

CAPITAL UNIVERSITY OF SCIENCE AND
TECHNOLOGY, ISLAMABAD



**The Mediating Role of Cognitive
Flexibility and Emotional
Regulation in the Relationship of
Schemas with Depression and
Anxiety among Young Adults**

by

Muhammad Saim Ajmal

A thesis submitted in partial fulfillment for the
degree of Master of Science

in the

Faculty of Management & Social Sciences
Department of Psychology

2026

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CERTIFICATE OF APPROVAL

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Acknowledgement

All praise and gratitude belong to Allah Almighty, whose countless blessings, guidance, and mercy enabled me to complete this research work successfully. I would like to express my deepest gratitude and sincere appreciation to my thesis supervisor and my mentor, Dr. Sabahat Haqqani, for her invaluable guidance, continuous support, patience, and insightful feedback throughout the course of this research. Her academic expertise, constructive criticism, and encouragement played a pivotal role in shaping this thesis and strengthening my understanding of the subject matter. I am profoundly grateful to my mother for her unconditional love, prayers, sacrifices, and unwavering support throughout my academic journey. I extend my sincere thanks to my dear friends Muhammad Imad Aziz and Noor-ul-ain, who generously helped me in the hardest times. Their timely support ensured continuity in my work and was instrumental in the completion of this thesis. I am also thankful to my mentor, especially, Mr. Syed Hussain Ali, who has offered his unconditional support to me and has even believed in me from the point, I started to doubt myself. Additionally, I am thankful to my teachers, friends, and colleagues who directly or indirectly contributed to the completion of this research through their guidance, encouragement, and support. Lastly, I acknowledge with gratitude everyone who supported me throughout this academic journey, as this accomplishment would not have been possible without their presence and contributions.

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Abstract

Schemas are the cognitive frameworks that help an individual organize and process incoming information. Recent studies found that cognitive flexibility allows the brain to utilize effective cognitive resources to manage stressful situations and psychological conditions including anxiety and depression. Additionally, emotional regulation has been found to significantly lower levels of anxiety and depression. Therefore, it is necessary to examine the relationship of schemas to anxiety and depression among young adults in Pakistan while integrating the potential mediating roles of cognitive flexibility and emotional regulation (cognitive reappraisal and expressive suppression). This study utilized a cross-sectional correlational design and path analysis in Mplus 8.1 with 300 young adults (18-26 years), having a bachelor's degree or enrolled, from Rawalpindi and Islamabad. Schemas were measured by The Brief Core Schema Scales (BCSS), cognitive flexibility by The Cognitive Flexibility Questionnaire, emotional regulation by Emotion Regulation Questionnaire (ERQ), and anxiety and depression by DASS-21 subscales. The correlational analysis conducted through SPSS 21 reported significant associations between schemas (negative self, positive self, negative others, positive others), cognitive flexibility, emotional regulation (cognitive reappraisal and expressive suppression), anxiety, and depression. However, path analysis revealed that negative self-schemas were strongest direct predictors of anxiety ($p < 0.001$) and depression ($p < 0.001$), while positive self-schemas were protective. Cognitive flexibility mediated these relationships by intensifying the link between negative self-schemas and depression (negative self $\rightarrow$ cognitive flexibility: $p < 0.001$; cognitive flexibility $\rightarrow$ depression: $p = 0.019$), and fully mediating the protective effect of positive self-schemas on depression (positive self $\rightarrow$ cognitive flexibility: $p = 0.002$; cognitive flexibility $\rightarrow$ depression: $p = 0.019$). Expressive suppression mediated the protective influence of positive other-schemas on both anxiety and depression (positive other $\rightarrow$ expressive suppression: $p = 0.010$; expressive suppression $\rightarrow$ anxiety: $p = 0.019$; expressive suppression $\rightarrow$ depression: $p = 0.010$), while independently increasing both symptoms (expressive suppression $\rightarrow$ anxiety: $p = 0.019$; expressive suppression $\rightarrow$ depression: $p = 0.010$). Educational level

was unrelated to schemas, and cognitive flexibility showed no association with emotion regulation strategies. The findings suggest that Negative self-schemas emerged as primary risk factors for anxiety and depression, while expressive suppression consistently predicted higher levels of anxiety and depression. Cognitive reappraisal showed no significant benefit while cognitive flexibility was protective only with positive schemas but harmful with negative ones, highlighting the need for experimental research.

Keywords: Schemas, Cognitive flexibility, young adults, Cognitive reappraisal, Expressive suppression, Anxiety, Depression.

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Abbreviations

BCSS	Brief Core Schema Scale
CFI	Comparitive Fit Index
CFS	Cognitive Flexibility Scale
CI	Confidence Interval
CUST	Capital University of Science and Technology
DASS-21	Depression, Anxiety, and Stress Scale
ERC	Ethical Review Committee
FOMSS	Faculty of Management and Social Sciences
MLM	Maximum Likelihood Estimator
RMSEA	Root Mean Square Error of Approximation
SE	Standard Error
SPSS	Statistical Package for Social Sciences
SRMSR	Standardized Root Mean Squared Residual
TLI	Tucker- Lewis Index
WLSNV	Weighted Least Squares with Mean and Variance Adjustment

Chapter 1

Introduction

1.1 Background of the Study

Schemas are fundamental structures that help an individual to organize their experiences including how one perceives himself and the world around ([André and Baumeister, 2023](#)). It is crucial to study their impact as they assist an individual to tackle difficulties during the course of life ([Bishop et al., 2022](#)). However, a recent study found, not only the negative schemas to cause anxiety and depression, but there might be other cognitive factors leading to psychopathology ([Tsolakis, 2025](#)). This study assessed two of those factors hypothesized to act as partial mediators between schemas and anxiety and depression. From previous studies, negative schemas about oneself and others, have been found to cause difficulties in regulating emotions further leading to mental health issues ([Fassbinder et al., 2016](#)).

Additionally, another study found individuals with negative schemas to lower cognitive flexibility which leads to anxiety and depression ([Zafar et al., 2024](#)). Therefore, it is imperative to assess the impacts of cognitive flexibility and emotional regulation on anxiety and depression. In addition, cognitive flexibility has a significant relationship with emotional regulation. A recent study involving cognitive reappraisal, have found it to be positively correlated to cognitive flexibility while also being linked to decreased levels of anxiety ([Gu et al., 2025](#)).

Cognitive Flexibility is increasingly being recognized as an important factor in recovering from mental health disorders with evident impairments over a wide range of mental health conditions ([Duriez et al., 2021](#)). It is the ability to switch between alternate cognitive processes for the adaptation of behavior in response to changing environment ([Cañas, 2006](#)). It is essential to further study this multifaceted ability as it has also been found to enhance and benefit in different areas such as academic abilities through various cognitive training program ([Lee et al., 2024](#)).

Emotional regulation, the process through which individuals amend their emotional responses and experiences so that appropriate responses can be produced as a result of environmental stresses ([Aldao, 2013](#)). It also has been found to maintain overall quality of life while minimizing the need for constant support from mental health practitioners, thus, lessening the burden on healthcare systems ([Menefee et al., 2022](#)).

If individuals are trained to use effective emotional regulation strategies and manage their emotional reactivity, it will be preventive and result in reduction in burden of mental health disorders ([Menefee et al., 2022](#)). On the other hand, difficulties in emotional regulation can lead to anxiety and depressive disorders ([Cisler and Olatunji, 2012](#); [Compare et al., 2014](#)). A meta-analysis conducted in 2021, revealed that enhancing emotional regulation strategies leads to significant reduction in symptoms of anxiety and depression ([Daros et al., 2021](#)).

Given these considerations, this research has examined the associations between schemas, anxiety and depression, while also assessing the partial mediating roles of cognitive flexibility and emotional regulation. Most importantly, this research covered the population from the community who remain undiagnosed or unreported from anxiety and depression, as one-third of every adult is affected by mental health condition in Pakistan and less than half of the population have access to mental healthcare facilities ([Khan and Niaz, 2025](#); [Malik et al., 2025](#)). Due to which it is important to conduct this study at community level.

1.2 Gap Analysis

In Pakistani population, the prevalence of anxiety and depression is high as compared to the global estimated numbers while the treatment resources are scarce (Niazi et al., 2025; Sabzwari, 2022). Despite the availability of various interventions to manage anxiety and depression, approximately, 17.8% of the adult population is suffering from depression and 19.5% from anxiety (Malik et al., 2025). This suggests that there is still a dire need to understand the internal cognitive and emotional resources in development and maintenance of anxiety and depression.

Beck in his original cognitive theory, pointed schemas leading to anxiety and depression but according to an updated model proposed by Beck and Haigh's, there are some other cognitive and emotional factors perpetuating anxiety and depression in individuals (Beck and Haigh, 2014; Chand et al., 2023). A recent study conducted in 2025, suggested that combined predictive effect of cognitive flexibility and emotional regulation leads to effective management of academic related stress. If this stress is not dealt on time, it can lead to anxiety and depression in Pakistani university students (Rehman et al., 2025a). This indicates that there are some factors that are associated with depression and anxiety which need to be studied.

This study aimed to assess the relationship between schemas and anxiety and depression while also integrating the partial mediational analysis of cognitive flexibility and emotional regulation. Findings contributed to better understanding of the mechanisms of the above mentioned variables leading to anxiety and depression among young adults and also added up to the existing literature.

1.3 Problem Statement

As mentioned above, the rates of depression and anxiety are higher in Pakistani population as compared to the global estimated numbers (Niazi et al., 2025;

[Sabzwari, 2022](#)). In spite of this, many individuals in the community go undiagnosed and unreported of anxiety and depression. Additionally, difficulties in emotional regulation and cognitive flexibility have been reported to alleviate the levels of anxiety and depression ([García-Fernández et al., 2025](#)).

Previous studies have reported the significance of emotional regulation and cognitive flexibility in reducing the levels of anxiety and depression ([Rehman et al., 2025b](#)) but, they do not explore the exact pathways between the effects of schemas and anxiety and depression. This study explicitly analyzes the pathways between schemas and anxiety and depression while also assessing the mediational pathways involving cognitive flexibility and emotional regulation. It is also not clear in the existing studies that these variables act as co-variables or mediators. In addition, there is a research gap regarding the mediational pathways, making it imperative to explore the mediational impacts of cognitive flexibility and emotional regulation on anxiety and depression within the Pakistani population.

1.4 Rationale

According to the Government of Pakistan, 26% population of Pakistan lies in the age range of 15-29 years ([Finance Division, Government of Pakistan, 2021](#)). Being a developing country with approximately, one third of its population to be youth, brings more challenges, as well as opportunities for boosting economic growth. However, the rates of anxiety and depression are also very high due to which this resource is being compromised and affecting its ability to be utilized for productive outcomes ([Auerbach et al., 2018](#)).

In Pakistan, stigmatization is still prevalent regarding mental health causing many individuals having symptoms of anxiety and depression to go undiagnosed ([Husain et al., 2020](#)). Necessary improvements in mental healthcare setups for Pakistan, have been proposed in recent studies. This study also suggested crucial policy reframing and integration of mental healthcare units in primary health setups ([Dayani et al., 2024](#)). All these recommendations suggest policy level changes,

whereas, the changes required at ground level are under-explored.

The existing literature indicates that though cognitive flexibility and emotional regulation are important factors but their empirical evidence is insufficient that both these factors are important in reducing the symptoms of anxiety and depression in Pakistani population. The existing literature indicates that though cognitive flexibility and emotional regulation are important factors, there is still research gap highlighting the importance of these factors in reducing the levels of anxiety and depression in Pakistani population. However, latest studies have revealed the effective implacability of cognitive and behavioral interventions in treating both anxiety and depressive symptoms in Pakistani context. (Noor, 2024; Naeem et al., 2021).

Furthermore, this research emphasizes the significance of the mediational variables (cognitive flexibility and emotional regulation) that may be crucial for practitioners to consider working on these factors along with cognitive behavioral techniques for better management of anxiety and depression symptomology. Another reason for conducting this study is that helps to identify preventive factors towards anxiety and depression on community level, which will ultimately, reduce the burden on mental healthcare systems.

1.5 Theoretical Framework

The Generic cognitive model provides the theoretical framework for conceptualizing psychopathology as a product of interconnected information processing systems and modes (Beck and Haigh, 2014). According to this model, incoming information is first screened by proto-schemas which are basic mental frameworks leading to automatic processing of incoming information through a primary processing system and then, amended by a reflective (secondary) processing system which can assist to correct the distortions lowering levels of anxiety and depression. Additionally, these distortions or thinking errors are the "surface-level" expressions

of deeply rooted, negatively biased core beliefs or schemas ([Beck and Haigh, 2014](#); [Beck and Bredemeier, 2016](#); [Tsolakis, 2025](#)).

In primary processing system, the automatic thoughts are characterized by cognitive distortions due to the effect of negatively biased core beliefs or schemas among individuals with psychopathology. The reflective system facilitates to correct these distortions and hence, maintain the overall mental health. This feature of reflective system, makes it important for recovery and prevention of psychopathologies, like anxiety and depression. The reflective system consists of elements like logical reasoning and adaptive attitudes ([Tsolakis, 2025](#)). In this study, cognitive flexibility represents the functional capacity of the reflective (secondary) processing system. It is a highly flexible reflective system which modifies the biased outputs of the automatic system. Specifically, individuals with high cognitive flexibility can disengage from rigid, maladaptive schemas and correct cognitive distortions before these distortions lead to psychological symptoms ([Zelazo, 2015](#)).

Furthermore, this model proposes a theory of modes which comprises of integrated networks of cognitive, affective, and behavioral systems. Every mode is bound by a vital affective system, which represents here as Emotion Regulation ([Beck and Bredemeier, 2016](#)). These modes act as a bridge between cognitive appraisals and emotional outcomes. In addition, emotional regulation acts as a partial mediator which the reflective system attempts to modulate the emotional processing of activated modes ([Gross, 2015](#)). When cognitive flexibility is low, negatively biased schemas remain active and the reflective system fails to deactivate the distress modes leading to maintenance of depressive and anxious states. While, the failing of modes can also lead to maintenance of psychopathology ([Beck and Bredemeier, 2016](#); [Beck and Haigh, 2014](#)).

1.5.1 Conceptual Framework

The model represents the deeply rooted schemas represented as proto-schemas, screen the incoming information and can further activate automatic thoughts, also

triggering cognitive distortions. The two main systems which also interact with each other; the primary processing and the reflective system, are responsible to process schemas. Cognitive flexibility which is composed of the reflective system, serves as the partially mediating corrective mechanism to amend the outputs of primary processing system, impacting the levels of anxiety and depression. Additionally, the levels of emotional regulation represented as modes in the theory, mediate the relation between schemas and anxiety and depression. High cognitive flexibility will allow individuals to disengage from maladaptive schemas and correct automatic cognitive distortions. On the contrary, when cognitive flexibility is low, it fails to deactivate distress modes, which are mediated by Emotional Regulation. Consequently, this model indicates the partial mediational effects of cognitive flexibility and emotional regulation in the relation between schemas and anxiety and depression.

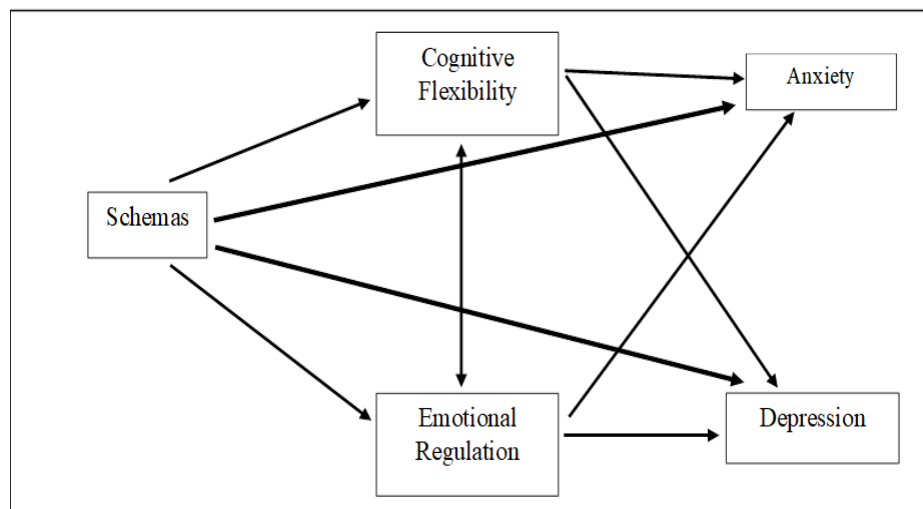


FIGURE 1.1: Conceptual Framework of the Study

1.6 Research Objectives

The study objectives are as follows:

- i. To evaluate the associations between schemas, anxiety, depression and the mediating effects of cognitive flexibility and emotional regulation among young adults.

- ii. To evaluate the relationship between schemas and educational level.
- iii. To assess the relationship between cognitive flexibility and emotional regulation.

1.7 Research Hypotheses

H1. Negative self and negative others schemas increase anxiety and depression levels while positive self, and positive others schemas decrease anxiety and depression levels.

H2. Cognitive flexibility and emotional regulation are negatively related with the levels of anxiety and depression among young adults.

H3. Emotional regulation and cognitive flexibility mediate the relationship of schemas with anxiety and depression, lowering the levels of anxiety and depression.

H4. There is a relationship between schemas subscales and level of education.

H5. A) Cognitive flexibility is positively associated with Cognitive reappraisal.

B) Cognitive flexibility is negatively associated with Expressive suppression.

Chapter 2

Literature Review

The following chapter provides a narrative discussion of the existing research related to schemas schemas, followed by its association with cognitive flexibility and emotional regulation leading to anxiety and depression. In addition, it will also provide narrative review on the relationship between cognitive flexibility and educational level and cognitive flexibility and emotional regulation.

2.1 Schemas

Schemas were first explained by Frederic Bartlett in 1932, in which, he described schemas, as the old knowledge which affects the new incoming information ([Carbon and Albrecht, 2012](#)). Further, Jean Piaget's cognitive development theory, stressed the importance of schemas as these cognitive structures are responsible for creating an understanding of everything around us and ourselves as well ([Herman, 2012](#)). In addition, Piaget associated the concepts of accommodation and assimilation with schemas which either modify the existing schemas or adapt the previous schemas in response to new and unique information ([Malik and Marwaha, 2023](#)). Thus, understanding their effects with changing situations and environmental stressors is essential.

Moreover, the two major types of schemas central to this study include self-schemas and schemas towards others. Self-schemas are responsible to form a concept about

the self, based on past experiences while schemas toward others, is described as the organization and interpretation of information about others or social groups (Markus, 1977; Baldwin, 1992). Additionally, the information related to self and others is stored in the long term memory due to which it influences the incoming information. The information which is consistent with self schemas, is processed much rapidly, while, incongruent information is resisted to be processed (Ng and Renshaw, 2002).

Schemas improve our understanding of self and others, but sometimes, they can lead to negative interpretation of self, people and events around us (Markus, 1977; Baldwin, 1992) So, these negative schemas can adversely affect behaviors and emotions and when faced with challenges, an individual utilizes a schema automatically leading to negative outcomes (Bishop et al., 2022). Therefore, it is important to understand the association of schemas with emotions and psychopathologies.

2.2 Associations of Schemas with Anxiety and Depression

It is crucial to comprehend the role of schemas and psychopathologies as schemas help an individual to tackle different situations and environmental stressors. This was confirmed by a meta-analytic study which included review of 51 studies revealing the positive relationship of negative schemas with depression in adults (Bishop et al., 2022). Anxiety is pervasive worry about the future, often, leading to somatic symptoms such as muscle aches, rapid heartbeat, etc (American Psychological Association, 2018).

On the other hand, depression comprises of depressed mood and anhedonia for longer periods of time affecting 5.7% youth population worldwide (World Health Organization, 2009). Some schemas assist the individual to positively adapt to situation while the negative ones, can cause anxiety and depression (Gotlib and Rottenberg, 2001). A study conducted in 2022 on 140 patients aged 18 to 72

revealed that higher scores on positive schemas were associated with greater life satisfaction among individuals suffering from anxiety and depression ([Chi et al., 2022](#)). Consequently, positive schemas strongly increase the overall life experiences of an individual and can aid to deal with anxiety and depression effectively.

