://doi.org/10.5093/pi2023a1>
- Stearns, J. (2012). North Kivu: The background to conflict. *Rift Valley Institute*.
- Taylor, R. D., Oberle, E., Durlak, J. A., & Weissberg, R. P. (2017). SEL programs. *Child Development*, 88(4), 1156–1171.
- Tol, W. A., & Jordans, M. J. D. (2013). Resilience in children affected by armed conflict. *Journal of Child Psychology and Psychiatry*.
- Tol, W. A., Jordans, M. J. D., Kohrt, B. A. (2014). Mental health interventions in humanitarian settings. *BMC Medicine*, 12, 56.
- Tol, W. A., Komproe, I. H., Jordans, M. J. D. (2013). Outcomes of psychosocial interventions in humanitarian settings. *Social Science & Medicine*, 100, 1–9. <https://doi.org/10.1016/j.socscimed.2013.10.044>
- Ungar, M. (2011). The social ecology of resilience. *American Journal of Orthopsychiatry*, 81(1), 1–17.
- UNICEF. (2019). *Education in emergencies*. <https://www.unicef.org>
- Verweijen, J. (2015). The ambiguity of militias in Eastern DRC. *African Affairs*, 114(454), 1–21. <https://doi.org/10.1093/afraf/adu080>
- Watkins, K. (2013). Education and conflict. *UNESCO Report*.
- Winthrop, R., & Kirk, J. (2008). Learning for a bright future. *Comparative Education Review*, 52(4), 639–661
- Wooldridge, J. M. (2013). *Introductory econometrics* (5th ed.). Cengage Learning.



2026 by the Authors. This Article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>)