

**EMOTION REGULATION DIFFICULTIES AS A  
RISK FACTOR FOR INTERNALIZING  
DISORDERS: A PATH MODEL WITH  
TEMPERAMENT AND FAMILY ENVIRONMENT**

*By*  
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**JUNE 2014**

## **DECLARATION**

I, Milu Maria Anto, do hereby declare that this thesis, “**Emotion Regulation Difficulties as a Risk Factor for Internalizing Disorders: A Path Model with Temperament and Family Environment**” is bonafide record of the research work done by me under the guidance of Dr. C. Jayan, Professor & Head, Department of Psychology, University of Calicut. I further declare that this thesis has not previously formed the basis for the award of any degree, Diploma, associateship, fellowship or other similar title of recognition.

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**CERTIFICATE**

This is to certify that this thesis entitled “**Emotion Regulation Difficulties as a Risk Factor for Internalizing Disorders: A Path Model with Temperament and Family Environment**” is a bonafide record of research work carried out by Mrs.Milu Maria Anto, under my supervision and guidance, and that no part of this has been presented before for the award of any degree, Diploma, associateship, fellowship or other similar title of recognition

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To

The Director  
Directorate of Research  
University of Calicut.

Certified that Ms. Milu Maria Anto, Research Scholar under my guidance and supervision, had made necessary corrections in her PhD thesis entitled "**Emotion Regulation Difficulties as a Risk Factor for Internalizing Disorders: A Path Model with Temperament and Family Environment**" as per the suggestion of the adjudicators. Two copies were submitted with necessary correction to the Directorate of Research of Calicut University.

Supervisor & Guide

## **DEDICATION**

This thesis is dedicated to my family members, especially to  
my husband DR. Jophy and  
loving daughters Haya Eliya & Ethel Cicol  
& to all the adolescent girls.

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# **EMOTION REGULATION DIFFICULTIES AS A RISK FACTOR FOR INTERNALIZING DISORDERS: A PATH MODEL WITH TEMPERAMENT AND FAMILY ENVIRONMENT**

## **ABSTRACT**

Individuals feel different emotions in various situations and to be able to continue their every day life; they have to control these emotions. All of the components of the emotion like feelings, behaviors, and physiological responses are subject to change or maintain whether consciously or unconsciously, to adapt to the environment, with the help of the process of emotion regulation. Emotion regulation is the foundation for more adaptive social functioning and is critical for adolescent's mental health. Anxiety and depression generally called Internalizing Disorders, in youth is usually associated with difficulties in regulating emotions. A number of researchers have speculated that men and women differ in their emotional regulation strategies, skills and problems. Research drawn from various literature supports that temperamental predispositions and environmental variable, family environment both have got important role in the emergence of emotion regulation skills in adolescents. The goal of the current study is to examine the influence of temperamental factors and family dimensions on Internalizing disorders such as anxiety and depression considering emotion regulation difficulties as a mechanism of effect. This contributes to the enhancement of the etiological models of anxiety and depression and may help to develop more focused prevention and intervention programmes. Separate models for all the different types of anxiety disorders and depression help to clarify the actual mechanism through which these variables act. Thus in the current study, 2041 adolescent girls participated with an age range 13-17years and studying in 8<sup>th</sup> to plus to classes. The participants completed measures such as Difficulties in Emotion Regulation Questionnaire, Family Environment Scale, Revised Early Adolescent Temperament Scale and Revised Anxiety and Depression Scale. The collected data was analysed, with Pearson's Correlation analysis and Path Way Analysis using statistical packages such as SPSS and AMOS. Six models were prepared using path analysis for internalizing disorders such as Social Phobia, Panic

Disorder, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive Symptoms and Depression. Each model proved that family environment and temperament have got distinct mode of influence on internalizing disorders. Also emotion regulation serves the role of a mediator for temperament and family environment variables. Thus the findings from the study provide understanding about the early detection and focused management of these risk factors specifying the role of parents.

**Key Words:** Difficulties in Emotion Regulation, Family Environment, Temperament, Internalizing Disorders, Adolescent girls.