On the other hand, a study conducted on a total of 138 participants with self-reported questionnaires revealed that the negative beliefs about others also contribute to anxiety which. The participants in this study were divided into two groups of probable GAD and non-GAD group and the results revealed negative schemas to significantly contribute to anxiety ([Koerner et al., 2015](#)). Evidently, another study revealed that an individual's negative schemas can cause him to misinterpret his emotions leading to anxiety and depression ([Karaush and Kupriyanova, 2022](#)). So, negative self-schemas can significantly lead to anxiety and depression. Additionally, an experimental study conducted in a series of three successive experiments including a total of 117 participants, revealed that people who have negative beliefs about themselves, mostly pay attention to those feedbacks and views that confirm and strengthen this belief about themselves.

Additionally, these beliefs are fixed and almost impossible to change and further contribute to different types of anxieties ([Müller-Pinzler et al., 2019](#)). It was also confirmed by a meta-analysis which included 24 studies revealing the vital impact of negative schemas on anxiety and depression among young adults. This study also involved a second phase including a meta-analysis of 15 studies, which revealed strong relationship between maladaptive schemas and symptoms of anxiety ([Tariq, 2023](#)). Thus, a significant relationship is present between negative schemas leading to symptoms of anxiety and depression. On the other hand, negative schemas regarding others are significantly associated with depressive symptoms. Furthermore, research has shown that negative schemas are positively associated with anxiety and depression, while positive schemas are inversely related to them. These negative schemas not only affect a person's self but also interpersonal functioning in terms of their view and beliefs about others. Conversely, positive schemas about others counter the negative ones and act as a protective factor against anxiety and

depression ([Dozois, 2021](#)). Hence, negative schemas about self and others, both act as a potential vulnerabilities for depression and anxiety.

This claim is also supported by another study including 300 students and the analyses conducted through structural equation modeling revealing that negative schemas are positively correlated with anxiety and depression. Also, an individual having positive emotional schemas are negatively correlated with anxiety and depression ([Mohammadkhani et al., 2022](#)). Hence, suggesting the importance of further exploration of the relationships between schemas and anxiety and depression. As mentioned previously, anxiety and depression are prevalent in global population and individuals lose many healthy years of their lives due to anxiety and depression. The estimated global numbers of anxiety and depression are alarming affecting the quality of life of individuals. A recent research conducted on the Global Bur-den of Disease has revealed a marked and significant rise in healthy years lost to depression and anxiety between 2013 and 2023, with anxiety disorders accounting for 500 healthy years lost per 100,000 population and depressive disorders accounting for 1,000 per 100,000 ([Institute for Health Metrics and Evaluation, 2021](#)). These numbers suggest further exploration of factors that are exaggerating the numbers of anxiety and depression among community and also those factors that can aim to lower the levels of anxiety and depression.

2.3 Relationship of Schemas with Education

As mentioned above, positive schemas can help an individual to tackle difficulties effectively, while the negative ones can lead to anxiety and depression ([Gotlib and Rottenberg, 2001](#)). It is also important to study the association of schemas with education as a turkish study comprising of a total of 898 students, found a positive relationship of positive schemas and higher educational levels in individuals. An interesting finding of this study was that male students reported more positive schemas than female students ([Kiliç and Yüksel, 2026](#)). Hence, education provide more exposure to individuals to re-think and amend the negative schemas leading

to positive outcomes.

Schemas have been found to be modified by different educational strategies blended with technological tools. The schema based instructions can influence student's prior knowledge to promote academic achievement and modification of old schemas. Additionally, schema based instructions can be beneficial to activate metacognitive awareness which can lead to identification of learner's own biases and schemas, and yet can be modified further (Meylani, 2024). Moreover, Yu explained that with collaborative learning, student's schemas can be activated and modified and also, a flipped model can be utilized to blend learning with technology for modification of schemas (Yu and Zhu, 2019). Another study conducted in 2012, revealed that evident association between cognition and education as individuals with more learning experiences gain more knowledge and skills, leading to effective problem solving (Parisi et al., 2012).

Conversely, some studies do not support the association of positive beliefs about self or schemas with higher educational level. A study conducted on 6th and 8th grade Norwegian students revealed that the grade 8th girls, although, scored higher in exams but they reported low scores on self-esteem and self-efficacy (Diseth et al., 2014). Additionally, a study including 101 students with age ranging from 21 to 35 years, revealed no association between schemas and higher education. Hence, higher education do not directly modify or change a student's schemas (Chalabi, 2024).

2.4 Mediating Role of Cognitive Flexibility and Emotional Regulation

Cognitive Flexibility serves as an important capacity for an individual to deal with environmental stressors and strengthening it can assist to help manage psychopathologies. It is described as the cognitive ability to re-organize the knowledge to switch between different tasks with changing situations from environment (Gu

et al., 2025). However, a recent study revealed that it can be enhanced at any stage of life but requires the implementation of specific cognitive techniques. This study found the partial mediating effects on negative schemas and anxiety and depression its role is particularly relevant; indeed, research has shown it to partially mediate the link between negative schemas and anxiety and depression (Tan, 2020). Additionally, a study comprising of 300 young adults with age ranging from 18 to 24 years, revealed that the levels of cognitive flexibility are lowered due to negative schemas which then lead to anxiety and depression (Zelazo, 2015). Therefore, cognitive flexibility plays a significant mediating role between schemas and anxiety and depression. Additionally, a cross sectional survey comprising 1619 Chinese adults, found that cognitive flexibility protects against negative thinking patterns which can aid to reduce the chances of having depression (Wang et al., 2019). A study conducted in 2023, proposed that cognitive flexibility equips an individual with skills and mechanisms to adapt appropriately with respect to the challenges with time (Fuchs, 2023).

Emotional regulation is a skill which refers to the management and generating effective response in emotional experiences while also navigating emotional events effectively (Rolston and Lloyd-Richardson, 2025). All people experience emotions, though, they can be positive or negative but people use emotional regulation automatically while responding or managing emotional situations (Hilt et al., 2011). Emotional regulation strategies act as an important factor influencing depression as a narrative review conducted in 2014, revealed that emotional regulation strategy such as reappraisal is utilized by individuals which is strongly linked to reduced rate of mental and physical disorders (Compare et al., 2014). While emotional regulation strategies can help reduce anxiety and depression, some may also contribute to these conditions. Moreover, not only anxiety and depression can be caused due to difficulties in emotional regulation but it can also increase the risk of further mental health issues (Young et al., 2019).

Schemas have a significant impact on emotional regulation and types of schemas are specifically responsible for utilization of emotional regulation strategies. In his

study, Harold states that negative schemas can lead to emotional dysregulation, which further impact an individual's behavior and emotional functioning (Dadomo et al., 2016). Another study conducted in 2021, comprising of 454 students, revealed through structural equation modelling that activation of negative schemas can also lower the levels of cognitive flexibility which can lead to negative thinking contributing to ineffective emotional regulation (Anayurt and Yalçın, 2021). This finding authenticates that enhancing cognitive flexibility can lead to effective management of depression and anxiety. Another study, comprising of 501 university students recruited through random sampling technique, confirmed the relationship of negative schemas on strategies of emotional regulation (Çoban and Deveci Şirin, 2025).

Hence, schemas can lead to negative impacts on emotional regulation suggesting further exploration of negative impacts of schemas. Additionally, a meta analytic study including a total of 19 studies published between 2008 and 2022, reported significant association between emotional regulation problems and negative schemas. This study assessed the association of 18 early negative schemas and all of them were reported to significantly increase with the levels of high emotional regulation (Pilkington et al., 2024). Consequently, it is essential to further investigate the relationships between schemas and emotional regulation. On the other hand, utilization of positive schemas can help an individual to cope up with problems of life and use positive strategies effectively (Prasko et al., 2025). Using these positive schemas can lower the levels of anxiety and depression, helping a person to improve overall functioning.

2.5 Relationship Between Cognitive Flexibility and Emotional Regulation

As described, cognitive flexibility is the ability to switch between different tasks and reorganizing the existing knowledge to tackle with different stressful situations (Gu et al., 2025). A recent study conducted in 2025, comprising of 392

pre-school teachers, revealed a potential association between cognitive flexibility and emotional regulation strategies (Gu et al., 2025). James Gross, an American psychologist proposed five types of emotional regulation strategies which can be differentiated between adaptive or maladaptive strategies (Gross, 2002). The two strategies center to this study are cognitive reappraisal and emotional regulation and their associations with cognitive flexibility. A study conducted in 2020, with a sample of 147 college students revealed a significant association between the two emotional regulations as cognitive reappraisal leads to positive emotional outcomes while expressive suppression leads to negative ones (Vally and Ahmed, 2020). These strategies further impact the cognitive flexibility processes and alter the levels of anxiety and depression in individuals. A recent study conducted on 312 university students revealed the significant association between emotional regulation strategy, such as, cognitive reappraisal and cognitive flexibility contributing to enhanced well-being (Kiye and Çiçek Habes, 2024). Another study conducted in 2020, comprising 30 young adults with age ranging from 18-25 years, identified a potential relationship between cognitive flexibility and emotional regulation. It revealed cognitive reappraisal to be the primary emotional regulation strategy to be used by the participants (Ghosh and Halder, 2020). Hence, it seems that not only cognitive flexibility and emotion regulation serve as vehicle in the pathway of anxiety and depression, they also seem to influence each other.

On the other hand, inverse relationship has been found between cognitive flexibility and expressive suppression which further lead to negative emotional outcomes (Gu et al., 2025). Conversely, a recent study comprising a sample of 186 Turkish university students, revealed a positive association of cognitive reappraisal and expressive suppression with cognitive flexibility (Altın et al., 2026). Hence, the existing literature points on both positive and negative associations between cognitive flexibility and emotional regulation strategies, due to which, it is imperative to further explore the relation of cognitive flexibility with emotional regulation strategies.

Chapter 3

Research Methodology

3.1 Research Design

A quantitative, cross sectional research design was utilized in this study.

3.2 Ethical Considerations

The ERC of FOMMS, CUST, provided the ethical clearance to conduct this research. Additionally, an informed consent was also sought from the individuals to participate in this research. The participants were guaranteed confidentiality and anonymity regarding their data.

3.3 Locale of the Study

Pakistan is a developing Muslim country in South Asia with an important strategic position and huge growth potential ([World Bank Group, 2016](#)). Geographically, it borders Afghanistan, Iran, India, Bangladesh, and Russia. Urdu is the official language of the country but most of the official written communication is in English. The other main languages include Sindhi, Siraiki, and Pashtu ([World Health Organization, 2009](#)). Additionally, one of the major income sector contributing to Pakistan's economy is services sector (61%). More-over, it is the world's 6th most

populated country ([Population Reference Bureau, 2015](#)). As mentioned in the previous sections, anxiety and depression rates are significantly higher as compared to global estimates and 17.8% of the adult population is suffering from depression and 19.5% from anxiety ([Malik et al., 2025](#)). Despite these alarming figures, the government has only allocated 0.8% of the GDP for overall health budget ([Finance Division, Government of Pakistan, 2026](#)).

3.4 Sampling Technique and Sample Size

Subject to item ratio was utilized to calculate the sample size which recommends at least 5 participants per item to be included in the study instruments being used ([Hair et al., 2010](#)). The total number of items consisted in all of the scales were 60; The Brief Core Schema Scales (BCSS) consisted of 24 items, anxiety and depression subscales from DASS-21 consisted of 7 items from each subscale equivalent to a total of 14, Cognitive Flexibility Scale consisted of 12 items and Emotional Regulation Questionnaire consisted of 10 items. A total of 300 participants (both male and female), from different areas of Rawalpindi and Islamabad regions were included in this research. The age range of the participants was between 18-26 years covering the young adulthood category. Additionally, this research employed convenient sampling technique as it provides easy access to participants in the community.

3.4.1 Inclusion Criteria

- i. The participants whose age is at least 18-26 years (Young adults).
- ii. Participants having bachelor's degree or at least enrolled in a bachelor's program.

3.4.2 Exclusion Criteria

- i. Inability to provide informed consent.
- ii. Diagnosed with physical or psychological condition which hinders their ability to participate in study

3.5 Research Instruments

3.5.1 Demographic Information Sheet

The demographic sheet was provided to participants and the sections of the sheet included age, gender, educational level, perceived socio-economic status and any diagnosed physical/mental disability.

3.5.2 BCSS Core Schemas

This scale was developed by David Fowler in 2006. It contains 24 items and is self-rated with a five point likert scale. Additionally, the alpha values for clinical and non-clinical sample were 0.78 and 0.79 respectively. While, the negative other subscale carried 0.88 and 0.87 alpha values respectively ([Fowler et al., 2006](#)).

3.5.3 Anxiety and Depression Subscale from DASS-21

It was developed by Syd Lovibond and Peter Lovibond in 1995. It is a brief, freely accessible version of the original 42-item measure. The University of New South Wales allows it to be used in academic research with no licensing fee ([University of New South Wales, 2026](#)).

Only the anxiety and depression subscale, each containing 7 items will be utilized in this study as these subscales specifically assess and screen the anxiety and depression symptoms. The internal consistency values for anxiety and depression are 0.87 and 0.94 respectively ([Antony et al., 1998](#)).

3.5.4 CFS

The cognitive flexibility Scale was developed by Mathew M. Martin in 1995. It contains a total of 12 items rated on a 6 point likert scale. The item numbers 2, 3, 5 and 10 are reverse coded. In addition, it reported good test re-test reliability value of 0.83 ([Martin and Rubin, 1995](#)).

3.5.5 ERQ

The Emotional Regulation Questionnaire was developed by Gross and John. It contains 10 items and rated on a 7 point likert scale. It represented satisfactory alpha values of 0.79 and 0.73 on its subscales, cognitive reappraisal and expressive suppression respectively ([Gross and John, 2003](#)).

3.6 Data Collection Procedure

The data was collected from 11th May 2026 to 1st June, 2026 from the areas of Saddar, Rawalpindi including Ghakhar plaza (26), computer market 1 (19), computer market 2 (25), Rania Mall basement (9) and 1st floor (19) and City Center plaza (42). The participants were either employed as full time workers or owners of garment shops, computer and laptop shops. They belonged from diverse cultures including Punjabi, Pashtuns, Sindhi and Balochi.

A medical billing company; Mednexus (21), was also approached in Rawalpindi situated near Asghar Mall road, while a software company; Softbuilds (33), located in G11-Markaz, Islamabad. Additionally, two public universities situated in H-10, Islamabad; International Islamic University, Islamabad (IIUI) (71) and National University of Modern Languages (NUML) (10) and two private universities in Islamabad; Iqra University (6) and Riphah International University (6), were approached. Moreover, the educational level was set at least enrolled in bachelor's degree program so that they can easily understand the language of the instruments.

In addition, students from different departments were recruited in this study and the participants were verbally asked to take part in the study and upon their agreement. They were presented with a QR code of Google form containing the consent form, demographic form and the five questionnaires including The Brief Core Schema Scales (BCSS), The Cognitive Flexibility Questionnaire, Emotion Regulation Questionnaire (ERQ), and anxiety and depression subscales from Depression Anxiety Stress Scale 21 (DASS-21).

3.7 Analyses

Data analysis was performed using SPSS-21 and Mplus 7. For categorical variables, descriptive statistics were employed to determine frequencies and percentages while mean, mode, median, skewness, histograms and kurtosis were calculated for continuous variables. In addition, inferential statistics were computed to assess the reliabilities through the values of Cronbach's Alpha (α). The Bivariate correlational analyses with one tailed test was used to check the association between schema subscales (negative self, positive self, negative other and positive other), cognitive flexibility, emotional regulation subscales (cognitive reappraisal and expressive suppression), anxiety and, depression and education.

Mediation was tested through structural equation modeling by initially specifying measurement models in which observed indicators loaded exclusively onto their hypothesized latent factors, with loadings to all other factors fixed at zero. Factor loadings, R^2 values, and structural pathways were evaluated using a 0.05 significance threshold, and non-significant indicators were removed. Continuous variables were estimated using the MLM, whereas, WLSMV was utilized to measure categorical variables. Because Mplus 7 does not yield chi-square significance values for multiply imputed data under MLM and WLSMV estimation, model fit was assessed with the RMSEA, an index less sensitive than the chi-square test to large samples and non-normality.

Model fit was evaluated using the CFI, which contrasts the hypothesized model with a null model (Bentler, 1990), with values 0.9 denoting acceptable fit (Hu and Bentler, 1999), alongside the RMSEA, for which values of 0.01 to 0.08 indicate mediocre fit to excellent, respectively (MacCallum et al., 1996). If models did not satisfy these thresholds, further revisions were done based on modification indices and factor loadings. As Mplus lacks the capacity to generate modification indices for pooled multiply imputed data, these indices were derived from one imputed dataset and subsequently applied to the pooled models.

Chapter 4

Results

This study aimed to explore the associations between schemas, anxiety and depression while also assessing the mediating roles of cognitive flexibility and emotional regulation among Pakistani young adults. This chapter presents the findings achieved through descriptive and inferential statistical analyses to address the study objectives and hypotheses.

4.1 Data Analysis

The data analyses were carried by SPSS-21 and Mplus version 7.

4.2 Demographic Characteristics of the Sample

The total number of received responses in the educational level categories; ‘Enrolled in Bachelor’s degree (responses = 92), Diploma (responses = 11), Other (responses = 5)’, were very low due to which all these three categories were summed up into one (Enrolled in Bachelor’s degree or Diploma or Other) with total responses of 108. Similarly, the individual responses of ‘Masters’ and ‘PhD’ were 67 and 9 respectively. Both of the categories were combined into one category ‘Masters or PhD’ with a total of 76 responses while ‘Bachelors’ category remained the same with 116 responses.

The final sample contained 300 participants with age range from 18 years to 26

TABLE 4.1: Demographic Characteristics of the Participants

Demographic Variable	Categories	f	%
Gender	Male	162	54.0
	Female	138	46.0
	Other	0	0.0
Age in years (18–26)	18	13	4.3
	19	17	5.7
	20	27	9.0
	21	26	8.7
	22	40	13.3
	23	38	12.7
	24	43	14.3
	25	31	10.3
	26	65	21.7
Educational Level	Enrolled in Bachelor's degree, diploma, or other	108	36.0
	Bachelor's	116	38.7
	Master's or PhD	76	25.3
Marital Status	Single	203	67.7
	Married	45	15.0
	Engaged	29	9.7
	In a relationship	19	6.3
	Divorced	1	0.3
	Widowed	3	1.0
Employment Status	Full-time	53	17.7
	Part-time	43	14.3
	Self-employed	30	10.0
	Unemployed	46	15.3
	Student	128	42.7
Perceived Socioeconomic Status	Lower class	17	5.7
	Middle class	248	82.7
	Upper class	35	11.7
Diagnosed Physical/Mental Disability	Yes	31	10.3
	No	269	89.7

years, , with a marked tendency to cluster in between the ages of 22 and 26 years. In general, males comprised the majority of the sample with 162 participants (54.0%), while females made up 138 participants (46.0%). No participants identified under the "Other" gender category (0%). The sample exhibits an older age concentration, with 72.3% ($n = 217$) of participants clustered between 22 and 26 years old, peaking sharply at age 26 (21.7%), while the remaining 27.7% ($n = 83$)

occupy the early emerging adulthood range of 18 to 21 years. The largest single category consisted of individuals with Bachelor's degrees ($n = 116$, 38.7%), closely followed by the combined category of those enrolled in a Bachelor's degree, holding a Diploma, or reporting other educational levels ($n = 108$, 36.0%). In contrast, participants with Master's or PhD degrees constituted the smallest educational grouping, accounting for 25.3% ($n = 76$) of the sample. Analysis of marital status indicated that single individuals formed the highest section at 67.7% ($n = 203$). Married participants represented 15.0% ($n = 45$) of the sample, while those who were engaged made up 9.7% ($n = 29$). The divorced individuals were highly rare at 0.3% ($n = 1$) and widowed individuals accounting for 1.0% ($n = 3$).

Within the upper-class segment (11.7%, $n = 35$), the data trends show a dual distribution; male participants frequently align with the self-employment category (10.0%, $n = 30$), while female participants heavily populate the advanced educational tracks, including Master's degrees (22.3%) and PhD programs (3.0%). Conversely, the lower-class tier (5.7%, $n = 17$) shows a different distribution.

Male participants within this low-income bracket link primarily with the full-time employed status (17.7%, $n = 53$), which coordinates with the overall male majority (54.0%). While, female participants within the lower-class tier correspond directly with the unemployed category (15.3%, $n = 46$). Analysis of current socio-economic status (SES) revealed the largest proportion of participants identifying as middle class (82.7%, $n = 248$) while the lower class constituted the smallest socioeconomic bracket at 5.7% ($n = 17$).

