

Emotion Dysregulation Linked to Depression Symptoms in a Sub-Saharan Sample of Adolescent University Students

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Abstract

Emotions are fundamental to human development and survival across the lifespan. Adolescence is a volatile and critical developmental period characterized by frequent high-intensity positive and negative emotions. Emotion dysregulation and depression symptoms are common occurrences in adolescence. This study explored the association between emotion regulation difficulties and depressive symptoms in adolescents. The study was anchored on the extended process model of emotion regulation. The study employed a descriptive-analytical design and sampled 352 adolescents, ages 18-19, from the United States International University-Africa, Kenya. SPSS® v28 was used to analyze data and apply descriptive and inferential statistics. The study found no gender or ethnic differences in emotion regulation. However, there was a significant association between emotion regulation difficulties and depression, $\chi^2(3) = 12.133, p = 0.007, V = 0.186$, and a positive and significant linear relationship between the variables, $r(352) = 0.229, p < 0.001, r^2 = 0.052$. Notably, the higher the emotion regulation difficulties, the higher the depression levels. The study concluded that emotionally dysregulated adolescent university students are particularly vulnerable to developing psychological symptoms of depression.

Key Words: Emotions, Emotion Regulation, Adolescence, Depression

Introduction

Emotions serve an important function across the lifespan. Emotions are positive and negative affective states generated by specific events. Emotions differ from long-lasting emotional states such as mood and enduring negative emotional states brought by failure to cope (Gross, 2015a). The study of emotions is interdisciplinary and relevant across various fields and sub-fields within psychology. More so, the ability to monitor, maintain, increase, or decrease one's emotions is a common feature in mental health and a major developmental task worth studying (Gross, 2013). Emotion regulation is the internal and external processes that monitor, evaluate, and modify emotional expressions to help individuals accomplish their goals (Thompson, 1994). It is the adaptive response to one's emotions, including identifying, understanding, accepting, and using emotions effectively and efficiently to guide behavior. The present study investigates emotion regulation and its association with depressive symptoms in adolescence. The authors review emotion regulation in adolescence, individual differences in regulating emotions, and links between emotion regulation and depression.

Emotion regulation can be conceptualized from a functional (Barret, 2016), dynamic (Gross, 1998b; 2015a), cognitive (Lazarus, 1991), or biological perspective (Izard, 1977; Panksepp,

2006). This paper is situated with Gross' Extended Process Model because this model provides a general yet comprehensive framework for understanding and interpreting individual differences in emotion regulation (Gross, 2015a). Gross conceptualizes emotion regulation as aligning one's emotional experience and expression to current and ongoing circumstances, such as crying at a funeral and laughing at a comedy show. Emotions are produced when individuals pay attention to and evaluate situations important to their current goals (Urry & Gross, 2010). Gross' model describes emotion regulation as a complex cyclic process that unfolds over time through identification, selection, and implementation stages (Gross, 2015a). An individual detects an emotion, selects an emotion regulation strategy, and then implements the chosen strategy. The regulation of emotions can be explicit or implicit. Explicit emotion regulation is one's conscious effort to initiate and monitor the regulatory process (Gyurak et al., 2011). Here, the individual has full insight and awareness of the process. However, due to the demands of everyday life, people cannot always engage in conscious and effortful emotional regulation. At times, emotion regulation occurs outside one's conscious awareness. Implicit regulation is an automatic regulatory process evoked by a stimulus that can run without an individual's insight or understanding. For example, individuals can automate decreasing sadness when walking past a homeless family on their way to work. The current study focuses on the habitual use of explicit emotion regulation.