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## **ABBREVIATIONS**

DERS	=	Difficulties in emotion regulation
RD	=	Relationship Dimension
PG	=	Personal growth Dimension
SM	=	System Maintenance Dimension
EC	=	Effortful Control
SU	=	Surgency
NA	=	Negative Affect
AF	=	Affiliativeness
SP	=	Social Phobia
PD	=	Panic Disorder
SA	=	Separation Anxiety
GA	=	Generalized Anxiety
OC	=	Obsessive Compulsive Symptoms
MD	=	Depression

**CHAPTER 1**  
**INTRODUCTION**

*"A man who is master of himself can end a sorrow as easily as he can invent a pleasure. I don't want to be at the mercy of my emotions. I want to use them, to enjoy them, and to dominate them." Oscar Wilde (1992)*

During the past years, increasingly sophisticated research, at different stages of life have been elaborated the role of emotion and behaviour. Variety of emotion saturates the life of every one (Hsieh, 2010). These emotions are often portrayed as irresistible forces that exert a sweeping influence on behavior (Koole, 2008). Contemporary conceptions of emotion emphasize emotion's positive role in adaptation. It was observed by many researches that emotions tailor cognitive style to situational demands to facilitate decision making, to prepare the individual for rapid motor responses and to promote learning. Emotions are also thought to have important social functions (Gross 1999). Most of the time we may need to control, deny, mask or alter emotions in some way for some social reasons.

"In the Old Testament, one of the earliest messages God sent to Cain was that desire can lead to sin and that people must govern their desire" (Gen. 4:7). Implicit in this injunction is the idea that people have the ability to control their emotions.

Functions of emotion have been discussed from earlier periods itself. In the past Hebb conceived emotions as neural activation states without a function. But recent evidences show that emotions are functional. It facilitates our decision making, and also prepares one for rapid motor responses and provides information regarding the ongoing match between organism and environment. Emotions also fulfill social function by providing information about others' behavioral intentions, and script our social behavior (Gross, 1998)

Emotions per se are not viewed as dysfunctional, but negative emotions are often maladaptive with high intensity, long duration, and situational inappropriateness. It was conceptualized from recent studies that internalizing problems not only involve prolonged, intense expressions of anxiety and sadness but

also efforts to control or suppress negative emotions. (Zahn–Waxler, Klimes–Dougan, and Slattery, 2000).

Thompson (1994) "suggested that emotional responses should be flexible and responsive to situational cues in order to adapt to changes and environmental shifts. Learning to effectively manage emotions is recognized as key to mental health and for better functioning in school, work, and relationships. Regulating emotions require a set of complex skills which is necessary for effective adaptation and successful social negotiations in everyday life" (Macklem, 2008).

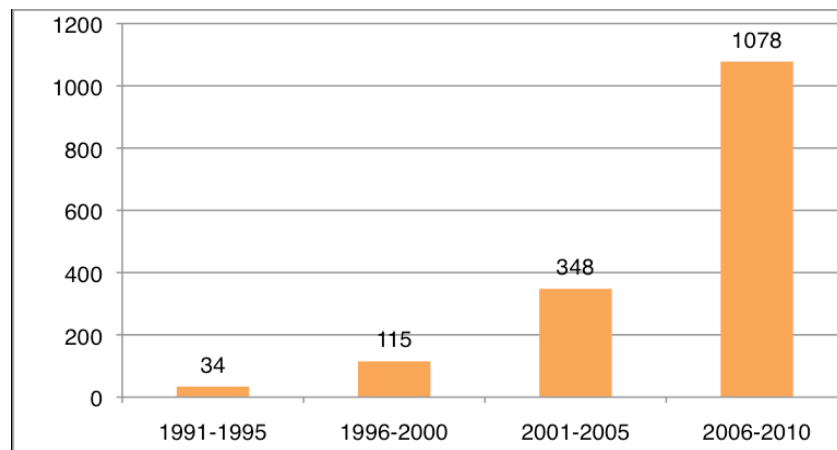
### **Emotion Regulation**

Research concerned with emotion regulation is a relatively recent innovation; even though Philosophers from Socrates have taken interest in the role emotion should play in everyday affairs. At present research on emotion regulation has wide range of applicability in a variety of fields, including developmental, personality, social, physiological, and clinical psychology (Gross, 2010). Also its roots spans around in the literature on coping, as well as attachment theory and emotion theory (Gross & Thompson, 2007).