Finally, the vast majority of the participants reported no diagnosed physical/mental conditions, comprising 89.7% ($n = 269$) of the total sample, whereas 10.3% ($n = 31$) of the participants reported having a diagnosed physical or mental disability including anxiety, psychosomatic disorder and depression. In addition, some responses from participants who did not actually have the disability were not considered, because their answers were based on how they perceived the condition rather than on a confirmed diagnosis.

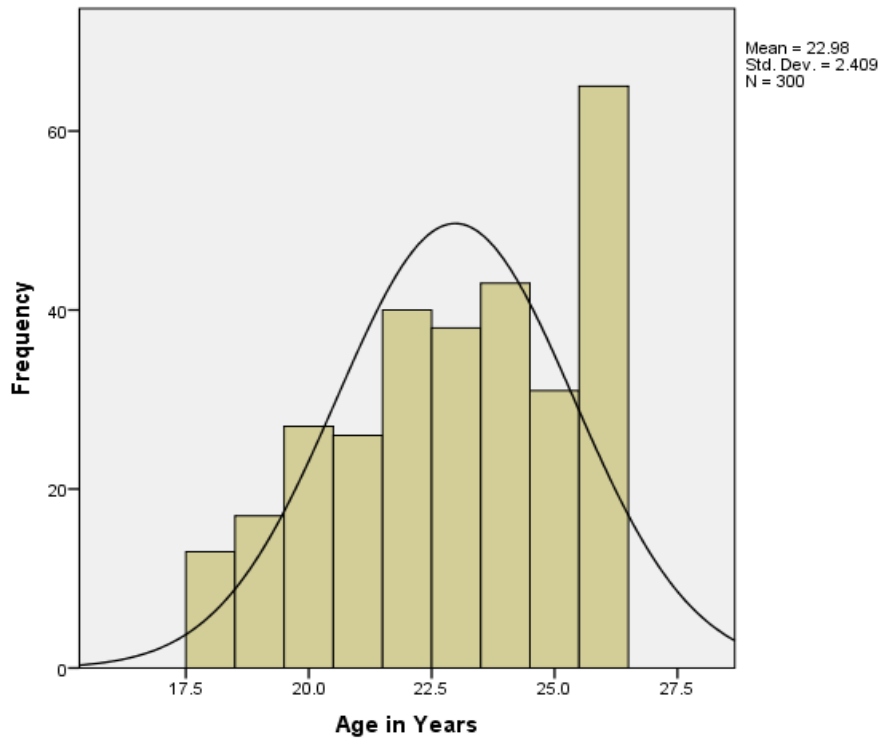


FIGURE 4.1: Figure indicating participants age distribution

4.3 Reliabilities of Scale

The reliabilities of administered scales were calculated by utilizing α test.

The α values, collectively, for all the scales ranged from 0.702 (cognitive flexibility scale) to 0.879 (positive-other subscale), with all exceeding the reliable threshold of 0.70. The positive-other subscale (0.879), positive-self subscale (0.875), and depression subscale from dass-21 (0.872) demonstrate the highest internal consistency, while the negative-other subscale (0.869) and anxiety subscale from dass-21 (0.860) are also strong.

Additionally, subscales like negative-self (0.823), cognitive reappraisal (0.830), and expressive suppression (0.717) further confirm that the items within each respective instrument are reliably measuring their underlying psychological constructs. Overall, these results indicate that every scale used in the study possess acceptable to good internal consistencies.

TABLE 4.2: Psychometric Properties of the Study Scales (N = 300)

Scales and Sub-scales	Sub-	Items	M	SD	α	PR	AR	Skew	Kurt
Negative-Self scale	Sub-	6	4.04	4.70	.823	0–24	0–24	1.351	1.336
Positive-Self scale	Sub-	6	16.35	5.64	.875	0–24	0–24	- 0.537	- 0.176
Negative-Other Subscale		6	7.83	5.71	.869	0–24	0–24	0.609	- 0.149
Positive-Other Subscale		6	10.40	5.20	.879	0–24	0–24	0.523	0.405
Anxiety (DASS-21)	Subscale	7	6.55	5.15	.860	0–21	0–21	0.706	- 0.082
Depression scale (DASS-21)	Sub-	7	6.81	5.37	.872	0–21	0–21	0.605	- 0.344
Cognitive Flexibility Scale	Flexibil-	12	49.85	7.09	.702	12–72	29–71	0.100	0.213
Cognitive praisal	Reap-	6	26.68	7.28	.830	6–42	6–42	- 0.337	- 0.180
Expressive precession	Sup-	4	17.22	5.14	.717	4–28	4–28	- 0.319	- 0.064

Note. M = mean; SD = standard deviation; α = Cronbach's alpha; AR= Actual Range; PR= Potential range Skew = skewness; Kurt = kurtosis.

4.4 Descriptives

The descriptive analyses of all the scales are following. On the basis of skewness, kurtosis, normality test and shape of the distribution curve, the variables for the present study will be treated as normal in correlation analyses.

TABLE 4.3: Descriptive Statistics of Study Variables

Scales and Sub-scales	M	Mdn	Mode	SD	Skew	Kurt
Negative-Self Subscale	4.04	2.00	0	4.70	1.351	1.336
Positive-Self Subscale	16.35	17.00	24	5.64	-0.537	-0.176
Negative-Other Sub-scale	7.83	7.00	0	5.71	0.609	-0.149
Positive-Other Sub-scale	10.40	11.00	12	5.20	0.523	0.405
Anxiety Subscale (DASS-21)	6.55	6.00	0	5.15	0.706	-0.082
Depression Subscale (DASS-21)	6.81	6.00	0	5.37	0.605	-0.344
Cognitive Flexibility Scale	49.85	50.00	46	7.09	0.100	0.213
Cognitive Reappraisal	26.68	27.00	24	7.28	-0.337	-0.180
Expressive Suppression	17.22	17.00	16	5.14	-0.319	-0.064

Note. *M* = mean; *Mdn* = median; *SD* = standard deviation.

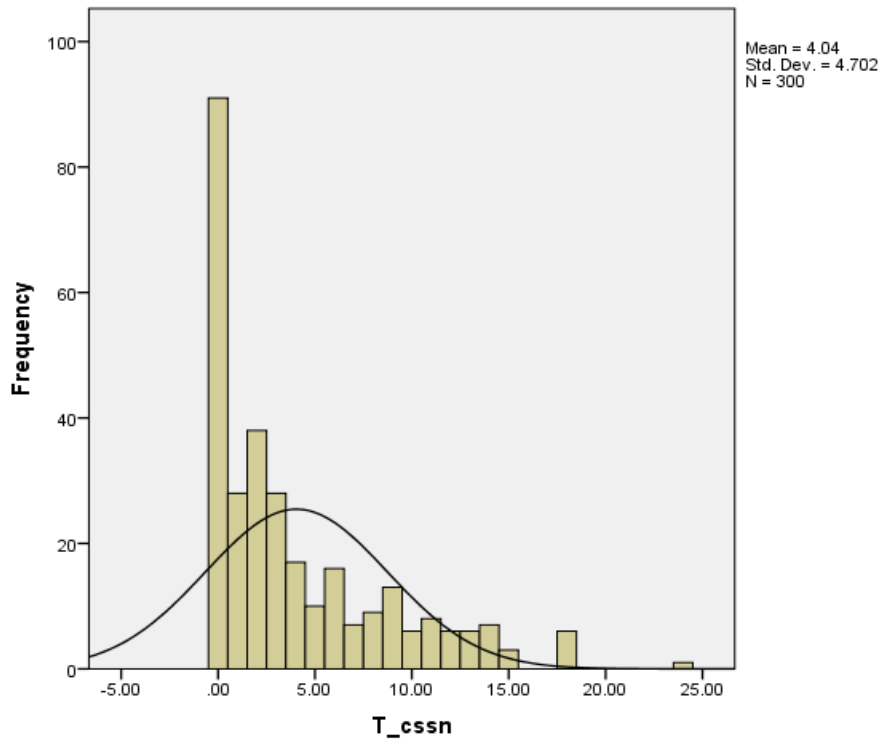


FIGURE 4.2: Distribution of scores for negative self schemas from Brief Core Schemas Scale (BCSS) (N=300)

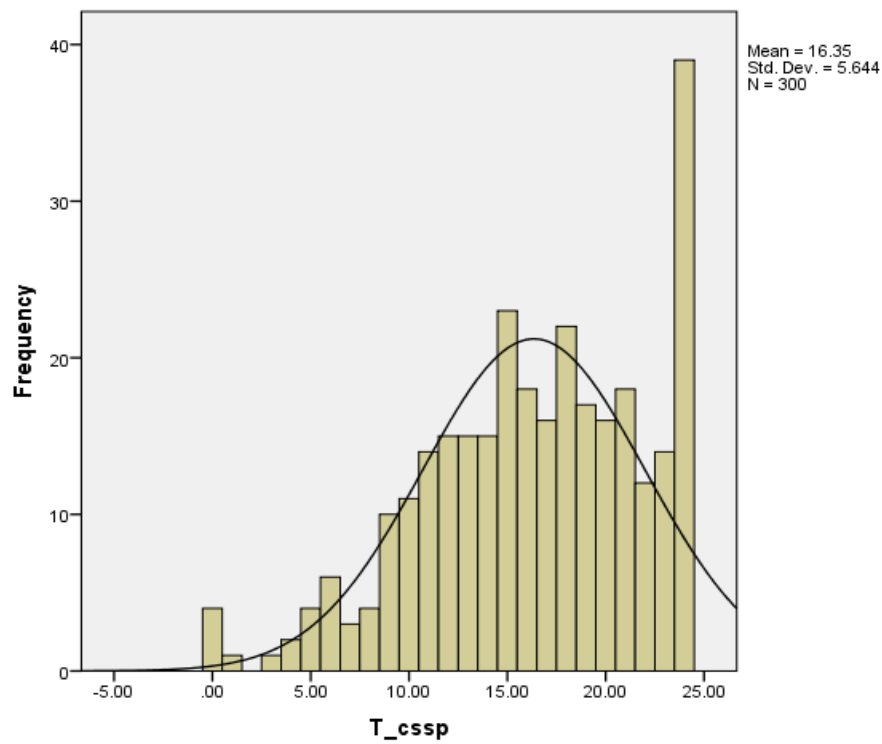


FIGURE 4.3: Distribution of scores for positive self schemas from Brief Core Schemas Scale (BCSS) (N=300)

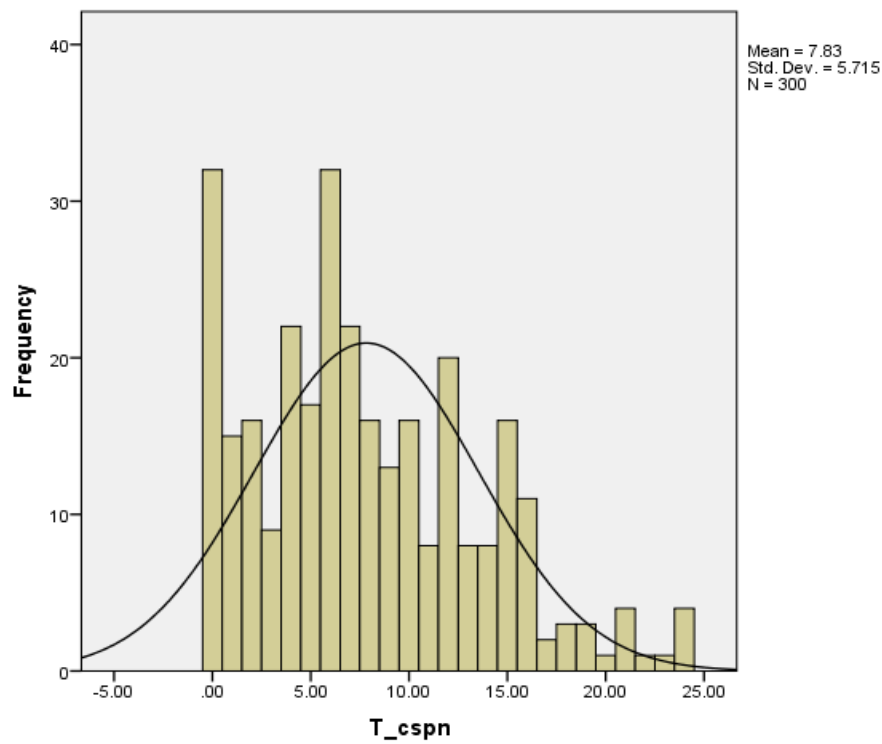


FIGURE 4.4: Distribution of scores for negative other schemas from Brief Core Schemas Scale (BCSS) (N=300)

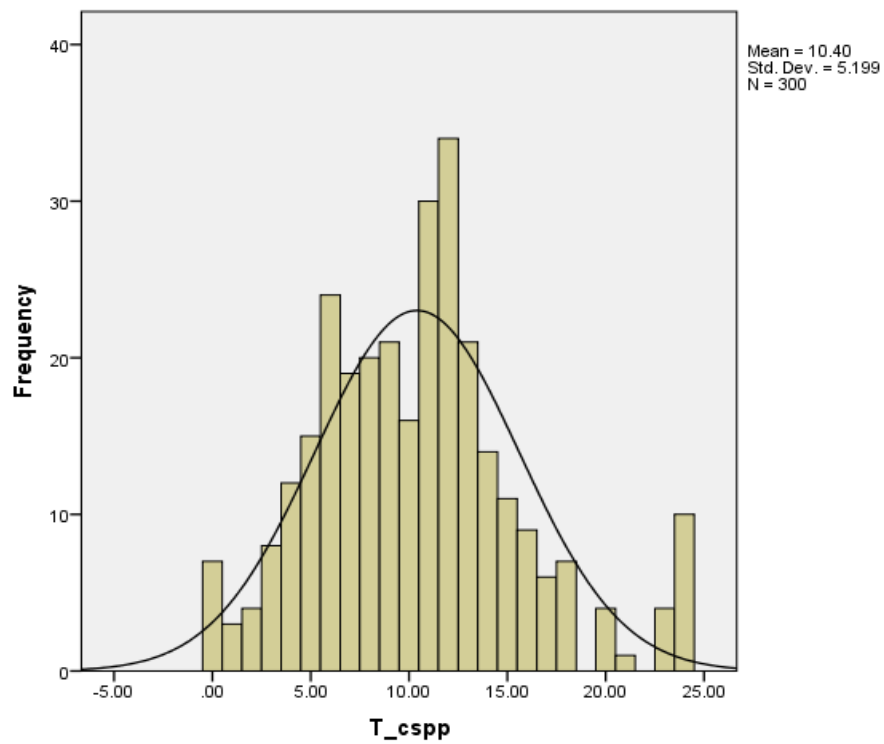


FIGURE 4.5: Distribution of scores for positive other schemas from Brief Core Schemas Scale (BCSS) (N=300)

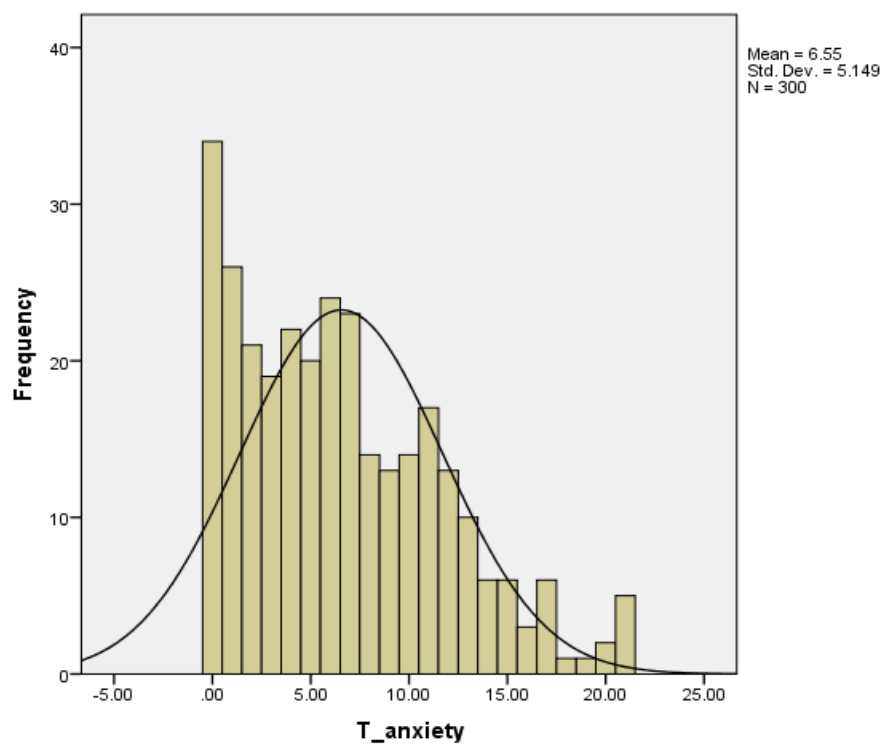


FIGURE 4.6: Distribution of scores for anxiety subscale from DASS-21 (N=300)

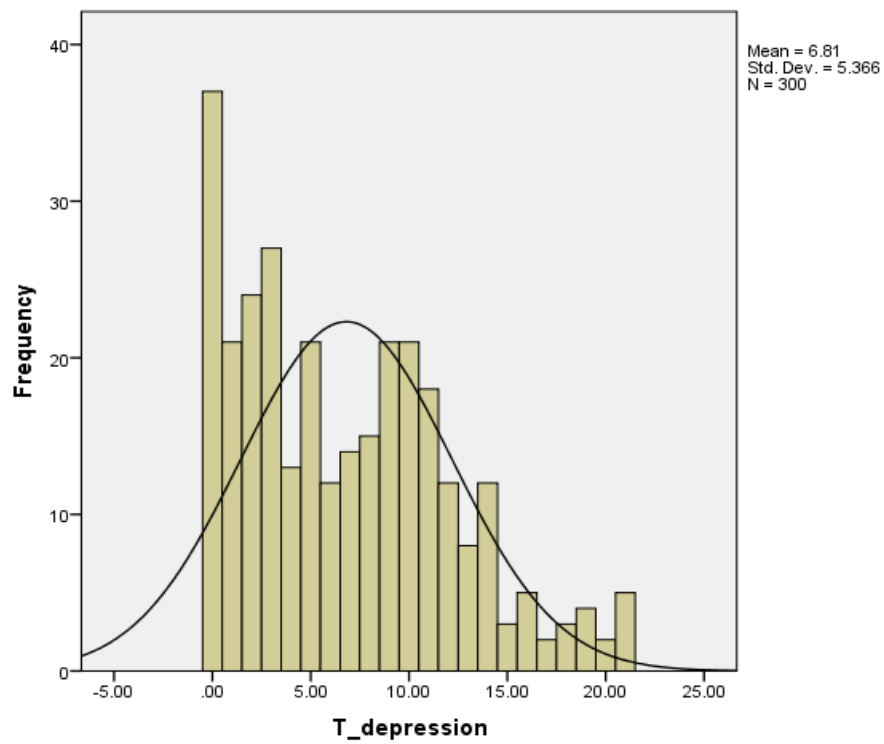


FIGURE 4.7: Distribution of scores for depression subscale from DASS-21 (N=300)

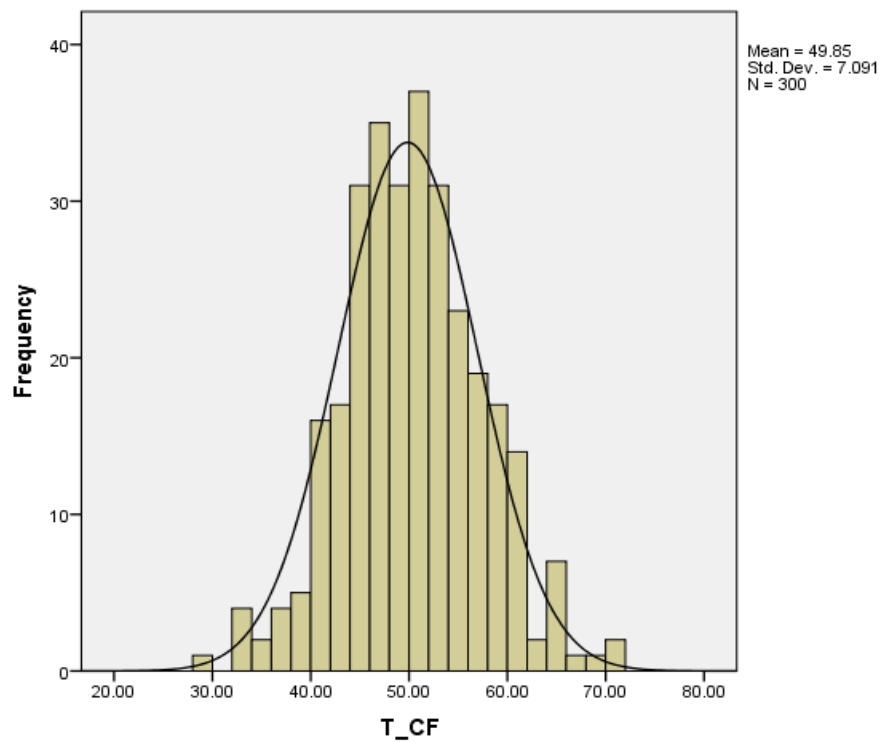


FIGURE 4.8: Distribution of scores for cognitive flexibility from Cognitive Flexibility Scale (N=300)