Clinicians are concerned with problems in emotion regulation and how such problems contribute to mental health disorders. Generally speaking, emotional responses that are inappropriate, insufficient, excessive, and not suitable for one's social context are maladaptive (Aldao et al., 2010). Specifically, emotion dysregulation can be defined as one's (1) Inability to effectively process information and day-to-day events (Dodge, 1991a), (2) Difficulty with integrating emotions with other cognitive, social, or physiological processes (Katz & Gottman, 1991), (3) Little control over emotional experiences and expression (Izard, 1977), (4) Failure to meet emotion development milestones (Cicchetti et al., 1991), and (5) Inflexible use of emotion regulation strategies to fit ever-changing environments (Aldao et al., 2015). Further, John & Eng (2014) suggest three conceptual approaches to studying individual differences in emotion regulation: (1) Regulation to minimize pain and maximize pleasure, (2) Regulation to decrease negative affect while coping with stress, and (3) The role of emotional skills in regulating emotions. Emotion regulation difficulties may suggest that a person uses less effort to regulate emotions (Salovey et al., 1995) or has little access to adaptive emotion regulation skills (Gratz & Roemer, 2004). The present study conceptualized emotion dysregulation as the limited use or availability of emotional skills and competencies, which may lead to consistent difficulties in regulating emotions over time.

Gratz and Roemer (2004) posit six dimensions within which a person can have emotion regulation difficulties. These dimensions include a lack of acceptance of one's emotions, difficulty controlling one's impulsiveness, limited awareness of emotions, inability to identify emotions accurately, limited access to and limited use of emotion regulation strategies, and inability to focus on and pursue a goal. Competency in these six dimensions may indicate adaptive emotion regulation. Difficulties specific to adolescents include frequent intense negative emotions, poor emotional clarity, and high emotional instability that exhaust one's coping resources (van Roekel et al., 2016). Other emotion dysregulation indicators include (1) Responses incongruent with a situation, such as an under or exaggerated emotional response; (2) Consistent responses of anger, aggression, or irritability in social situations; (3) Problems with relating with others and (4) problems with internalizing or externalizing behavior (Zeman et al., 2006). Psychological symptoms associated with internalizing are

anxiety, depression, somatic complaints, and disordered eating, while externalization is linked to behavior problems such as impulsive, aggressive, and antisocial activities.

Several individual factors influence how adolescents regulate emotions. Specifically, personal history, age, gender, and language use may influence emotion regulation. Children generally have more adaptive emotion regulation than adolescents (Cracco *et al.*, 2017), and adolescents have heightened emotional experiences than children and adults (Zeman *et al.*, 2006). There are also age differences in strategy use, where older adolescents use distraction more than reappraisal (Theurel & Gentaz, 2018). Further, literature shows that females experience higher levels of emotion dysregulation than males (Skripkauskaitė *et al.*, 2015), and female adolescents have more emotion regulation difficulties when younger and less when older (Sanchis-Sanchis *et al.*, 2020). Adverse Childhood Experiences (ACEs) also play an essential role. ACEs are physical, sexual, and emotional abuse and neglect, household dysfunction, incarcerated family member, and parental separation or divorce experienced in childhood (Anda *et al.*, 2005). Anda and colleagues' study results suggest that the more ACEs one has, the greater the difficulty in regulating emotions. In addition to ACEs, age, and gender, language also influences emotion modulation. Studies in a multilingual sample in Sub-Saharan Africa have shown that emotions are experienced differently in one's first language versus languages acquired later (Basnight-Brown *et al.*, 2022). In addition, language can be used as an emotion regulation strategy in multilinguals. Santiago-Rivera *et al.* (2009) found that switching one's native language may reduce the distress of negative emotions. The present study will examine the role of age and gender in modulating emotions.

Adolescents often struggle to modulate their emotions. Adolescence is the critical developmental period between 10 and 19 years, characterized by frequent high-intensity positive and negative emotions (WHO, 2013; Bailen *et al.*, 2019). Adolescents account for 13.2 million of the Kenyan population (UNPF, n.d.). Although adolescents have a better understanding of emotional experiences and strategies than children (Zimmer-Gembeck & Skinner, 2016), they experience a temporary decrease in their ability to regulate emotions due to an increase in fluctuations in emotions and emotional reactivity. It is well-established that emotion dysregulation is associated with various psychological symptoms, including depression (Fernandez *et al.*, 2016). Depression affects approximately 280 million, or 3.8% of the global population (WHO, 2021). The Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) defines depression as sadness, emptiness, irritability, and changes in one's physiology and cognitions that directly impact an individual's ability to function (American Psychiatric Association, 2013).