William James in 1884 wrote about the ill effects of difficulties in emotion regulation. This type of manifestation of emotional excess or deficit, to which James refers, may play a key role in psychopathology. (Bloch, Morgan, and Kring, 2009)

A special issue to the conceptualization and mental health implications of emotion dysregulation was dedicated by an important journal named *Child Development* (Volume 75, Issue 2, March 2004). It was found that in the past 3 years alone, phenomena such as , adolescent depression, adolescent bipolar disorder, nonsuicidal self-injury in adolescents, externalizing spectrum disorders in children etc. have been viewed focusing on to the concept ‘emotion regulation’. The following figure provides a graph illustrating the growth, showing the number of peer-reviewed articles with the keyword phrase “emotion regulation” from the PsycINFO database<sup>2</sup>. (Rusk, 2011)





*Figure 1* Number of peer-reviewed articles on emotion regulation by five-year period, based on PsycINFO data (adapted from Rusk, 2011).

Self-regulation enables a flexible balance of openness to experience and protection from harm allowing a person to meet current situational demands and adaptively calibrate responses to future situations. (Laurent, 2014).

### **Definitions of Emotion Regulation**

Thompson, (1994) defined "emotion regulation as the process of initiating, maintaining, and modulating the occurrence, intensity, or duration of internal feeling states and the physiological processes related to emotions".

"Emotion regulation is the ongoing process of responding to one's environment with emotions that are both socially acceptable and context-appropriate for a given situation" (Cole, Michel, & Teti, 1994).

Gross (2001) describes a process model of emotion regulation using the following definition: "Emotion regulation includes all of the conscious and nonconscious strategies we use to increase, maintain, or decrease one or more components of an emotional response".

Gratz and Roemer (2004) defined emotion regulation as "involving the (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally appropriate

emotion regulation strategies and the flexibility to modulate emotional responses as desired in order to meet individual goals and situational demands".

Multiple components of emotion regulation have been proposed, including abilities to identify emotions, generate new emotional experiences, selectively deploy attention, and reinterpret potentially distressing cognitions, modify potentially distressing situations, and modulate response (Gross & Thompson, 2007).

"General emotion-regulation skills are important for several reasons: First, negative emotions that are not necessarily mentioned in the diagnostic criteria of a particular disorder often cue behaviour patterns associated with the disorder (e.g., anger cues binge eating; sadness cues substance abuse). Second, negative emotions not necessarily mentioned in diagnostic criteria often severely interfere with effective coping and implementation of strategies learned in treatment (e.g., anxiety impedes depressed patients from active problem solving; depressed mood and feelings of hopelessness impede anxious patients from engaging in feared situations). Finally, many patients suffer from more than one disorder which could be explained at least partly by general emotion-regulation deficits (e.g., inability to accept one's feelings likely will lead to a variety of responses, such as avoidance or rumination, that eventually lead to multiple disorders, such as anxiety and depression). Thus, the enhancement of skills that are applicable to more than one emotion can target the essence of a patient's problems. Especially with patients high in comorbidity, a focus on general emotion-regulation skills as adjunctive to disorder-specific interventions may enhance efficacy and efficiency of these interventions". (Berking, Wupperman, Reichardt, Pejic, Dippel, & Znoj, 2009)

Social encounters provide us with the opportunity to develop and exercise emotional management, by enhancing or disguising our feelings, and our expertise at these skills will also influence the outcome of the interaction. Thus emotion regulation is not an innate skill but one that develops through social interactions. (Desautels, 2008)

## **Development of Emotion Regulation Across Life Span**

"Rapid development of emotion-related self-regulation develops in the early years of life and improves slowly into adulthood. Individual differences in children's self-regulation are fairly stable after the first or second year of life". (Eisenberg, Spinrad, and Eggum, 2010)

Infants initially prompt others by negative signaling like crying. Attention from caretakers has got a positive impact on infant's emotion which has been expressed by smiling ,cooing etc. also learn ways to directly influence their own emotions, which paves the rudimentary means to autonomous emotion regulation.