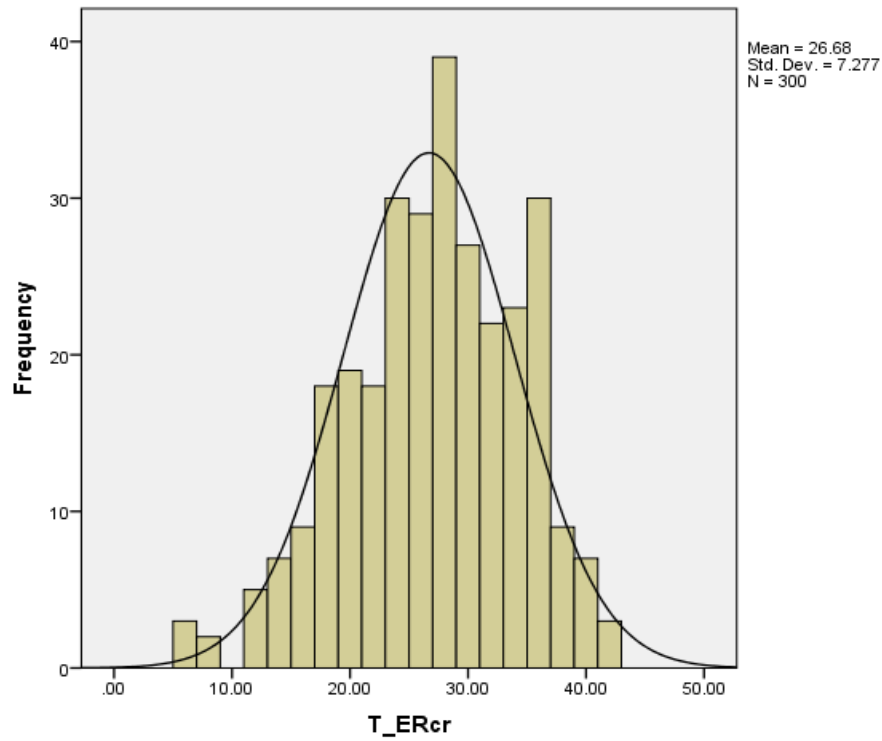


FIGURE 4.9: Distribution of scores for cognitive reappraisal from Emotional Regulation Questionnaire (N=300)

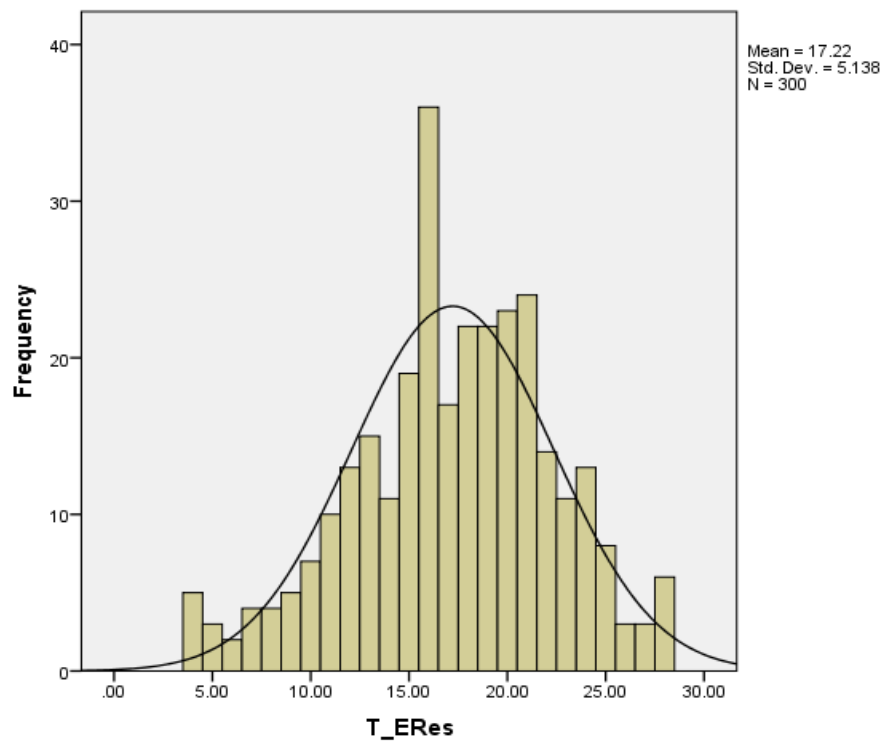


FIGURE 4.10: Distribution of scores for expressive suppression from Emotional Regulation Questionnaire (N=300)

4.5 Association of Schemas Subscales with Anxiety and Depression

TABLE 4.4: Correlation of schemas subscales (negative-self, positive-self, negative-other and positive-other) with anxiety and depression

Variables	Anxiety	Depression
Negative Self Schemas	.433**	.466**
Positive Self Schemas	-.310**	-.297**
Negative Other Schemas	.415**	.398**
Positive Other Schemas	-.148**	-.111*

Note. Pearson's correlation coefficients are reported. * $p < .05$. ** $p < .01$.

To check the association between schemas subscales and anxiety and depression, a Pearson's Bivariate (one tailed) correlation revealed a moderate positive correlation between negative self schemas ($r=.433^{**}$, $p<.01$) and depression ($r=.466^{**}$, $p<.01$), emphasizing that as the Negative Self schemas score increases, the score of anxiety and depression also increases. Likewise, the bivariate correlation revealed significant, moderate positive correlations between negative other schemas and anxiety ($r=.415^{**}$, $p<.01$) and depression ($r=.398^{**}$, $p<.01$), emphasizing that as the negative other schemas score increases, the score of anxiety and depression also increases.

Conversely, the Pearson's Bivariate correlation revealed significant, moderate negative correlations between positive self schemas and anxiety ($r=-.310^{**}$, $p<.01$) and depression ($r=-.297^{**}$, $p<.01$), indicating that as the positive self schemas score increases, the anxiety and depression scores decrease. Moreover, the bivariate correlation revealed significant, weak negative correlations between positive other schemas and anxiety ($r=-.148^{**}$, $p<.01$) and depression ($r=-.111^{*}$, $p<.05$), indicating that as the positive other schemas score increase, the anxiety and depression scores mildly decrease.

4.6 Association of Cognitive Flexibility and Emotional Regulation Subscales with Anxiety and Depression

TABLE 4.5: Correlation of cognitive flexibility and emotional regulation subscales with anxiety and depression

Variables	Anxiety	Depression
Cognitive Flexibility	-.458**	-.525**
Cognitive Reappraisal	-.025	-.068
Expressive Suppression	.190**	.213**

Note. Pearson's correlation coefficients are reported. ** $p < .01$.

The results revealed a partial support for the hypothesis. There is a negative association of cognitive flexibility with anxiety and depression, however, a positive association was present between expressive suppression with both and cognitive reappraisal yielded no significant association.

The Pearson's Bivariate correlation (one tailed) revealed a moderate negative correlation between cognitive flexibility and anxiety ($r = -.458^{**}$, $p < .01$) and a strong negative correlation with depression ($r = -.525^{**}$, $p < .01$), indicating that as the cognitive flexibility score increases, the scores of anxiety and depression significantly decrease.

However, contrary to the hypothesis, Pearson's Bivariate correlation revealed that no significant association appeared between cognitive flexibility and anxiety ($r = -.025$) or depression ($r = -.068$). This indicates that changes in cognitive reappraisal scores were not related with changes in anxiety or depressive symptoms. Moreover, the correlational analyses revealed a positive correlation between expressive suppression and anxiety ($r = .190^{**}$, $p < .01$) and depression ($r = .213^{**}$, $p < .01$).

4.7 Association of Schema Subscales and Educational Level Categories

TABLE 4.6: Comparison of Self-Schemas Across Educational Levels

Variables	En BS, Dip, or Other		BS		MS or PhD		F	η^2
	M	SD	M	SD	M	SD		
Negative Self Schemas	4.22	4.88	4.08	4.39	3.74	4.95	.241	.005
Positive Self Schemas	15.56	5.90	16.44	5.35	17.33	5.62	2.246	.015
Negative Other Schemas	7.29	5.67	8.15	5.41	8.11	6.22	.752	.005
Positive Other Schemas	10.12	5.04	10.19	5.17	11.13	5.46	1.004	.007

Note. *M* = mean; *SD* = standard deviation; *F* = one-way analysis of variance statistic; η^2 = eta squared effect size.

The one-way ANOVA analysis revealed a non-significant difference between educational level categories on schema subscales indicating that there is no significant association between educational level categories and all Schema subscales scores.

4.8 Association of Cognitive Flexibility and Emotional Regulation Subscales

A bivariate correlation revealed a weak positive correlation between cognitive flexibility and cognitive reappraisal, ($r = 0.223$, $p < .01$). However, the analysis revealed that the relationship between cognitive flexibility and expressive suppression was not statistically significant, ($r = -0.054$, $p > .05$) indicating that cognitive

TABLE 4.7: Correlation of cognitive flexibility and emotional regulation subscales (cognitive reappraisal and expressive suppression)

Variables	Cognitive Reappraisal	Expressive Suppression
Cognitive Flexibility	.223**	-.054

Note. Pearson's correlation coefficients are reported. ** $p < .01$.

flexibility mildly affects cognitive reappraisal but has no association with expressive suppression.

4.9 Structural Equation Modelling

4.9.1 Measurement Model

Factor analyses of the subscales of BCSS

In this study, each subscale (negative beliefs about self, positive beliefs about self, negative beliefs about other and positive beliefs about other) from 'The Brief Core Schema Scale' (BCSS) were measured by a total of 24 items and 6 items among each subscale.

4.9.2 Hypothesized Model

As suggested by factor analytic studies, negative self-beliefs, positive self-beliefs, negative other-beliefs and positive other beliefs were taken along a continuum in this study. A single factor model was hypothesized. The hypothesized model for the factor structure is presented in Figure 4.11.

4.9.3 Final Model

The final four factor model ($\chi^2 = 562.235$, $df = 246$, $p < 0.001$; CFI = 0.908; TLI = 0.897; RMSEA = 0.065 [90% CI 0.058–0.073]; SRMR = 0.055) showed an acceptable fit to the data, although the chi square test remained significant. It consisted of 24 indicators measuring four correlated latent variables (negative

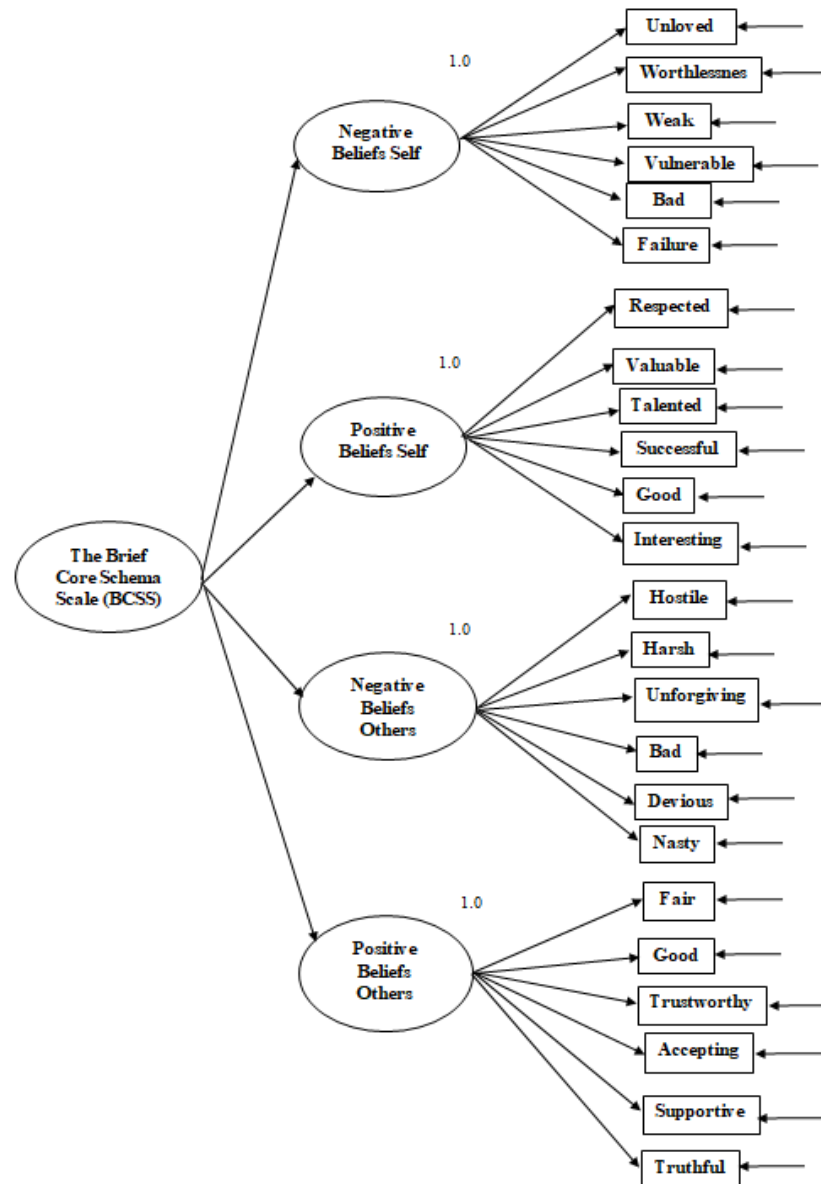


FIGURE 4.11: Hypothesized factor structure negative beliefs self, positive beliefs self, negative beliefs other and positive beliefs other (BCSS)

self, positive self, negative other, positive other) and 78 free parameters. All standardized factor loadings were statistically significant ($p < 0.001$). The smallest standardized estimate was for the item 13 on the negative other factor ($\lambda = 0.504$, $p < 0.001$). The remaining standardized regression weights ranged from 0.589 (item 1 on negative self) to 0.812 (item 24 on positive other). The item 13 also exhibited the lowest R^2 statistic (0.254, $p < 0.001$), while the remaining R^2 values ranged from 0.347 (item 1) to 0.659 (item 24). Significant correlations were found among all latent factors, notably a strong negative covariance between negative self and positive self ($r = -0.533$, $p < 0.001$), a strong positive covariance between negative

self and negative other ($r = 0.552$, $p < 0.001$), and a moderate positive covariance between positive self and positive other ($r = 0.399$, $p < 0.001$). The weaker latent correlations approached zero (e.g., negative self with positive other, $r = -0.161$, $p = 0.014$). Overall, the model fit indices suggest that the hypothesized four factor structure adequately reproduces the observed co-variances, and the factors are well defined by their indicators.

TABLE 4.8: Variance accounted for (R^2) by negative self beliefs, positive self beliefs, negative other beliefs and positive other beliefs. (N=300).

S. No.	Indicator	R^2	SE
1	Unloved	0.665	0.064
2	Worthlessness	0.676	0.056
3	Weak	0.705	0.056
4	Vulnerable	0.769	0.068
5	Bad	0.630	0.052
6	Failure	0.800	0.058
7	Respected	0.769	0.058
8	Valuable	0.914	0.058
9	Talented	0.819	0.064
10	Successful	0.994	0.071
11	Good	0.897	0.058
12	Interesting	0.878	0.062
13	Hostile	0.578	0.066
14	Harsh	0.999	0.066
15	Unforgiving	0.970	0.066
16	Bad	0.949	0.058
17	Devious	0.986	0.061
18	Nasty	0.862	0.065
19	Fair	0.676	0.062
20	Good	0.704	0.056
21	Trustworthy	0.839	0.057
22	Accepting	0.869	0.054
23	Supportive	0.858	0.054
24	Truthful	0.919	0.056

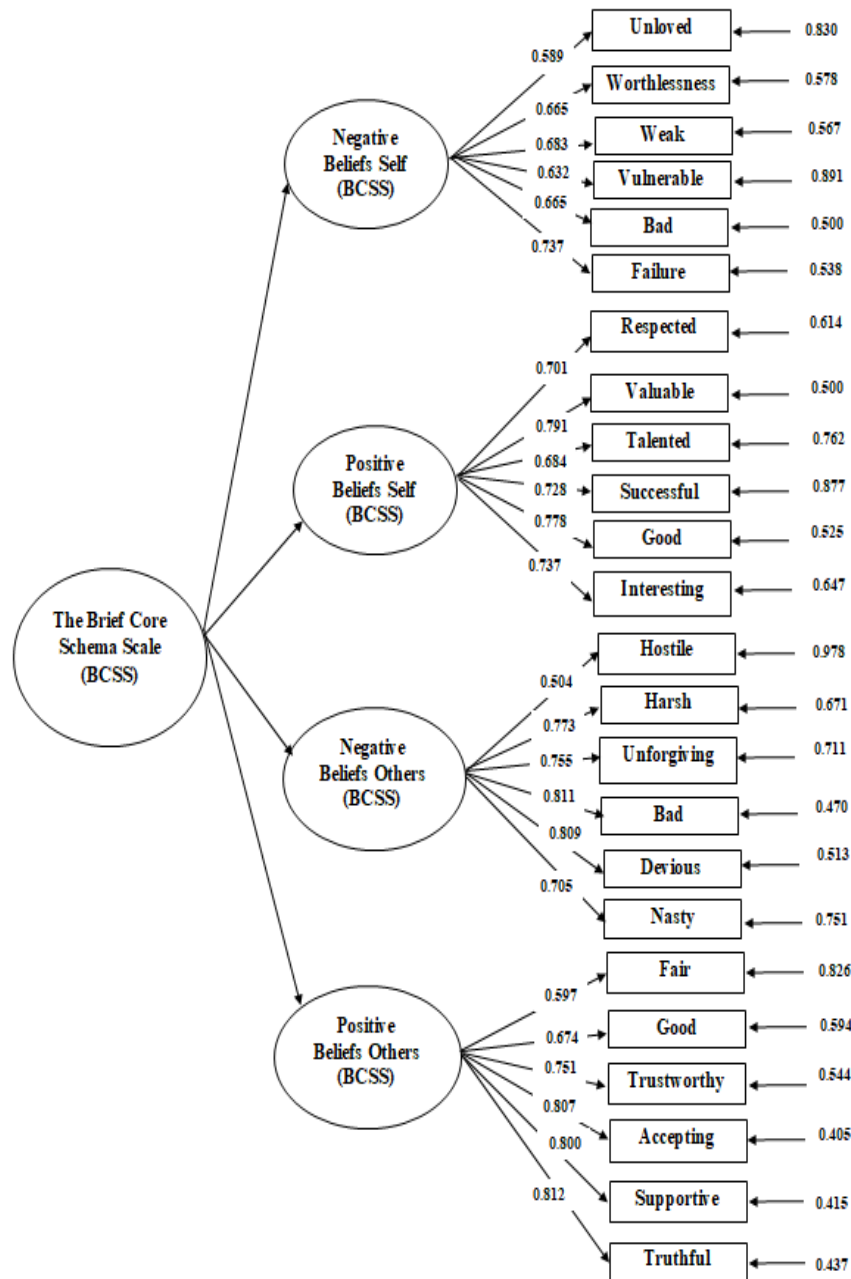


FIGURE 4.12: Obtained factor structure negative beliefs self, positive beliefs self, negative beliefs other and positive beliefs other (BCSS)

4.10 Factor Analyses of Anxiety and Depression Subscale from DASS-21

In this study, anxiety and depression were measured with 14 items and 7 items belonging from each subscale from the Depression, Anxiety and Stress Scale (DASS-21).