Adolescents are vulnerable to developing depressive symptoms due to physiological changes, new demands, and an increased need for independence relative to childhood (Lee *et al.*, 2014). This developmental stage is also at the highest risk for the onset of mental disorders (Riediger & Klipker, 2014). Of all common mental health disorders, major depressive disorder has the highest lifetime prevalence in adolescents in their first year of university (Bantjes *et al.*, 2019). Indeed, depressive disorders have the highest occurrence in adolescence (Mullen, 2018). Studies show that symptoms of depression in adolescence are associated with using unhelpful emotion regulation strategies (Schafer *et al.*, 2017) and decreased levels and shorter periods of positive emotions (Silk *et al.*, 2011). Furthermore, the prevalence of depressive symptoms in Kenyan adolescents is 38.86% with mild symptoms, 19.21% with moderate symptoms, and 8.85% with severe symptoms (Osborn *et al.*, 2022). The current study examines how emotions are linked to depressive symptoms in adolescents.

In the past three decades, research on emotion regulation has grown globally; however, there are limited studies on adolescent mental health (Erschine et al., 2017). Studies on emotion regulation (Katembu, 2023; Mbungu et al., 2019) and emotional intelligence (Karimi et al., 2020; Muiga, 2020; Okello & Aomo, 2018) in adolescents in Kenya are few. More so, studies on depression in adolescence are also limited and include studies on adolescents with HIV (Gaitho et al., 2018), depression in pregnant adolescent females (Kumar, 2020), risk factors for depression (Luseno et al., 2021), depression and academic performance (Nyayieka et al., 2020), and intervention studies for depressive symptoms (Osborn et al., 2020; Venturo-Conerly et al., 2022). To the authors' knowledge, no published studies examined the relationship between emotion regulation and depression among adolescents in Kenya. Due to these knowledge gaps, the current study focused on exploring how emotion regulation is associated with depression symptoms in adolescence. Two objectives that guide this study are (1) To determine emotional regulation difficulties experienced by adolescent undergraduate students by gender and (2) To examine emotional regulation difficulties associated with depression among adolescent undergraduate students.

Methods

The current study sample consisted of 352 adolescents aged 18 and 19 years. By gender, the participants were 61.9% ($n = 218$) females and 38.1% ($n = 134$) males. Distribution by nationality was 72.5% of Kenyan participants ($n = 251$) and less than 5% from other African countries, India, Japan, and the United States. The study was conducted at the United States International University-Africa (USIU-Africa). USIU-Africa is a private university located in Nairobi City County, Kenya. The inclusion criteria for the present study were (1) Undergraduate students, (2) Persons between 18 and 19 years, (3) Consent to participate, and (4) Enrolled in a general education course. The sampling procedure used was cluster sampling, where the clusters were general courses. Before data collection, ethical clearance was granted by the USIU-Africa Institutional Review Board, clearance reference USIU-A/IRB/F084-2022. A study permit was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI), reference number 563187. The study was cross-sectional and used a survey method to collect data.