Children after developing musculoskeletal control, become able to approach, withdraw from, or alter emotionally salient features of the environment and gain increasing autonomy in emotion self regulation and language development enable them to give self instructions and understand instructions from caretakers to modulate their emotional responses, considered as a core turning point ,which greatly increase the scope of emotion regulation. As their social environment expands children learn to differently express positive and negative emotions and also learn rules that govern the expression of emotions in specific situations. If significant others are successful in managing their emotions, they also learn that emotion regulation is possible. If they experience important other's emotions as being out of control, they may have difficulty regulating their own emotions.

By late childhood and early adolescence, increasingly sophisticated cognitive abilities permit new forms of emotion regulation, such as reframing, taking another's point of view. In adulthood, emotion regulatory skills continue to develop as individuals learn the rules that govern the experience and expression of emotions within a given occupational context. In the later adult years, there may be increased variability in patterns of emotion regulation. Older people often rely heavily on the management of their social environment to regulate their emotions (Gross and Munoz, 1995).

The transition from childhood to adolescence involves a number of biological, cognitive, and social changes that result in increased negative affect, heightened emotional reactivity, and increased risk for internalizing symptoms for many adolescents. Depression and anxiety disorders, for example, typically emerge during the adolescent transition and are two of the most common disorders to affect adolescents (Cohen, et al, 1993)

### **Emotion Regulation in Adolescent Period**

Adolescence is characterized by an increase in the intensity and frequency of (negative) emotions ,heightened levels of emotional variability, increases in several types of psychopathology, and increased demand for independent self-regulation.(Neumann, van Lier , Frijns, Meeus, & Koot, 2011).

"The social, biological, and psychological worlds of children develop dramatically during adolescence, evoking a variety of emotions. For example, adolescents may experience joy with their newfound autonomy and frustration with the added stress this brings. As with any time in development, emotions must be regulated in order to achieve one's goals. The hormonal and brain changes that occur during adolescence make such regulation challenging".(Hilt, Hanson,& Pollak, 2011).

"Adolescence is an important time to explore processes and correlates of emotion regulation for several reasons. First, the transition through adolescence is accompanied by physical, psychological, and social transformations that elicit novel experiences of emotional arousal. Consistent with most prevalent notion that emotional experience is especially intense in adolescence; studies indicate that adolescents experience more frequent and intense emotions than younger or older individuals. Second, many of the hormonal, neural, and cognitive systems thought to underlie the regulation of emotion appear to mature throughout the adolescent period. Third, the prevalence of various forms of psychopathology, including affective and behavioral disorders, increases dramatically during the adolescent period. A better understanding of emotion regulation during adolescence may help

us understand individual differences in mental health and adjustment during this period of increased risk". (Silk & Morris, 2003)

"Regulating emotions is a set of complex skills which is necessary for effective adaptation and successful social negotiation in everyday life. According to Shapiro emotion regulation is a key component of resilience. It is a corner stone for more adaptive social functioning and is critical for adolescent's mental health". (Hsieh, M, 2010)

The ability to appropriately express, manage, identify, and respond to emotion is necessary for social competence. Those skilled in emotion regulation are generally rated as more socially desirable, are better at handling conflict, and have better interpersonal skills. The presence of childhood psychopathology is also closely tied to emotion regulation. "Children with internalizing disorders, such as major depressive disorder, anxiety disorders, and externalizing disorders, such as attention-deficit hyperactivity disorder and oppositional defiant disorder, consistently have shown poor development of emotion regulation components". (Scanlon, 2010).

### **Emotion Dysregulation**

"Emotion dysregulation or Difficulties in Emotion Regulation, has been detected as a risk-factor associated with a number of mood disorders involving unregulated affect, such as anxiety and depression" (Gross & Munoz, 1995). Successful emotion regulation is dependent on one's ability to identify specific emotions, as different emotions may call for the use of different emotion regulation strategies (Stegge & Terwogt, 2007).

Emotion Regulation difficulties may occur if emotions are experienced as intense and overwhelming. Adolescents may exhibit behaviors associated with emotion dysregulation, including prolonged depressed mood, chronic anxiety, and risky behaviors, if emotion-regulation strategies are , not learned, or well practiced. (Scanlon, 2010).