4.10.1 Hypothesized Model

As suggested by factor analytic studies, anxiety and depression were taken along a continuum in this study. A single factor model was hypothesized. The initial model was tested first but required the addition of three covariance paths between the error terms of the indicators to achieve a well-fitting model. Therefore, all the items of cognitive flexibility were loaded onto a single latent variable. The hypothesized model for the factor structure is presented in Figure.

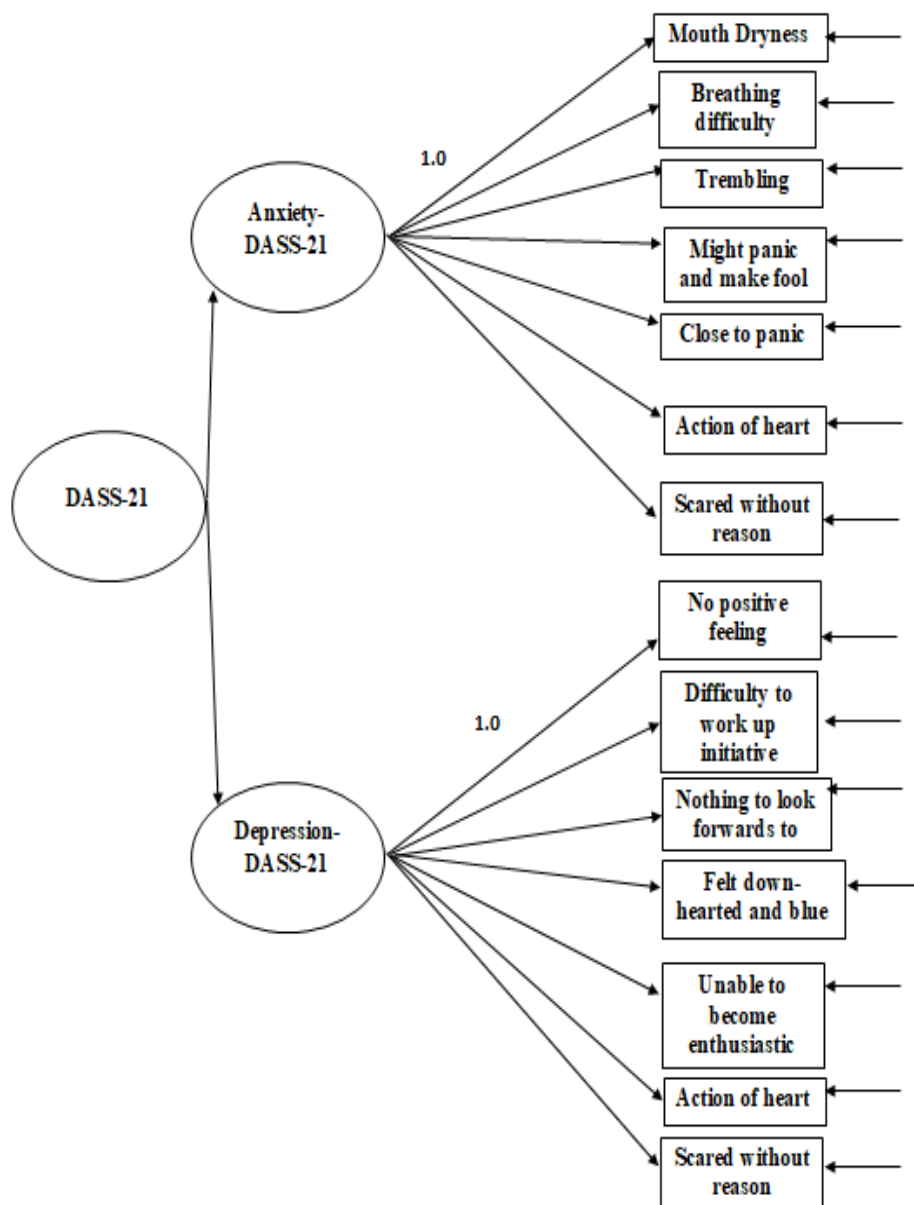


FIGURE 4.13: Hypothesized factor structure of anxiety and depression subscales from DASS-21

4.10.2 Final Model

The final two-factor model ($\chi^2(76)=164.756$, $p<.001$; CFI=.957; TLI=.948; RMSEA=.062, 90% CI [.049, .075]; SRMR=.036) showed acceptable fit to the data. It consisted of 14 indicators, two correlated latent variables (anxiety and depression), and 43 free parameters. The smallest standardized factor loading was 0.524 (item 2, $p<.001$). The remaining standardized loadings ranged from 0.547 (item 5) to 0.788 (item 17), all statistically significant ($p<.001$). The item 2 had the lowest R^2 statistic (0.275, $p<.001$). The remaining items also had significant R^2 values, ranging from 0.300 (item 5) to 0.620 (item 17). No residual co-variances among items were specified in the model. The latent factors anxiety and depression were very strongly correlated ($r = .951$, $p<.001$). The overall model fit indices and the statistically significant factor loadings support the adequacy of this two-factor structure..

TABLE 4.9: Variance accounted for (R^2) by anxiety and depression items(N=300).

S. No.	Indicator	R^2	SE
2	Mouth Dryness	0.524	0.045
3	No Positive Feeling	0.590	0.040
4	Breathing Difficulty	0.679	0.034
5	Difficulty to Work Up Initiative	0.547	0.043
7	Trembling	0.689	0.034
9	Might Panic and Make a Fool of Self	0.666	0.035
10	Nothing to Look Forward To	0.764	0.027
13	Felt Down-hearted and Blue	0.743	0.029
15	Close to Panic	0.774	0.027
16	Unable to Become Enthusiastic	0.734	0.030
17	Action of Heart	0.788	0.025
19	Action of Heart	0.683	0.034
20	Scared Without Reason	0.762	0.028
21	Scared Without Reason	0.745	0.029

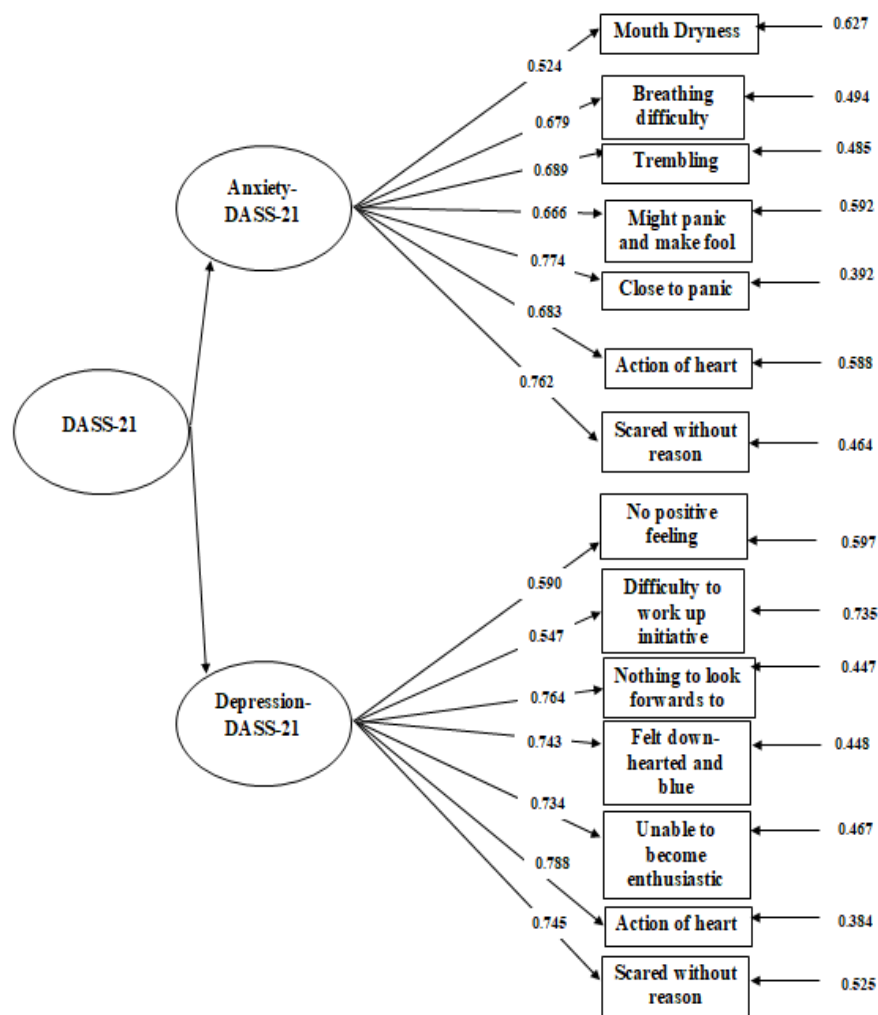


FIGURE 4.14: Obtained factor structure of anxiety and depression subscales from DASS-21

4.11 Factor Analyses of Cognitive Flexibility Scale

In this study, cognitive flexibility was measured with 12 items from the Cognitive Flexibility Scale (CFS).

4.11.1 Hypothesized Model

As suggested by factor analytic studies, cognitive flexibility was taken along a continuum in this study. A single factor model was hypothesized. The initial

model was tested first but required the addition of several covariance paths between the error terms of the indicators to achieve an acceptable fit. Therefore, items measuring cognitive flexibility were loaded onto a single latent variable. The hypothesized model for the factor structure is presented in Figure .

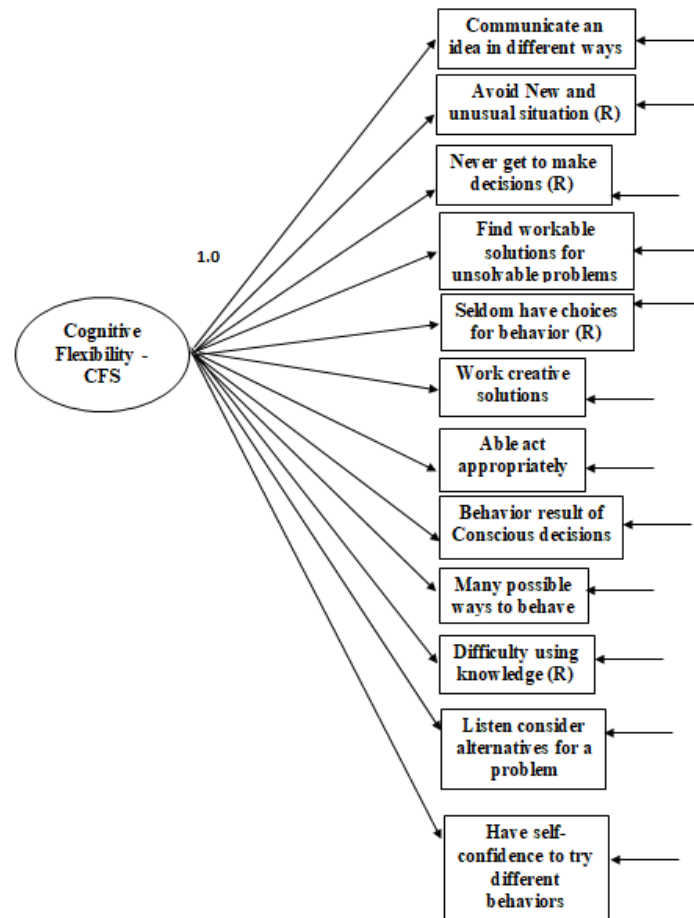


FIGURE 4.15: Hypothesized factor structure of Cognitive Flexibility Questionnaire (CFS)

4.11.2 Final Model

The final model (mean $\chi^2=110.487$; $df = 48$; mean CFI=0.931; RMSEA=0.066) showed acceptable fit to the datasets. It consisted of twelve indicators, one latent variable and 42 free parameters. The smallest standardized estimate (0.100, $p=0.113$) was of ‘Avoid New and unusual situation (R)’ item. The remaining estimates for the standardized regression weights ranged from -0.309 (‘Seldom have choices for behavior (R)’ item) to 0.738 (‘Able act appropriately’ item). ‘Avoid New and unusual situation (R)’ item had the lowest R^2 statistic (0.010, $p=0.428$).

The remaining variables had R^2 statistics that range from 0.017 ('Never get to make decisions (R)') to 0.544 ('Able act appropriately' item). The 'Never get to make decisions (R)' item significantly correlated with 'Avoid New and unusual situation (R)' item ($r=0.460$, $p<0.001$). The 'Difficulty using knowledge (R)' item significantly correlated with 'Avoid New and unusual situation (R)' item ($r=0.404$, $p<0.001$) and 'Never get to make decisions (R)' item ($r=0.339$, $p<0.001$). The 'Have self-confidence to try different behaviors' item significantly correlated with 'Listen consider alternatives for a problem' item ($r=0.199$, $p=0.001$). The 'Find workable solutions for unsolvable problems' item significantly correlated with Communicate an idea in different ways item ($r=0.177$, $p=0.003$). Furthermore, 'Many possible ways to behave' item significantly correlated with 'Behavior result of conscious decisions' item ($r=0.207$, $p=0.002$) in the final model. The overall model fit indices suggested that the model fits the data acceptably and the majority of the factor loadings are statistically significant. The diagrammatic presentation of the final model with standardized loadings and the variance accounted for by each indicator is presented in the following diagram and table respectively.

TABLE 4.10: Variance accounted for (R^2) by cognitive flexibility items (CFS). (N=300).

S. No.	Indicator	R^2	SE
1	Communicate an Idea in Different Ways	0.254**	0.050
2	Avoid New and Unusual Situations (R)	0.010	0.013
3	Never Get to Make Decisions (R)	0.017	0.016
4	Find Workable Solutions for Unsolvable Problems	0.243**	0.050
5	Seldom Have Choices for Behavior (R)	0.095*	0.036
6	Work Creative Solutions	0.466**	0.053
7	Able to Act Appropriately	0.544**	0.052
8	Behavior Is the Result of Conscious Decisions	0.424**	0.055
9	Many Possible Ways to Behave	0.474**	0.053
10	Difficulty Using Knowledge (R)	0.013	0.014
11	Listen and Consider Alternatives for a Problem	0.300**	0.052
12	Have Self-confidence to Try Different Behaviors	0.343**	0.053

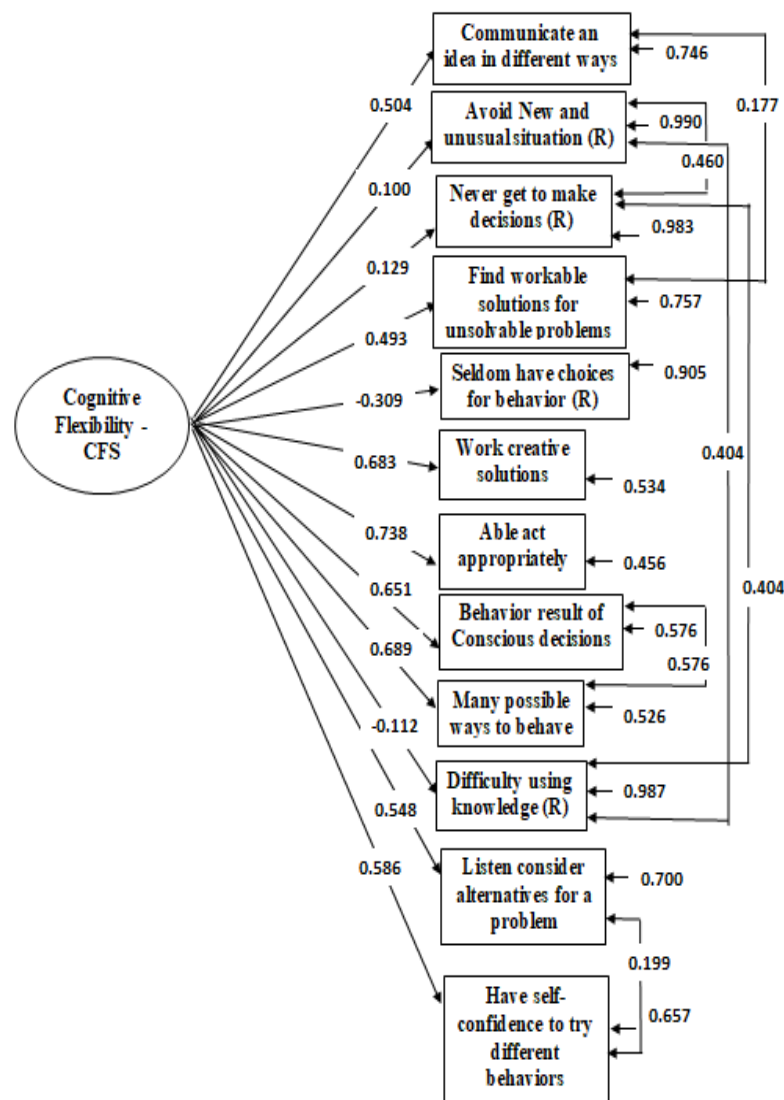


FIGURE 4.16: Obtained factor structure of Cognitive Flexibility Questionnaire

4.12 Factor Analyses of Subscales of ERQ

In this study, cognitive reappraisal and expressive suppression subscales from emotional regulation questionnaire were measured with a total of 10 items from ERQ. The number of items of cognitive reappraisal were 6 while, for expressive suppression, they were 4.

4.12.1 Hypothesized Model

As suggested by factor analytic studies, cognitive reappraisal and expressive suppression were taken along a continuum in this study. A single factor model was

hypothesized. Therefore, items measuring cognitive reappraisal and expressive suppression were loaded onto a single latent variable.

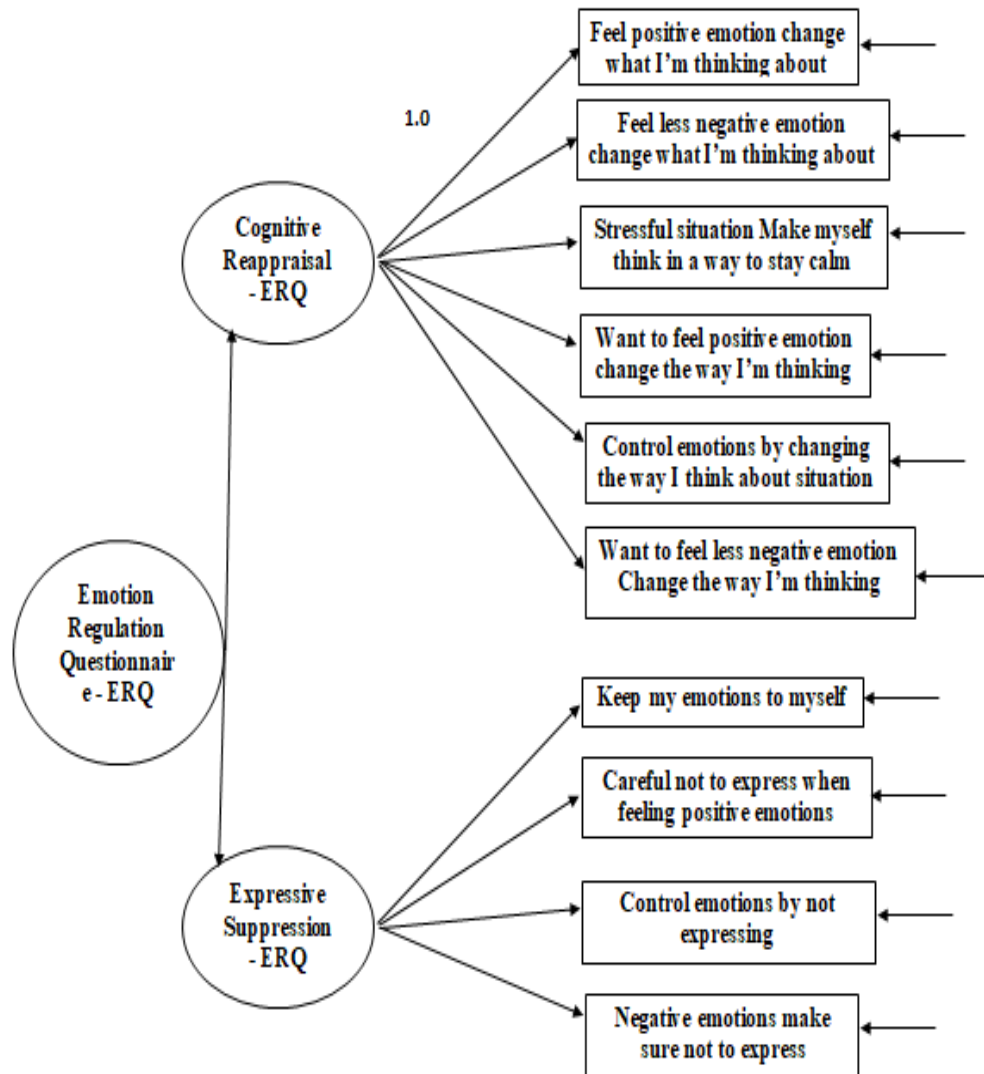


FIGURE 4.17: Hypothesized factor structure of subscales from Emotion Regulation Questionnaire (ERQ)

4.12.2 Final Model

The tested model consisted of ten observed indicators, two correlated latent variables (Cognitive Reappraisal and Expressive Suppression), and 32 freely estimated parameters. The overall fit indices were mixed: $\chi^2(33) = 100.489$, $p < 0.001$; CFI = 0.935; TLI = 0.911; RMSEA = 0.083 (90% CI [0.064, 0.101]); and SRMR = 0.044. While the SRMR fell below the conventional 0.05 threshold suggesting

good absolute fit, the CFI and TLI were slightly below the 0.95 benchmark for excellent fit, and the RMSEA point estimate exceeded 0.08, indicating moderate approximate fit. All factor loadings were statistically significant ($p < 0.001$).