The instrument used to measure emotion regulation was the Difficulties in Emotion Regulation Scale, and depressive symptoms were measured using the Beck Depression Inventory, Second Revision (BDI-II). The Difficulties in Emotion Regulation Scale (DERS) is a 36-item self-report questionnaire that measures individuals' clinically significant emotional regulation problems (Gratz & Roemer, 2004). The DERS has six sub-scales, namely (1) Awareness, (2) Clarity, (3) Acceptance, (4) Impulse, (5) Goals, and (5) Strategies. Participants answered the DERS items on a five-point Likert scale where 1 = almost never, 2 = sometimes, 3 = about half the time, 4 = most of the time, and 5 = almost always. Items 1, 2, 6, 7, 8, 10, 17, 20, 22, 24, and 34 were reverse scored, and the remaining items were summed to reach a total score. The total scores range from 36 to 180. Higher scores indicate higher levels of emotion regulation difficulties. In this study, total scores were used in the analysis. Although the DERS does not have clinical cut-offs, previous studies suggest the clinical range is between 80 and 127, meaning that those with difficulties in regulating emotions fall within this range (Harrison et al., 2010; Staples et al., 2012). Based on Harrison and Staples' research, the investigator formulated cut-off categories of not clinically significant for scores between 0 and 79 and clinically significant for scores between 80 and 127.

The Beck Depression Inventory, Second Revision (BDI-II) is a 21-item instrument created by Beck et al. (1996). The BDI-II was formulated to measure the severity of self-reported

depressive symptoms experienced within the past two weeks in adolescents and adults between 13 and 80 years. Each of the 21 items is rated on a four-point Guttman Scale, where each statement is given a value of between 0 and 3, where 0 has minimal severity and 3 the highest severity. BDI-II has clinical cut-offs of minimal (Raw Score = 0 to 13), mild (Raw Score = 14 to 19), moderate (Raw Score = 20-28), and severe (Raw Score = 29 to 63). The BDI-II has been used in adolescent populations (cite) and is validated for use in the Kenyan setting (Abubakar et al., 2016).

Findings

Data was manipulated using SPSS® v28 at a 95% confidence interval. To determine emotional regulation difficulties experienced by adolescent undergraduate students by gender, emotion regulation scores were computed for each participant and categorized as not clinically significant if between 0 and 79 and clinically significant if between 80 and 127. The average emotional regulation score for females ($n = 218$) was $M = 102.491$, $SD = 13.000$, and for males ($n = 134$), it was $M = 102.754$, $SD = 12.882$. Of all participants, 94.3% ($n = 331$) had clinically significant emotion regulation, where 94% were male and 94.5% were female. To determine associations between emotion regulation and gender, inferential statistics were performed. The normality assumption test for emotion regulation indicated that this data was normally distributed. Levene's variance equality test indicated that variances were equal ($p = 0.613$). Results showed no significant mean difference in emotion regulation difficulties between males and females, $t(350) = 0.185$, $p = 0.853$.

To find out depression levels among adolescent undergraduate students, the severity level of depression symptoms was categorized from total scores. Participants with minimal depression levels were 43.8% ($n = 154$), 8.5% ($n = 30$) had mild depression levels, 10% ($n = 36$) had moderate levels, and 37.5% ($n = 132$) had severe symptoms of depression. Pearson's chi-square test of independence was performed to investigate the relationship between emotion regulation difficulties and depression. The associations analyzed were in two categories of emotional regulation difficulties and four levels of depression. Pearson's chi-square results showed a significant association between emotional regulation categories and depression levels, $\chi^2(3) = 12.133$, $p = 0.007$, $V = 0.186$. Furthermore, a one-way analysis of variance (ANOVA) was performed to investigate whether there was a significant difference in emotional regulation difficulties between the four levels of depression. ANOVA results showed that at least two depression levels differed significantly, $F(3,348) = 5.616$, $p < 0.001$, $\eta^2 = 0.046$.

A Bonferroni posthoc analysis indicated that participants with severe levels of depression had significantly higher emotion regulation difficulties than those with minimal $p = 0.002$ and mild, $p = 0.048$ depression level. Pearson's correlation results showed a positive significant linear relationship between the variables, $r(352) = 0.229$, $p < 0.001$, $r^2 = 0.052$. Simple linear regression analysis was conducted where the response variable was depression total scores and the predictor variable was emotion regulation scores. The results showed that the model was statistically significant, $F(1, 350) = 19.383$, $p < 0.001$. The model also yielded an R^2 value of 0.052. The regression model showed that emotion regulation difficulties significantly influence depression, $\beta = 0.290$, $p < 0.001$, CI [0.160, 0.419].