Children with emotion dysregulation would show excessive emotional reactivity and/or emotional deficits, including constricted emotions, attenuated empathy, and contextually inappropriate affective displays. Prior investigations using normative samples have demonstrated that children with poor emotion regulation exhibit aggressive and under controlled behaviors in social interactions. (Kim, & Cicchetti, 2010).

"Emotion dysregulation still involves attempts at regulation, but the process leads to maladjustment rather than adjustment. For example, emotion dysregulation may result in poor interpersonal relationships, difficulty concentrating, feeling overwhelmed by emotions, or inability to inhibit destructive behaviors" (Hilt, Hanson, & Pollak, 2011)

"The absence of effective emotion regulation skills may be a specific risk factor in the development and maintenance of childhood anxiety, as anxious children typically exhibit marked difficulties regulating their emotions efficiently" (Eisenberg and Spinrad, 2004).

"It is important to realize that emotion regulation is not one single process but rather composed of numerous component processes. At the most basic level, these processes include (1) reading or understanding emotional signals, (2) sorting or categorizing the emotion signals as positive or negative to generate a response, and (3) enacting a behavior response" (Scanlon, 2010).

Hilt, "in 2011 also explained that several aspects of early child development may impact emotion regulation and dysregulation in adolescence. Infants are born with temperaments that may make it easier or more difficult to regulate emotions throughout life. Certain temperaments (e.g., proneness to negative affect, higher reactivity, and poor attentional control) make later emotion dysregulation more likely. Social learning, especially from caregivers early in life, and the family environment may also impact emotion regulation. Caregiver responsiveness, modeling, and discussion of emotions can set the stage for the development of patterns of emotion regulation and dysregulation. Additionally, some early childhood experiences like maltreatment, abuse and neglect, seem to have a

profound impact on the development of emotion dysregulation patterns throughout life".

Female adolescents were selected for this study because gender differences in emotional disorders emerge during the adolescent transition. While both male and female adolescents experience problems related to emotional arousal and reactivity, female adolescents in particular are at risk for internalizing problems, experiencing increases in the development of depression and anxiety symptoms. (Eastabrook, 2013)

From adolescence to adulthood it has been reported that, being female is "the strongest risk factor for internalizing problems, with females at least twice as likely as males to develop depression and anxiety" (Fan, 2011)

The reason for the above may be that, child gender is a potential source of variation in emotion socialization by parents depending on the cultural factors. "Parents hold discrepant expectations and respond differently to their sons' and daughters' expression of emotions, and boys and girls hold similar expectations about their parents' reactions to emotion displays. Compared to girls, boys' expression of sadness, fear and other vulnerable emotions is typically discouraged whereas boys' expression of anger is encouraged. Parents have been reported to preferentially support more relationship-oriented emotion regulation strategies by girls and more active, instrumental strategies by boys". (Dagne and Snyder, 2011).

Through their gender socialization, females are expected to perceive and have a greater emotional investment with their parents. This has, at least, three important implications. First, girls may be more susceptible to parental modeling and reinforcement of maladaptive emotion regulation techniques than boys. Second, when emotional connections are disturbed, their emotional development may be impaired or delayed, resulting in emotion dysregulation. (Kostiuk, & Fouts, 2002).

Gender differences in levels of specific self-reported Emotion Regulation difficulties have been reported. Female adolescents reported significantly greater emotional nonacceptance, greater emotional awareness, and less access to effective

Emotion Regulation strategies than male adolescents. Findings that female adolescents may have less access to effective Emotion Regulation strategies than their male counterparts are consistent with findings that adolescent females score higher on measures of maladaptive coping than adolescent males (Gratz and Roemer, 2004)

Child gender may also play a role in emotion regulation understanding. "Evidence suggests that girls may be more emotionally aware and have more accurate or elaborate emotion understanding than boys". (Cole, 2008).

### **Emotion regulation and Temperament**

Rothbart & Bates (2006) defined temperament as “constitutionally based individual differences” in how one responds in various domains, including attention, activity, and affect/emotion. Identifying temperamental characteristics is important in considering how children regulate emotions. It has been observed that different pathways and outcomes commonly exist for children with similar temperaments (Kochanska, 1995).