The smallest completely standardized loading was for item 4 (When I am feeling positive emotions, I am careful not to express them.) on expressive suppression factor (0.389). The remaining standardized regression weights ranged from 0.549 (item 3 'When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about' on cognitive reappraisal) to 0.788 (item 10 'When I want to feel less negative emotion, I change the way I'm thinking about the situation' on Cognitive Reappraisal). The item 4 (When I am feeling positive emotions, I am careful not to express them.) also had the lowest R^2 value (0.151, $p = 0.001$), while the R^2 values for the other items were also significant and ranged from 0.302 (When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.) to 0.621 (When I want to feel less negative emotion, I change the way I'm thinking about the situation.).

Additionally, the two latent factors, cognitive reappraisal and expressive suppression, showed a strong positive correlation ($r = 0.732$, $p < 0.001$). A significant residual covariance was found between item 1 (When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about.) and item 3 (When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about.) (standardized covariance = 0.375, $p < 0.001$).

The added residual covariance between item 1 (When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about) and item 3 (When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about) was significant ($r = 0.375$, $p < 0.001$). The two latent factors were strongly correlated ($r = 0.732$, $p < 0.001$). Overall, the inclusion of the item 1 and item 3 correlation resulted in an acceptable model fit, although some indices remained slightly below ideal thresholds. A diagrammatic presentation of the model with standardized loadings and the variance accounted for by each indicator is shown in the following figure and table.

TABLE 4.11: Variance accounted for (R^2) by cognitive reappraisal items (ERQ).
(N=300).

S. No.	Indicator	R^2	SE
1	Feel Positive Emotion by Changing What I Am Thinking About	0.592	0.043
2	Keep My Emotions to Myself	0.659	0.042
3	Feel Less Negative Emotion by Changing What I Am Thinking About	0.549	0.046
4	Careful Not to Express Positive Emotions	0.389	0.056
5	In a Stressful Situation, Make Myself Think in a Way to Stay Calm	0.561	0.045
6	Control My Emotions by Not Expressing Them	0.750	0.037
7	Want to Feel Positive Emotion by Changing the Way I Am Thinking	0.672	0.038
8	Control My Emotions by Changing the Way I Think About the Situation	0.782	0.030
9	When Feeling Negative Emotions, Make Sure Not to Express Them	0.721	0.038
10	Want to Feel Less Negative Emotion by Changing the Way I Am Thinking	0.788	0.029

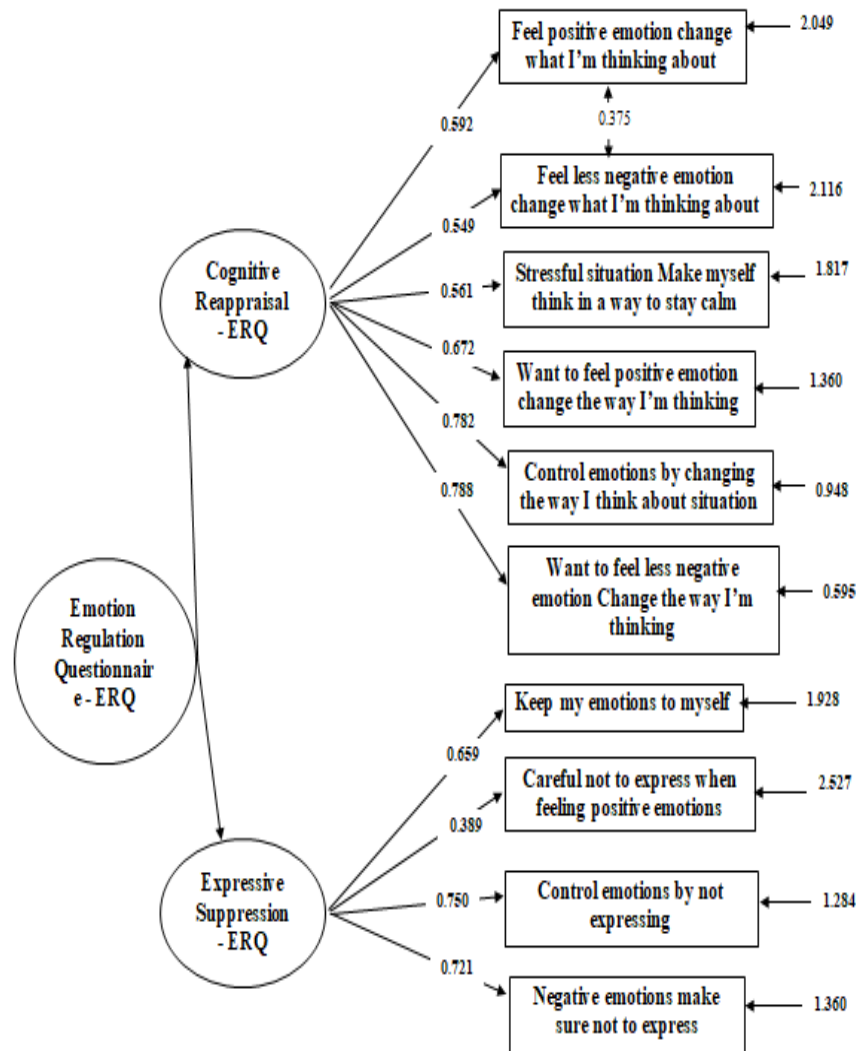


FIGURE 4.18: Obtained factor structure of Cognitive Reappraisal and Expressive Suppression subscales from Emotional Regulation Questionnaire (ERQ)

4.13 Structural Model: Schemas, Cognitive Flexibility, Emotion Regulation, Depression and Anxiety

Based on theoretical assumptions, it was hypothesized that the four schema subscales; negative self, positive self, negative other, and positive other, would directly predict anxiety and depression. Specifically, it was expected that more negative self and other schemas would be associated with higher anxiety and depression, while more positive self and other schemas would be associated with lower anxiety

and depression. Additionally, it was hypothesized that cognitive flexibility and emotion regulation would be negatively associated with levels of anxiety and depression among young adults. Specifically, higher cognitive flexibility, greater use of cognitive reappraisal, and lower use of expressive suppression were predicted to be linked with lower anxiety and depression.

Moreover, it was expected that emotional regulation (cognitive reappraisal and expressive suppression) and cognitive flexibility would mediate the relationship between schema subscales and anxiety and depression, such that these mediators would reduce symptoms of anxiety and depression. Specifically, it was hypothesized that more negative self and other schemas would be associated with lower cognitive flexibility and poorer emotion regulation, which in turn would increase anxiety and depression.

Conversely, more positive self and other schemas were expected to be associated with higher cognitive flexibility and more adaptive emotion regulation, thereby lowering anxiety and depression. Thus, a partial mediational model was specified, with schemas predicting anxiety and depression both directly and indirectly through the mediating processes. In addition, it was hypothesized that there would be a significant correlation between cognitive flexibility and emotion regulation.

4.13.1 Hypothesized Model

The full model contained 216 free parameters and demonstrated modest fit ($\chi^2 = 3107.07$, $df = 1674$, $p < 0.001$; CFI = 0.826; RMSEA = 0.053, 90% CI [0.050, 0.056]; SRMR = 0.080).

Based on the hypothesized pathways, a structural equation model was tested a priori. Four latent exogenous variables representing the schema subscales (Negative Self, Positive Self, Negative Other, Positive Other) were used to predict three latent mediators including Cognitive Flexibility, and the two subscales of Emotional Regulation including Cognitive Reappraisal and Expressive Suppression, which in

turn predicted the two latent outcome variables which were Anxiety and Depression.

Additionally, direct effects from the four latent schema variables to the two latent outcome variables which included Anxiety and Depression were also specified, and co variances between the latent variable Cognitive Flexibility and the two latent emotion regulation variables (Cognitive Reappraisal and Expressive Suppression) were freely estimated as part of the larger structural equation model. Examination of the path coefficients revealed numerous non-significant indirect and direct pathways, indicating mixed support for the hypothesis and that the hypothesized mediational effects were not fully supported, meaning model refinement was necessary.

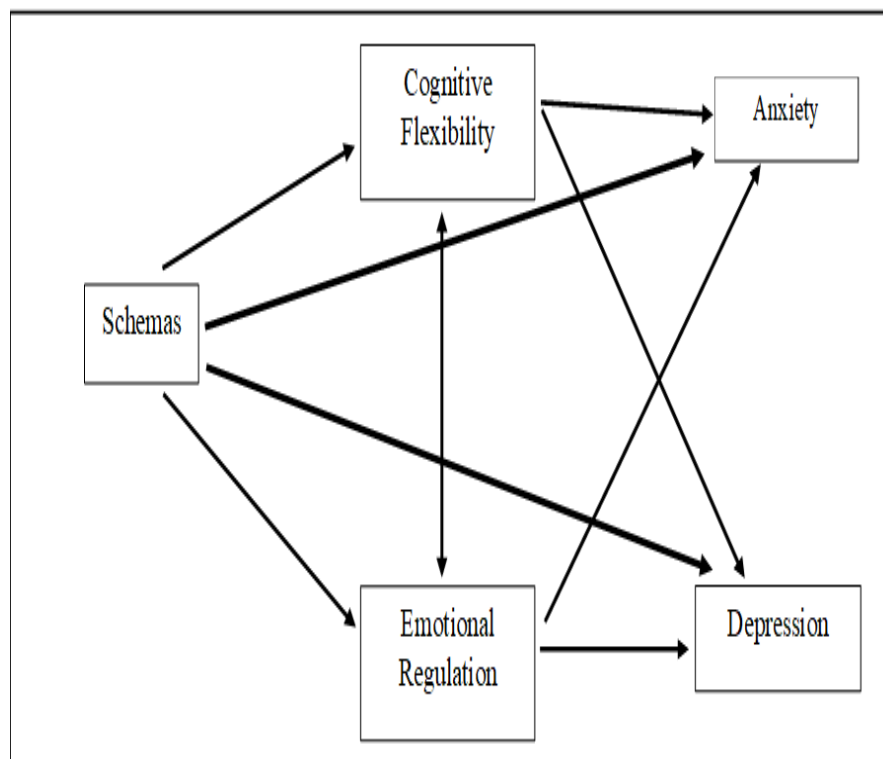


FIGURE 4.19: Diagrammatic presentation of initial SEM model for association of schemas and anxiety and depression, association of cognitive flexibility, emotional regulation and anxiety and depression, mediating effects of cognitive flexibility and emotional regulation between schemas and anxiety and depression, association between cognitive flexibility and emotional regulation (N=300).

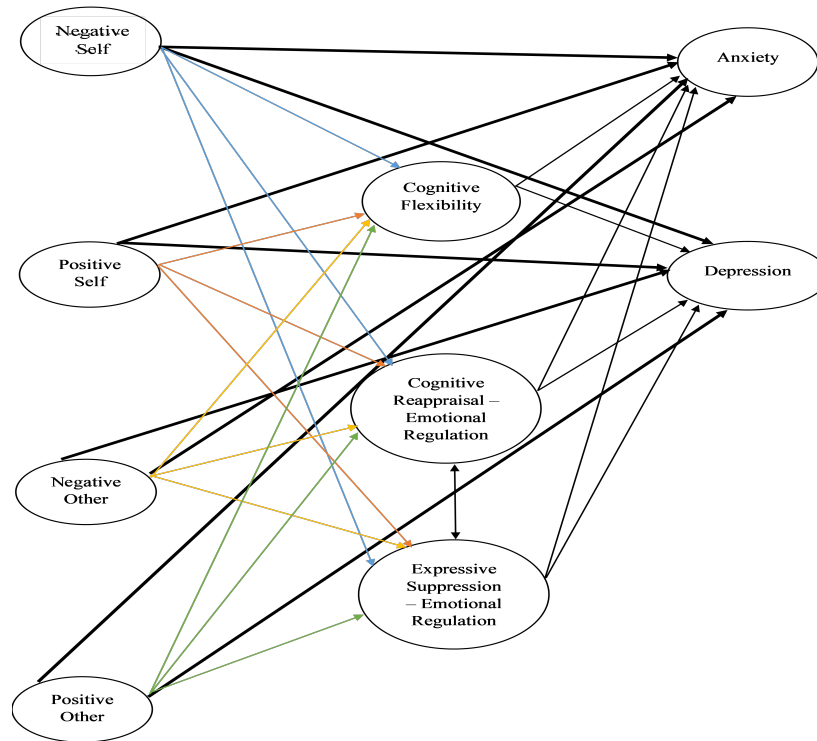


FIGURE 4.20: Diagrammatic presentation of initial SEM model for association of schemas (negative self, positive self, negative others and positive others) and anxiety and depression, association of cognitive flexibility, emotional regulation (cognitive reappraisal and expressive suppression) and anxiety and depression, mediating effects of cognitive flexibility and emotional regulation (cognitive reappraisal and expressive suppression) between schemas (negative self, positive self, negative others and positive others) and anxiety and depression, association between cognitive flexibility and emotional regulation (cognitive reappraisal and expressive suppression) (N=300).

Note: Path diagram displaying direct and mediated relationships between schemas and anxiety/depression. Thick black lines indicate strong direct pathways from schema subscales to anxiety and depression. Colored arrows denote indirect effects, showing that cognitive flexibility and emotion regulation strategies (cognitive reappraisal and expressive suppression) serve as mediators linking schema subscales and anxiety and depression. A double-headed arrow indicate a significant correlation between the two emotion regulation subscales.

4.13.2 Changes Made in the Model

There were specific changes made by removing non-significant relationships between the schema subscales and the outcomes. The direct paths from positive

self-schemas and positive other-schemas to anxiety and depression were not significant and were removed. All hypothesized pathways for negative other-schemas, including the direct paths to anxiety and depression, were also non-significant due to which the negative other-schemas variable was excluded from the final model entirely. The modifications resulted in only negative self-schemas which only had direct effects on anxiety and depression in the model.

After the initial model was tested, several hypothesized direct paths from the mediators to the outcomes were examined. The direct path from cognitive flexibility to anxiety and from cognitive reappraisal to both anxiety and depression were not statistically significant and were removed. However, the direct paths from expressive suppression to anxiety and to depression were significant and were retained. Additionally, non-significant paths from the schema variables to these mediators were removed including negative self-schemas, positive self-schemas which did not predict expressive suppression or cognitive reappraisal. The path from positive other-schemas to expressive suppression was retained as it was significant.

Moreover, cognitive flexibility did not predict anxiety, all schema variables to anxiety mediation via cognitive flexibility were removed. After these adjustments, only significant mediational links were retained in the model that included an indirect effect from positive self-schemas to depression via cognitive flexibility; indirect effects from positive other-schemas to anxiety and depression via expressive suppression and an indirect positive effect from negative self-schemas to depression via cognitive flexibility.

No mediation pathway from negative self-schemas to anxiety was found. The hypothesized model contained correlations between cognitive flexibility and both subscales of emotion regulation. After the assessment of modification indices and significance levels, it was revealed that these proposed correlations were not statistically significant and were therefore removed. The only within-mediator correlation that was significant and retained was the covariance between the two emotion regulation subscales themselves (expressive suppression with cognitive

reappraisal), which was large and significant.

The measurement model was also enhanced by adding within-construct residual correlations based on modification indices to improve overall fit. Among the schema items, a covariance was added between the item 12 (“I am interesting”) and positive self, while a proposed correlation between item 13 (“Other people are hostile”) and negative self was not retained. Correlated residuals among the anxiety and depression items were added, including item 20 (“I felt scared without any good reason”) with item 17 (“I felt I wasn’t worth much as a person”), item 21 (“I felt that life was meaningless”) with item 19 (“I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)”), item 21 (I felt that life was meaningless) with item 20 (I felt scared without any good reason), item 20 with item 16 (“I was unable to become enthusiastic about anything”), item 13 (“I felt down-hearted and blue”) with item 10 (“I felt that I had nothing to look forward to”), item 7 (“I experienced trembling, e.g. in the hands”) with item 5 (“I found it difficult to work up the initiative to do things”), and item 7 with item 4 (“I experienced breathing difficulty, e.g. excessively rapid breathing, breathlessness in the absence of physical exertion”).

The measurement model was also enhanced by adding within-construct residual correlations based on modification indices to improve overall fit. Among the schema items, a covariance was added between the item 12 (“I am interesting”) and positive self, while a proposed correlation between item 13 (“Other people are hostile”) and negative self was not retained.

Correlated residuals among the anxiety and depression items were added, including item 20 with item 17, item 21 with item, item 21 with item, item 20 with item 16, item 13 with item 10, item 7 with item 5, and item 7 with item 4. Residual correlations were also added between specific cognitive flexibility items including the item 3 with item 2, item 12 with item 11, item 4 with item 1, item 9 with item 8, and item 8 with item 7. Among emotion regulation indicators, residual correlations were added between item 3 and item 1, item 3, with item 2, item 9 with item 8, and item 2 with item 1.

4.13.3 Final Model

The final model included three schema subscales (negative self, positive self, positive others) as exogenous variables, with only negative self-schemas directly predicting anxiety and depression. The model demonstrated adequate fit: $\chi^2(1231) = 1924.42$, $p < 0.001$; RMSEA = 0.043; CFI = 0.901; TLI = 0.894; SRMR = 0.069. negative self-schemas significantly and positively predicted both anxiety ($\beta = 0.54$, $p < 0.001$) and depression ($\beta = 0.51$, $p < 0.001$); positive self-schemas and positive other-schemas showed no significant direct effects on either outcome, and negative other-schemas were excluded from the model due to non-significant associations with all endogenous variables. Among the mediators, cognitive flexibility was a significant negative predictor of depression ($\beta = -0.11$, $p = 0.019$) but did not significantly predict Anxiety. The cognitive reappraisal emotion regulation strategy showed no significant direct association with either anxiety or depression and was absent from the final model. Additionally, expressive suppression emotion regulation strategy was a significant positive predictor of both anxiety ($\beta = 0.15$, $p = 0.019$) and depression ($\beta = 0.15$, $p = 0.010$). The mediating roles of cognitive flexibility and emotion regulation were only partially consistent with the hypothesis that they would reduce symptoms. positive self-schemas exerted a significant protective indirect effect on depression through enhanced cognitive flexibility (positive self $\rightarrow$ cognitive flexibility: $\beta = 0.270$, $p = 0.002$; cognitive flexibility $\rightarrow$ depression: $\beta = -0.111$, $p = 0.019$). positive other-schemas showed a protective indirect effect on both anxiety and depression through reduced expressive suppression emotion regulation strategy (positive other $\rightarrow$ expressive suppression: $\beta = -0.178$, $p = 0.010$; expressive suppression $\rightarrow$ anxiety: $\beta = 0.145$, $p = 0.019$; expressive suppression $\rightarrow$ depression: $\beta = 0.152$, $p = 0.010$). In contrast, negative self-schemas lowered cognitive flexibility ($\beta = -0.373$, $p < 0.001$), which in turn increased depression ($\beta = -0.111$, $p = 0.019$), amplifying the effect on depression; no indirect effect of negative self-schemas on anxiety was significant.