Discussion of Findings

It is well established that individuals across the lifespan experience and regulate emotions differently (Zeman et al., 2006). The current study is one of the first in Kenya to examine

emotion regulation in adolescents and its associations with depression symptoms. The study results help fill knowledge gaps on the essential role of emotion regulation in developing and perpetuating adolescent mental health problems in Kenya. As per the first objective, the present study did not find significant associations between gender and emotional dysregulation. The result of no gender differences in emotion regulation difficulties may be due to more female ($n = 218$) than male ($n = 134$) participants in the study. Unlike findings in the present study, existing studies suggest gender differences in emotion regulation. Literature shows that male participants suppress emotions more than females (Gross & John, 2003), females have more intense and frequent emotions (Silk *et al.*, 2003), females use maladaptive emotion regulation strategies more frequently than males (Nolen-Hoeksema & Aldao, 2011), and female participants report less emotional clarity while male participants report little access to adaptive emotion regulation strategies (Zafar *et al.*, 2020). This literature suggests that emotion regulation difficulties may be more common in females.

Other evidence suggests age, not gender, may be a more important predictor of emotion. Chaplin and Aldao's (2013) meta-analysis states that although emotional expression varies across males and females, age and social contexts modulate these gender differences. Sanchis-Sanchis *et al.* (2020) studied age and gender effects on emotion regulation with 9-16-year-olds. They found that girls' adaptive emotion regulation increased with age, but in boys, emotion regulation difficulty increased with age. In addition, findings from Cracco *et al.* (2017)'s study with 8-to-18-year-olds suggests an increase in emotion dysregulation in adolescence. Cracco and colleagues noted that children 8-11 years had more adaptive emotion regulation than 12-15-year-olds. The authors pointed out that emotion regulation becomes more adaptive at 16-18 years but does not restore to the healthy levels observed in childhood. Differences in emotion regulation strategy use may also explain why adolescents have more difficulties. Theurel and Gentaz (2018) found that older adolescents use distraction to regulate emotions more than reappraisal. Notably, reappraisal is a more adaptive strategy than distraction (Lazarus, 1991). Age may likely matter more than gender in emotion regulation. Indeed, numerous studies show that neurobiological maturation over time helps children and adolescents acquire skills that modulate emotions and development in physical and cognitive domains (Etkin *et al.*, 2015; Zeman *et al.*, 2006).

Literature indicates that adolescents are vulnerable to developing depressive disorders (Mullen, 2018). The current study found that 43.8% of participants had minimal, 8.5% had mild, 10.2% had moderate, and 37.5% had severe depression levels. These findings suggest that adolescents in university have high levels of depression. A study with a large sample of Kenyan adolescents indicated that 38.86% had mild symptoms, 19.21% had moderate, and 8.85% had severe symptoms (Osborn *et al.*, 2022). Notably, Osborn and colleagues indicated less severe symptoms than in the present study. A potential explanation for the disparity in findings is the instruments used to measure depression symptoms respectively. Osborn *et al.* (2022) study used the Patient Health Questionnaire (PHQ-9), while the present study used the Beck Depression Inventory, Second Edition (BDI-II). A psychometric comparison between the two instruments by Titov *et al.* (2011) found that studies that used BDI-II resulted in participants with more severe symptoms than PHQ-9. A study by Choi *et al.* (2014) that compared popular depression measures concluded that it is possible for different instruments to yield varied results due to disparities in scale content and psychometric properties in each measure. In this case, PHQ-9 and BDI-II have different items and psychometric properties. In addition, Osborn and colleagues' study used a large sample size from various institutions, while the current study sample was smaller and used data from one institution. A survey of Kenyan adolescents in a rural community using the Center for Epidemiological Studies

Depression Scale Revised (CESD-R) found that 39% had depressive symptoms (Luseno *et al.*, 2021).