Moreover, cognitive reappraisal emotion regulation strategy played no mediational role in the final model. cognitive flexibility showed no significant correlation with either cognitive reappraisal emotion regulation or expressive suppression emotion

regulation, however, were strongly and positively associated with each other ($r = 0.69$, $p < 0.001$). In conclusion, negative self-schemas were the most powerful direct contributors to both anxiety and depression, while positive self and positive other schemas played a more indirect protective role. Cognitive flexibility acted as a partial mediator between positive self-schemas and depression, while expressive suppression was linked to positive other-schemas to lower anxiety and depression; however, expressive suppression was unexpectedly associated with higher anxiety and depression, cognitive reappraisal emotion regulation strategy played no meaningful role, and negative others showed no mediational pathways.

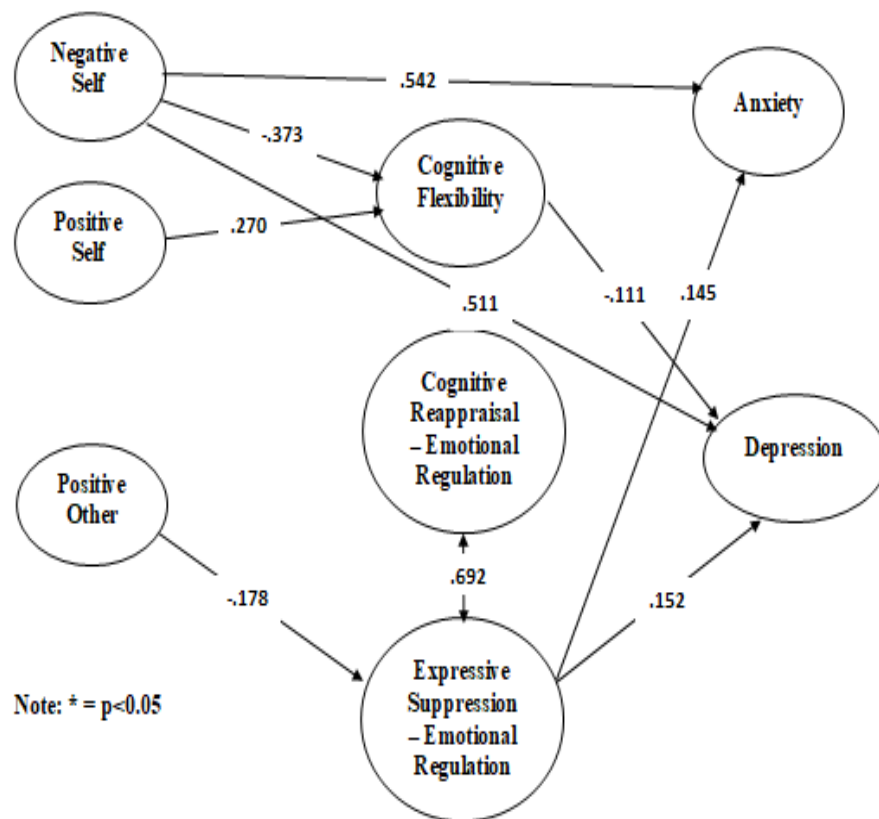


FIGURE 4.21: Diagrammatic presentation of significant pathways in final SEM model

Chapter 5

Discussion and Conclusion

The present study assessed the relationships of schemas with anxiety and depression while also analyzing partial mediating effects of cognitive flexibility and emotional regulation among young adults from the community. The findings regarding the associations of the four subscales of schemas (negative self, positive self, negative others and positive others) with anxiety and depression indicated that negative self and negative others were moderately positively correlated with both anxiety and depression. This suggested that if the scores of one variable increase, the scores of anxiety and depression also increase. On the other hand, the positive self subscale was negatively and moderately correlated to both anxiety and depression. While, the Positive Other subscale was weakly correlated to anxiety and depression. These results indicated that positive beliefs about self can effectively reduce the symptoms of anxiety while positive beliefs about others can mildly lead to reduction in the symptoms of anxiety and depression due to weak correlation. Moreover, the negative beliefs about self and others can lead to high increased symptoms of anxiety and depression.

The study also assessed the mediating roles of cognitive flexibility and emotional regulation in the relationship between all the four subscales of schemas and anxiety and depression. Surprisingly, cognitive flexibility only partially mediated between negative beliefs about self subscale and depression. While, it also had a direct impact on anxiety and depression. The cognitive flexibility also mediated between

positive self-beliefs and depression indicating lowering of the symptoms of depression. According to theoretical model, it was assumed that it would act as a partial mediator but here, the positive self-beliefs acted as full mediator. Emotional regulation was assessed with two subscales; cognitive reappraisal and expressive suppression, and both of these subscales correlated with each other. Only expressive suppression subscale acted as a full mediator between positive others belief subscale and anxiety and depression. Additionally, the study assessed the relationship of schemas (negative self, positive self, negative others and positive others) with different levels of education. The results indicated no association between schema subscales and educational level categories. The following sections discuss the detailed interpretation of the findings.

5.1 Sample Characteristics

The exploration of detailed demographic characteristics was carried out about the representativeness of the sample. The demographic characteristics included age, gender, educational level, marital status, perceived socio-economic status and any diagnosed physical/mental ability. As convenience sampling was used, the data was gathered from nearby 5 markets (Rawalpindi), 2 public universities (Islamabad), 2 private universities (Islamabad) and 1 call center (Rawalpindi), due to which this study makes no claim of the representativeness of individuals from the all regions of Rawalpindi and Islamabad. Least responses were received from individuals of age 18 and 19 years while most number of responses were received from the individuals from age 20 to 26. This can be explained as average age of youth working in markets is between 15 to 29 year while the average age of students enrolled in Bachelors in Pakistan is between 17 and 23 years ([Gallup Pakistan, 2025](#); [Mukhtyar et al., 2021](#)).

Moreover, a major portion of responses were received from individuals who reported single marital status and very less responses were received in terms of divorced and widowed which is evident as the target audience comprised young adults only. This finding is consistent with Gallup's national report as male and

female young adults wait for the attainment of educational goals and a sustainable career before getting married now (Gallup Pakistan and Gilani, 2023). Moreover, most of the individuals belonged from middle class category which is evident from the studies conducted at national which reports as 46% of the population reports of belonging from middle class category (Gallup Pakistan, 2025). Lastly, the figures reported on being diagnosed with any mental/physical disability are consistent with the studies, as a large population of the university students go undiagnosed but still have high levels of stress affecting their domains of life severely (Chaudhry et al., 2026; Niazi et al., 2025).

5.2 Reliability of Study Instruments

The internal consistency of the instruments used in this study was observed to range from acceptable to good, indicating that the majority of the measurement tools reliably assessed the intended constructs within the sample. The Brief Core Schema Scale (BCSS) showed acceptable reliability at the total level ($\alpha=0.739$). The individual subscales for negative-self, positive-self, negative-other, and positive-other constantly showed good internal consistency, with alpha values ranging from 0.823 to 0.879. The ‘positive beliefs about others’ subscale demonstrated the highest alpha values among the other three subscales ($\alpha=0.879$).

These values indicated that all the participants in this study responded to all the items of the subscales of schemas in a meaningful way. Additionally, these values are consistent with previous reliability studies across different regions and cultures (Huey Jing, 2019; Tan, 2020). Similarly, the DASS-21 subscales exhibited good internal consistency. Both the anxiety ($\alpha=0.860$) and depression ($\alpha=0.872$) subscales generated high reliability estimates, supporting the suitability of these scales in capturing the presence of symptoms of anxiety and depression within the sample used in this study.

The Emotion Regulation Questionnaire (ERQ) demonstrated strong internal consistency at the total scale level ($\alpha=0.850$), with its cognitive reappraisal subscale

also exhibiting good reliability ($\alpha=0.830$). The expressive suppression subscale showed acceptable internal consistency ($\alpha=0.717$), suggesting participants were able to respond consistently to items measuring the two distinct symptoms of anxiety and depression. Regarding the cognitive flexibility scale, this scale revealed overall acceptable reliability ($\alpha=0.702$). Overall, all of the study instruments revealed satisfactory to good internal consistency, supporting the reliability and credibility of the collected data.

5.3 Discussion of Hypothesis 1

The Pearson bivariate correlation (one-tailed) fully supported the hypothesis, confirming a statistically significant relationship between each of the four schema subscales and both anxiety and depression. Negative Self Schemas showed significant, moderate positive correlations with anxiety ($r = .433, p < .01$) and depression ($r = .466, p < .01$), consistent with prior research linking maladaptive self-schemas to heightened distress ([Karaush and Kupriyanova, 2022](#); [Müller-Pinzler et al., 2019](#)).

Negative Others Schemas also demonstrated significant, moderate positive correlations with anxiety ($r = .415, p < .01$) and depression ($r = .398, p < .01$), paralleling findings that negative beliefs about others contribute to both anxiety and depressive symptoms ([Koerner et al., 2015](#); [Dozois, 2021](#)). In contrast, positive self schemas exhibited significant, moderate negative correlations with anxiety ($r = -.310, p < .01$) and depression ($r = -.297, p < .01$), supporting evidence that adaptive self-schemas are inversely related to these conditions ([Chi et al., 2022](#); [Mohammadkhani et al., 2022](#)).

Positive others schemas revealed a significant but weak, negative association with anxiety ($r = -.148, p < .01$) and a significant, weak negative association with depression ($r = -.111, p < .05$). Thus, negative schemas were associated with higher distress, while positive schemas were consistently associated with lower distress, a pattern that is consistent with the previous literature ([Gotlib and Rottenberg, 2001](#); [Tariq, 2023](#); [Chi et al., 2022](#))).

Conversely, the Structural Equation Model (SEM) provided a more refined understanding, only partially supporting the hypothesis. Only negative self-schemas emerged as a significant direct predictor, with strong positive effects on anxiety ($\beta = 0.54$, $p < .001$) and depression ($\beta = 0.51$, $p < .001$), a finding that aligns with evidence identifying negative self-beliefs as a primary cognitive vulnerability for these disorders (Tariq, 2023; Karaush and Kupriyanova, 2022). Positive self-schemas and positive others-schemas failed to demonstrate significant direct predictive effects on anxiety or depression when tested simultaneously, and negative others-schemas were entirely excluded from the final model due to non-significant associations. These results are consistent with Beck's cognitive theory, which asserts that dysfunctional self-schemas constitute the core mechanism underlying anxiety and depression (Müller-Pinzler et al., 2019; Tariq, 2023). The non-significant direct effects of positive schemas suggest that, in the presence of strong negative self-beliefs, their protective influence may be suppressed. The analysis clearly indicates that negative self-schemas are the dominant driving mechanism of anxiety and depression within this sample, highlighting that preventive interventions should prioritize the restructuring of negative self-schemas (Tariq, 2023; Müller-Pinzler et al., 2019)).

5.4 Discussion of Hypothesis 2

The bivariate correlation analysis provided partial support for the hypothesis. Cognitive flexibility demonstrated significant, moderate-to-strong negative associations with anxiety ($r = -.458$, $p < .01$) and depression ($r = -.525$, $p < .01$), consistent with evidence that higher cognitive flexibility protects against negative thinking patterns and reduces the likelihood of depressive and anxiety symptoms (World Bank Group, 2016; Zafar et al., 2024).

However, contrary to the hypothesis, cognitive reappraisal did not show a statistically significant association with either anxiety ($r = -.025$) or depression ($r = -.068$), indicating that changes in cognitive reappraisal were not significantly linked to anxiety or depressive symptoms. In contrast, expressive suppression

revealed significant positive correlations with anxiety ($r = .190$, $p < .01$) and depression ($r = .213$, $p < .01$), showing that greater use of expressive suppression was associated with higher distress. Thus, cognitive flexibility emerged as the dominant protective mechanism, while expressive suppression operated as a maladaptive correlate of anxiety and depression, aligning with existing literature that points these factors as key cognitive and emotional processes in anxiety and depression (Wang et al., 2019; Fuchs, 2023; Young et al., 2019).

On the other hand, the Structural Equation Model (SEM) provided a more complex, fragmented perspective, leading to partial support. Cognitive flexibility was a significant negative predictor of depression ($\beta = -0.11$, $p = 0.019$), corroborating findings that this capacity serves as a protective factor against depressive symptoms (Wang et al., 2019; Zafar et al., 2024). However, it did not directly predict anxiety, and the pathway was non-significant due to which it was removed. For emotional regulation, the two strategies revealed opposite dynamics. The cognitive reappraisal showed no significant direct association with either anxiety or depression, whereas expressive suppression emerged as a significant, positive predictor of both anxiety ($\beta = 0.15$, $p = 0.019$) and depression ($\beta = 0.15$, $p = 0.010$). These results are consistent with evidence that disruptions in emotion regulation strategies, particularly maladaptive forms, contribute directly to anxiety and depression (Young et al., 2019). In summary, cognitive flexibility serves as a significant protective factor against depression (Wang et al., 2019; Zafar et al., 2024), while expressive suppression operates as a maladaptive risk factor for both anxiety and depression (Young et al., 2019). Interventions should therefore prioritize reducing maladaptive expressive suppression and strengthening cognitive flexibility.

5.5 Discussion of Hypothesis 3

The full model analysis of the results partially supports the hypothesis that emotional regulation and cognitive flexibility would mediate the relationship between schemas and symptoms of anxiety and depression, such that they would reduce

these symptoms. However, the mediating effects were selective and functioned differently depending on the type of schema involved. The findings established that positive self-schemas exerted a significant protective indirect effect on depression through enhanced cognitive flexibility.

Specifically, positive self-schemas significantly predicted higher levels of cognitive flexibility ($\beta = 0.270$, $p = 0.002$), and cognitive flexibility in turn significantly predicted lower depression ($\beta = -0.111$, $p = 0.019$). This pathway aligns with evidence that cognitive flexibility acts as a mediator in the schema–psychopathology relationship (Zafar et al., 2024) and that greater cognitive flexibility protects against depressive symptoms by enabling more adaptive responses to challenges (Wang et al., 2019; Fuchs, 2023). Thus, individuals who hold positive beliefs about themselves appear better able to adapt their thinking in response to changing situations, which subsequently reduces depressive symptoms.

This finding is consistent with the theoretical understanding that cognitive flexibility serves as a resilience factor. When individuals possess positive self-schemas, they may be more likely to approach challenges with adaptive thinking patterns, reinterpret stressful situations constructively, and avoid rigid, negative thinking styles that are characteristic of depression. The ability to shift perspectives and generate alternative interpretations likely buffers against the development or maintenance of depressive symptoms (Wang et al., 2019; Zafar et al., 2024).

Similarly, positive other-schemas showed a protective indirect effect on both anxiety and depression through reduced use of expressive suppression as an emotion regulation strategy. The pathways indicated that positive other-schemas significantly predicted lower expressive suppression ($\beta = -0.178$, $p = 0.010$), and expressive suppression significantly predicted higher anxiety ($\beta = 0.145$, $p = 0.019$) and higher depression ($\beta = 0.152$, $p = 0.010$).

These results are consistent with research demonstrating that positive schemas

promote the use of adaptive coping strategies (Prasko et al., 2025), while maladaptive emotion regulation strategies such as expressive suppression are directly linked to heightened anxiety and depression (Young et al., 2019). When individuals view others positively, they may feel more comfortable expressing their emotions openly, perhaps because they perceive others as accepting and trustworthy. This openness likely facilitates emotional processing and reduces the internal burden associated with concealing emotional experiences.

In contrast to the protective pathways, the indirect pathway from negative self-schemas to depression through cognitive flexibility did not reduce symptoms; instead, it intensified the depressive symptoms. Negative self-schemas significantly lowered cognitive flexibility ($\beta = -0.373$, $p < 0.001$), which in turn increased depression ($\beta = -0.111$, $p = 0.019$), yielding a significant indirect effect. This finding is consistent with prior evidence that maladaptive schemas diminish cognitive flexibility (Zafar et al., 2024; Anayurt and Yalçın, 2021) and that reduced cognitive flexibility, in turn, contributes to the maintenance or worsening of depressive symptoms (Wang et al., 2019).

Rather than serving as a protective mechanism, the mediation through cognitive flexibility therefore aggravated the impact of negative self-schemas on depression. Individuals with negative beliefs about themselves tend to exhibit reduced cognitive flexibility, meaning they may become stuck in negative thinking patterns. This pattern likely prevents them from generating alternative perspectives or finding adaptive solutions to problems, thereby intensifying depressive symptoms.

Several pathways showed no significant effects. No indirect effect of negative self-schemas on anxiety was found to be significant. Additionally, cognitive reappraisal as an emotion regulation strategy played no mediational role in the final model. This suggests that while expressive suppression was relevant in the model, cognitive reappraisal did not function as a significant mediator between schemas and symptoms in this specific sample. Negative other-schemas also showed no mediational pathways, indicating that beliefs about others being negative did not

operate through cognitive flexibility or emotion regulation strategies in relation to anxiety and depression outcomes.

5.6 Discussion of Hypothesis 4

The one-way ANOVA results indicate no statistically significant relationship between educational level and any of the four schema subscales, with all p values above the 0.05 limit (negative self: $p = .786$, positive self: $p = .108$, negative others: $p = .472$, positive others: $p = .368$). This confirms that individuals' cognitive and emotional patterns regarding self and others do not systematically differ based on whether they are pursuing a Bachelor's degree, hold a Master's or PhD, or fall into other educational categories.

Theoretically, this null finding aligns with the understanding that schemas are deeply rooted developmental constructs, typically established during childhood through core emotional experiences and progressively transforming from simple to complex forms, rather than being substantially reshaped by later-life educational achievements (Malik et al., 2025). Consistent with this perspective, previous research has demonstrated that higher academic performance does not necessarily correspond to healthier self-schemas; for instance, students with higher exam scores have been found to report lower self-esteem and self-efficacy (Diseth et al., 2014). Conversely, while some evidence suggests that increased learning experiences can enhance cognitive skills and problem-solving abilities (Parisi et al., 2012), the present results indicate that such cognitive benefits may not extend to fundamental schematic beliefs about the self and others.

Practically, these findings imply that clinicians should avoid assuming that higher educational attainment corresponds to healthier schemas. Instead, therapeutic interventions should aim at modifying maladaptive patterns and addressing unmet childhood emotional needs, which are the primary developmental origins of such schemas, rather than focusing on factors like educational background (Malik et al., 2025; Gotlib and Rottenberg, 2001).

5.7 Discussion of Hypothesis 5 (A, B)

The findings of this study partially support the hypothesis that there is an association between cognitive flexibility and emotional regulation, revealing a nuanced relationship depending on the specific regulatory strategy employed. The bivariate correlation analysis revealed a weak positive correlation between cognitive flexibility and cognitive reappraisal, ($r = 0.223$, $p < .01$). This significant association aligns with previous research reporting a link between cognitive flexibility and cognitive reappraisal (Kiye and Çiçek Habes, 2024; Ghosh and Halder, 2020; Gu et al., 2025). This positive relationship suggests that individuals with higher cognitive flexibility are more inclined to utilize cognitive reappraisal as an adaptive emotional regulation strategy. Theoretically, this makes sense, as cognitive reappraisal requires the ability to shift perspectives, reorganize existing knowledge, and reframe stressful situations, core components of cognitive flexibility (Gu et al., 2025). This supports (Gross, 2002) conceptualization of cognitive reappraisal as an adaptive strategy that relies on higher-order cognitive processes to manage emotional experiences effectively and foster positive emotional outcomes (Vally and Ahmed, 2020).

Conversely, the analysis revealed that the relationship between cognitive flexibility and expressive suppression was not statistically significant, ($r = -0.054$, $p > .05$). This lack of association contrasts with prior work that found an inverse relationship between cognitive flexibility and expressive suppression (Gu et al., 2025), as well as studies demonstrating a positive association between the two (Altın et al., 2026). The absence of a significant relationship in this sample suggests that the tendency to suppress emotions operates independently of cognitive flexibility. As suggested by the literature, the decision to suppress emotions may be driven by factors other than cognitive flexibility, such as social expectations, interpersonal contexts, or learned behavioral patterns (Gross, 2002; Vally and Ahmed, 2020). A person could be highly flexible in their thinking but still habitually suppress emotional displays due to cultural norms or situational demands. Alternatively, an individual with limited cognitive flexibility might freely express their emotions

without engaging in suppression.

Overall, while the existing literature points to both positive and negative associations between cognitive flexibility and emotional regulation strategies (Gu et al., 2025) the current findings suggest a more selective relationship. Cognitive flexibility appears to serve as a vehicle for the adaptive strategy of cognitive reappraisal but does not significantly influence the maladaptive strategy of expressive suppression. This divergence highlights the complexity of emotional regulation and suggests that cognitive flexibility may facilitate adaptive regulatory processes rather than uniformly affecting all strategies. Consequently, these results emphasize the need to further explore the distinct pathways through which cognitive flexibility interacts with varying emotional regulation strategies to impact broader outcomes such as anxiety, depression, and overall well-being.

5.8 Discussion of Resultant Model with Respect to Theoretical Framework

Based on the generic cognitive model, the full model analysis partially supports the resultant model that emotion regulation and cognitive flexibility would mediate the relationship between schemas and symptoms of anxiety and depression. The results reveal that the mediating effects were selective and operated differently depending on the type of schema, consistent with the view that distinct schema content activates specific modes and engages the reflective system in unequal ways. The finding that positive self-schemas exerted a significant protective indirect effect on depression through enhanced cognitive flexibility illustrates a functional reflective system.

Positive self-schemas significantly predicted higher levels of cognitive flexibility ($\beta = 0.270$, $p = 0.002$), and cognitive flexibility in turn significantly predicted lower depression ($\beta = -0.111$, $p = 0.019$). From the perspective of the generic cognitive model, individuals who hold positive beliefs about themselves appear to

possess a more flexible secondary processing system, which is better able to disengage from rigid, maladaptive schemas and to correct biased automatic outputs before they consolidate into depressive modes. This buffering process aligns with evidence that cognitive flexibility serves as a resilience factor enabling adaptive shifts in perspective that prevent the maintenance of depressive states (Beck and Haigh, 2014; Zafar et al., 2024; Wang et al., 2019).

Similarly, positive other-schemas showed a protective indirect effect on both anxiety and depression through reduced use of expressive suppression. The pathways also indicated that positive other-schemas significantly predicted lower expressive suppression ($\beta = -0.178$, $p = 0.010$), and expressive suppression significantly predicted higher anxiety ($\beta = 0.145$, $p = 0.019$) and higher depression ($\beta = 0.152$, $p = 0.010$). Within the theoretical framework, emotion regulation acts as the vital affective system as when positive schemas about others diminish the reliance on expressive suppression, a maladaptive regulation strategy, the mode's affective processing is more likely to proceed adaptively, thereby reducing anxiety and depressive symptoms. This finding is consistent with the framework that adaptive schemas facilitate effective emotion regulation, which in turn modulates the distress modes associated with anxiety and depression (Beck and Bredemeier, 2016; Gross, 2015).

In contrast, the indirect pathway from negative self-schemas to depression through cognitive flexibility did not reduce symptoms but it intensified them. Negative self-schemas significantly lowered cognitive flexibility ($\beta = -0.373$, $p < 0.001$), which in turn increased depression ($\beta = -0.111$, $p = 0.019$), resulting in a significant negative indirect effect. This pattern demonstrates a failure of the reflective system as described in the theoretical framework. When negatively biased self-schemas are active, they impair the secondary processing system's capacity to correct automatic distortions. The resulting cognitive rigidity prevents the deactivation of modes related to depression, further maintaining the depressive symptoms (Beck and Bredemeier, 2016; Beck and Haigh, 2014). Thus, rather than serving as a protective mechanism, cognitive flexibility in this context became a channel through which negative schemas perpetuated depression.

Several theoretically relevant pathways showed no significant effects and were excluded from the final model. No indirect effect of negative self-schemas on anxiety was found to be significant. This suggests that, for anxiety, the harmful influence of negative self-beliefs may be transmitted through other mechanisms not captured in the current model. Additionally, cognitive reappraisal as an emotion regulation strategy played no partial or full mediational role in the final model. Although cognitive reappraisal is often considered a reflective, corrective strategy within the secondary processing system (Tsolakis, 2025). It did not function as a significant mediator between any schema domains and depressive and anxiety symptoms. Thus, the reflective system's capacity to amend biased outputs can vary across individuals, and here expressive suppression, rather than cognitive reappraisal, emerged as the relevant emotion regulation pathway linking schemas to anxiety and depression.

Finally, negative other-schemas showed no mediational pathways, indicating that beliefs about others being negative did not operate through cognitive flexibility, expressive suppression, or cognitive reappraisal in relation to anxiety and depression outcomes. Within this theoretical framework, the findings suggest that negative other-schemas directly trigger modes that produce symptoms through unmeasured processes, rather than through reflective thought or emotion regulation. This aligns with the model's proposition that schemas activate distinct networks, and that failing to deactivate distress modes bypasses protective mediators.

5.9 Overall Implications and Suggestions for Future Research

i. Negative self-schemas emerged as the direct predictor of both anxiety and depression and overriding the protective influence of positive schemas. Thus, future experimental and longitudinal studies should test targeted schema-restructuring interventions (e.g., schema-focused therapy) in young adults, examining the effects of different schemas on anxiety and depression.

- ii. Cognitive flexibility has two opposite effects depending on a person's self-schemas. When self-schemas are positive, it helps protect against depression. But when self-schemas are negative and cognitive flexibility is poor, it elevates the level of depression. Researchers should use experiments to track these changes in real time, which will help clarify exactly when cognitive flexibility switches from being helpful to being risky.
- iii. Expressive suppression consistently acted as a harmful factor that directly increased the levels of both anxiety and depression. In contrast, cognitive reappraisal did not show any significant protective effect. Researchers should run controlled trials to test emotion regulation training that specifically aims to reduce suppression, rather than just promoting cognitive reappraisal, to see if this approach actually leads to measurable improvements in anxiety and depression symptoms.
- iv. The finding that cognitive reappraisal did not have a significant effect on anxiety and depression, questions the common finding that it is always helpful. It suggests that, at community level, reappraisal alone may not protect against anxiety and depression. Therefore, future studies should look at when, where, and how reappraisal is used, including the situational demands, timing, cultural appropriateness. This will help clarify the specific conditions under which reappraisal works or has no effect.
- v. Educational attainment showed no relationship with any schema domain, this warns us against assuming that more education automatically means healthier schemas. To understand how schemas are impacted by different levels of education, researchers should focus on longitudinal studies also including participants from diverse backgrounds, such as people with low literacy, and those living in rural areas.
- vi. Although not included in this study, cultural and social factors also shape emotion regulation strategies, core beliefs, and their interaction in individuals. Future studies should measure cultural elements like collectivism, family pressure, etc, and test how they influence the link between beliefs, regulation, and distress. This would support the development of culturally appropriate mental health models.

5.10 Limitations of the Study

The following limitations should be considered when interpreting the findings of this study:

- i. Due to the cross-sectional nature of the study, it is difficult to draw exact cause and effect conclusions as the path analyses give us some clues but, more longitudinal studies are required to assess the relationships between schemas, cognitive flexibility, emotional regulation, anxiety and depression. Any interpretations from the results quoted in this study should be utilized with immense caution.
- ii. This study utilized self-reported questionnaires which are subject to response biases such as recall biases. Emotional regulation including expressive suppression and cognitive reappraisal, and cognitive flexibility are such constructs which are interpreted subjectively due to which it would have affected participant's responses.
- iii. The sample included in this study included individuals from limited areas of Rawalpindi and Islamabad due to utilization of convenience sampling. This limits the generalizability of the findings. Additionally, individuals belonged only from different universities and urban areas further limiting the generalizability of the study.
- iv. Majority of the participants belonged from middle class socio-economic status which may have lowered the statistical power to explore the differences among other socio-economic status groups.
- v. Although, all the scales showed good Cronbach's Alpha values except The Cognitive Flexibility scale and the Expressive Suppression subscale from Emotional Regulation Questionnaire, as both showed acceptable internal consistency values. It may have affected the relationships between the analyzed variables.
- vi. The study relied primarily on assessing the effects on anxiety and depression while other psychopathological factors could have been also analyzed such as burnouts, aggression, etc.
- vii. Many cultural and social variables were not included in this study such as cultural norms, ethics, familial expectations, culturally imposed gender roles, collectivism, etc. These factors may have impacted emotional regulation strategies

and schemas about self and other world.

5.11 Conclusion

This study assessed the relationship between schemas, cognitive flexibility, cognitive reappraisal, expressive suppression, anxiety and depression. The findings revealed that negative self-schemas were the most powerful direct predictors of anxiety and depression, while positive self-schemas were protective. Moreover, cognitive flexibility mediated the relationships by strengthening the connection between negative self-schemas and depression, and it fully mediated the protective link from positive self-schemas to depression. Expressive suppression mediated the protective effect of positive other-schemas on both anxiety and depression, yet it independently worsened both symptoms. Educational level was not linked to schemas, and cognitive flexibility showed no relationship with emotion regulation strategies. Although, this study makes several contributions, the limitations include cross-sectional design, utilization of self-report questionnaires and limited generalizability. Future studies should explore the impact of cultural factors on schemas, cognitive flexibility and emotional regulation strategies while including individuals from diverse populations.

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Appendix A

Information Sheet

You are being asked to participate in a research study. The purpose of this form is to provide you information that may affect your decision as to whether or not to participate. Please feel free to ask if there is anything that you do not understand.

I, Muhammad Saim Ajmal, student of MS Psychology at Capital University of Science and Technology, Islamabad. I am conducting research thesis as a part of my degree requirement. This research aims to study the impact of schemas on mental health outcomes. If you decide to take part in this study you will be asked to complete a questionnaire that will take approximately 10 to 15 minutes. Please note that there are no known risks or discomforts associated with this study. Moreover, there are no direct benefit of participation. All information collected during this study will be kept confidential. Your participation is entirely voluntary, and you can refuse to participate at any time without penalty.

If you have any questions about this study now or in the future, you may contact, Muhammad Saim Ajmal at MSP243004@cust.pk & Dr. Sabahat Haqqani at sabahat.haqqani@cust.edu.pk

Informed Consent

i. I confirm that I have read and have understood the all the information for the above study

- ii. I understand that taking part in the study involves completing the questionnaire.
- ii. I understand that my participation is voluntary and that I may withdraw at any time.
- iv. I agree to take part in the above study.
- v. I confirm that I am not diagnosed with a psychological or physical illness which can hinder my ability to participate in this research.

Signature of the Participant:_____

Date:_____

Demographic Sheet

Gender:					
☐ Male	☐ Female		☐ Other(Specify):_____		
Age in years: (18 – 26)* _____					
Educational Level:					
☐ Enrolled in Bachelor's degree	☐ Bachelors		☐ Masters	☐ PhD	
☐ Diploma	☐ Other				
Marital Status:					
☐ Single	☐ Married	☐ Engaged	☐ In a relationship	☐ Divorced	
Employment Status:					
☐ Full-time	☐ Part-time	☐ Self-employed	☐ Unemployed	☐ Student	
Current socio-economic status:					
☐ Lower class	☐ Middle class	☐ Upper class			
Any diagnosed physical/mental disability: Yes/No					
<u>If it hinders your ability to participate in this research study, please do not proceed with the next sections.</u>					

Appendix B

Section 1

This section is concerned with beliefs people have about themselves and other people. Please indicate whether you hold each belief (NO or YES). If you hold the belief then please indicate how strongly you hold it by circling a number (1–4). Try to judge the beliefs on how you have generally, over time, viewed yourself and others. Do not spend too long on each belief. There are no right or wrong answers and the first response to each belief is often the most accurate.

Statement	NO	YES	Believe it slightly (1)	Believe it moderately (2)	Believe it very much (3)	Believe it totally (4)
MYSELF						
1. I am unloved	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
2. I am worthless	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
3. I am weak	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
4. I am vulnerable	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
5. I am bad	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
6. I am a failure	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
7. I am respected	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
8. I am valuable	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
9. I am talented	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
10. I am successful	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
11. I am good	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally

12. I am interesting	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
OTHER PEOPLE						
13. Other people are hostile	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
14. Other people are harsh	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
15. Other people are unforgiving	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
16. Other people are bad	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
17. Other people are devious	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
18. Other people are nasty	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
19. Other people are fair	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
20. Other people are good	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
21. Other people are trustworthy	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
22. Other people are accepting	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
23. Other people are supportive	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally
24. Other people are truthful	NO	YES	Believe it slightly	Believe it moderately	Believe it very much	Believe it totally

Section 2

This section is concerned with statements that deal with your beliefs and feelings about your own behavior. Read each statement and respond by circling the number that best represents your agreement with each statement.

Item	Statement	Strongly Agree (6)	Agree (5)	Slightly Agree (4)	Slightly Disagree (3)	Disagree (2)	Strongly Disagree (1)
1.	I can communicate an idea in many different ways.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
2.	I avoid new and unusual situations. (R)	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
3.	I feel like I never get to make decisions. (R)	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
4.	I can find workable solutions to seemingly unsolvable problems.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
5.	I seldom have choices when deciding how to behave. (R)	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
6.	I am willing to work at creative solutions to problems.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
7.	In any given situation, I am able	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree

	to act appropriately.						
8.	My behavior is a result of conscious decisions that I make.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
9.	I have many possible ways of behaving in any given situation.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
10.	I have difficulty using my knowledge on a given topic in real life situations. (R)	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
11.	I am willing to listen and consider alternatives for handling a problem.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
12.	I have the self-confidence necessary to try different ways of behaving.	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree

Section 3

This section is concerned with some questions about your emotional life, in particular, how you control (that is, regulate and manage) your emotions. The questions below involve two distinct aspects of your emotional life. One is your emotional experience, or what you feel like inside. The other is your emotional expression, or how you show your emotions in the way you talk, gesture, or behave.

Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale:

Item	Statement	Strongly Disagree (1)	Disagree (2)	Slightly Disagree (3)	Neutral (4)	Slightly Agree (5)	Agree (6)	Strongly Agree (7)
1.	When I want to feel more <i>positive</i> emotion (such as joy or amusement), I <i>change what I'm thinking about</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
2.	I keep my emotions to myself.	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
3.	When I want to feel less <i>negative</i> emotion (such as sadness or anger), I <i>change what I'm thinking about</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
4.	When I am feeling <i>positive</i> emotions, I am careful not to express them.	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
5.	When I'm faced with a stressful situation, I make myself <i>think about it</i> in a way that helps me stay calm.	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

6.	I control my emotions by <i>not expressing them</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
7.	When I want to feel more <i>positive</i> emotion, I <i>change the way I'm thinking about the situation</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
8.	I control my emotions by <i>changing the way I think about the situation I'm in</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
9.	When I am feeling <i>negative</i> emotions, I make sure not to express them.	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
10.	When I want to feel less <i>negative</i> emotion, I <i>change the way I'm thinking about the situation</i> .	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree

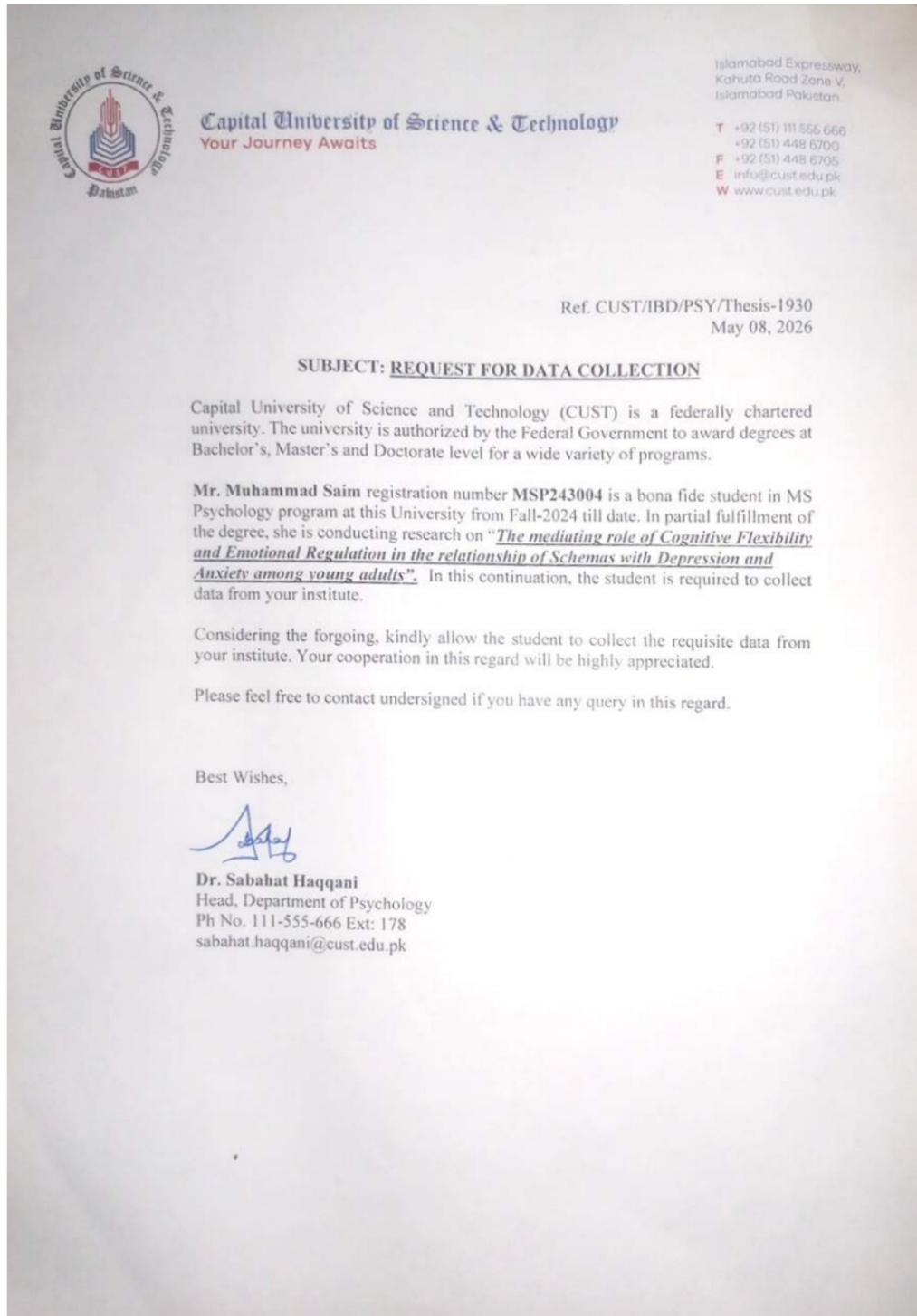
Section 4

Please read each statement and circle the number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

Score	Meaning
0	Did not apply to me at all
1	Applied to me to some degree, or some of the time
2	Applied to me to a considerable degree or a good part of time
3	Applied to me very much or most of the time

Item	Statement	0	1	2	3
2 (a)	I was aware of dryness of my mouth	0	1	2	3
3 (d)	I couldn't seem to experience any positive feeling at all	0	1	2	3
4 (a)	I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5 (d)	I found it difficult to work up the initiative to do things	0	1	2	3
7 (a)	I experienced trembling (e.g. in the hands)	0	1	2	3
9 (a)	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10 (d)	I felt that I had nothing to look forward to	0	1	2	3
13 (d)	I felt down-hearted and blue	0	1	2	3
15 (a)	I felt I was close to panic	0	1	2	3
16 (d)	I was unable to become enthusiastic about anything	0	1	2	3
17 (d)	I felt I wasn't worth much as a person	0	1	2	3
19 (a)	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20 (a)	I felt scared without any good reason	0	1	2	3





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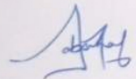
RESEARCH ETHICS COMMITTEE CERTIFICATE OF REVIEW AND SUPPORT

This is to certify that Project titled: *"The mediating role of Cognitive Flexibility and Emotional Regulation in the relationship of Schemas with Depression and Anxiety among young adults"* submitted by Scholar: Muhammad Saim MSP243004 and supervised by: Dr. Sabahat Haqqani reviewed by the Research Ethics Committee of Faculty of Management and Social Science, meets the requirements of the American Psychological Association's Ethical guidelines for Human Research and is **REVIEWED** and **APPROVED** by Research Ethics Committee of Faculty of Management and Social Sciences.

It is the Scholar's responsibility to ensure that all researchers associated with this project are aware of the conditions of approval and which documents have been approved.

The Scholar is required to notify the Research Ethics Committee in case of any amendment in the project, specifically:

- Any significant change to the project and the reason for that change, including an indication of ethical implications (if any)
- Serious adverse effects on participants and the actions taken to address those effects
- Any other unforeseen events or unexpected developments that merit notification
- The inability of the Principal Investigator to continue in that role, or any other change in research personnel involved in the project
- A delay of more than 12 months in the commencement of the project; and,
- Termination or closure of the project.



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