Emotion regulation difficulties are a transdiagnostic factor in adolescent psychopathology (Colmenero-Navarrete *et al.*, 2021). In line with the second study objective, the present study found a significant association between emotional regulation categories and depression. Results showed that when emotion regulation difficulties increase, so do depression levels. Several studies support this claim. Studies show that depression in adolescence is associated with maladaptive emotion regulation strategies (Amone-P'Olak *et al.*, 2017; Schafer *et al.*, 2017), and older adolescents report more depressive symptoms than younger adolescents (Nyundo *et al.*, 2020). Chang *et al.* (2018) found that those with higher levels of emotion regulation difficulties were more likely to have a higher severity of Post-Traumatic Stress Disorder (PTSD) and depressive symptoms. Emotion regulation difficulties are also linked to poor interpersonal relationships and non-acceptance of emotions, factors associated with depression (Schwartz-Mette *et al.*, 2021; Zafar, 2020). Further, Nicholson *et al.* (2021) study findings suggest that maladaptive emotion regulation strategies put one at risk for poor sleep quality and depressive symptoms, while adaptive emotion regulation strategies reduce the risk for symptoms. These studies imply that emotion dysregulation is a risk factor for depression, and adolescents are especially at risk.

Conclusion

This study contributes to the dearth of information on adolescent mental health. However, the study also has some limitations. The study used a cross-sectional research design. Emotion regulation use changes daily, is context-specific, and is best observed over time to establish a pattern (John & Gross, 2007). Future studies should consider a different methodology, such as the experience sampling method or momentary ecological assessments, to minimize recall bias and increase validity by collecting real-time information. Another limitation of the present study is that it did not investigate other psychological symptoms that co-occur with depression symptoms. Future studies should examine depression symptoms with traumatic stress, substance use, disordered eating, and anxiety. In addition, studies in the future could consider investigating potential mediators and moderators such as food security, access to healthcare, mental health stigma, parenting style, cyberbullying, unemployment, academic performance, social connectedness, and adverse childhood experiences. Future studies should also investigate context-specific and cultural factors associated with emotion dysregulation and depressive symptoms.

In terms of the study sample, the present study had more males than females, sampled mostly Kenyan nationals, had a limited age range of 18- and 19-year-olds, and collected data from one university. Future studies should consider a sample that is representative of gender and nationality to enable a more robust data analysis and to generalize results to Sub-Saharan Africa. It would be interesting to find out if there are differences in emotional dysregulation among adolescents from different countries. Future studies should also consider a wider age range while sampling to be able to compare age and emotion dysregulation. More so, this study sampled adolescents in the university setting. Other studies may build on the current one by including comparisons between adolescents in high school and those in university and tertiary institutions.

In addition to recommendations for further study, practitioners and policymakers may benefit from the results of this study. The study found that adolescents have high levels of emotional dysregulation. To address this, practitioners could develop programs for adolescents that teach resilience and emotion regulation skills. Such programs could be implemented in high

schools, colleges, universities, communities, and religious settings. Further, the summary of the study results could be shared with all Universities and Colleges, Associations of Counselors and Psychologists, Associations of Psychiatrists and Medical professionals, and Kenya governmental offices. Such dissemination would provide country-wide notification to medical and mental health facilities to improve assessments, interventions, and prevention for adolescent mental health.

Timely and appropriate support for adolescents lessens the lifetime burden of chronic and recurrent depression and increases the quality of life among adolescents. Kenya's young population offers an opportunity for intervention to reduce the burden of mental health problems. Adolescents enrolled in university struggle with emotion dysregulation, which may lead to depression symptoms. Based on study results of high frequencies of participants with emotion regulation difficulties and severe depression, it is likely that the prevalence of severe psychological symptoms among adolescents in Sub-Saharan Africa may be higher than what current statistics capture. Practitioners must design early interventions for this demographic.

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