A child’s understanding of regulatory strategies may also be influenced by child temperament. Emotionally more reactive child will get more potential opportunities to learn about regulating emotion. At the same time highly reactive children might have difficulty in understanding their experiences because they become too upset and miss learning opportunities (Cole, 2008).

Chess & Thomas (1986) "proposed nine different characteristics that make up a child's temperament: activity level, sensitivity (threshold level), intensity of reaction, adaptability, distractibility, inhibition (approach/withdrawal), negative emotionality (quality of mood), persistence, and regularity (rhythmicity)". Children high or low in these areas characterize different temperaments.

Temperament, representing innate individual differences in emotional, behavioral, and biological reactivity to changes in environment (Rothbart & Bates, 1998), has been hypothesized to directly shape the display and development of Emotion Regulation strategies (Feng, Shaw, Kovacs, Lane, O’Rourke, &



Alarcon,2007). "Rothbart and her colleagues have argued that the primary components of temperament involve emotionality and emotion regulation" (Rothbart & Bates, 2006).

A debate currently exists as to whether emotion regulation is a component of temperament or a distinct construct. According to studies children's propensity towards negative emotional reactivity may influence children's need for regulation, thus it can be treated as a distinct construct. "Highly reactive children likely experience more affective arousal and may require more effort to modulate arousal than less reactive children. But less reactive children may have little need to regulate their emotions because they are rarely distressed". (Mirabile , 2006)

In the context of temperament, one framework holds that emotional dysregulation consists of three dimensions: "(a) a low threshold, or high sensitivity/vulnerability to emotional stimuli; (b) a high amplitude of emotional response; and (c) a slow return to emotional baseline". These dimensions are similar to the "difficult child" temperamental constellation described by Thomas and Chess that characterizes children who evidence irregularity of biological functions, negative responses to new stimuli, and slow adaptability to change. In time, individuals with problems regulating affect often develop maladaptive mechanisms to cope with their intense emotional experiences (Newhill, 2004).

According to Derryberry and Rothbart (1997) "three emotional defense and approach systems describe the basic dimensions of temperament". They labeled these three systems as the defense and harm-avoidance system, the approach system, and the nurturance/affiliation system. They proposed that differences in such dimensions are the basic components of temperament and the over- or under-activation of such temperamental systems promote maladaptive responding. "The development of temperament, overall, and it's reciprocal interaction with internal and external stimulation of emotion over time likely contributes to the developing child's emotion regulation" (Braciszewski, 2010). Children with inhibited or irritable temperaments may be considered to be more at risk for developing poor emotion regulation (Scanlon, 2010).

"A multidimensional representation of constitutionally based individual differences in reactivity and self regulation is the temperament model developed by Rothbart and colleagues. Putnam, Ellis, and Rothbart (2001) investigated this model in early adolescents, and found four broad temperament factors: Surgency, Negative Affectivity, Effortful Control, and Affiliation".

*Effortful Control*, denoting the ability to regulate attention and behavior, is believed to make major contributions to social adaptation. "Children high on Effortful Control may be able to regulate their emotional state by deploying their attention and thus reduce the probability of internalizing problems. High effortful control ability has got a moderating effect on negative affect that allows the deleterious effects of increased reactivity to be overridden. At the same time there is possibility that, children high in Effortful Control were also high in guilt /shame, which may predispose to feelings of anxiety and depression".( Tortella-Feliu, et al 2012)

"*Surgency*, manifested as orientation to and exploration of novelty, was comprised of high-intensity pleasure (positive loading), shyness (negative loading), and fear (negative loading), indicating that this factor largely reflects the relative activation of the BIS (behavioural inhibition system) and BAS system (behavioral activation system). Extraversion (surgency) is related to assertiveness, positive emotions, and sociability, with high scores indicating a tendency toward experiencing pleasure in novelty .High levels of Surgency (i.e., high activation and/or low inhibition) may result in externalizing problems, for instance if goals are blocked. Low levels of Surgency (low activation and/or high inhibition) may lead to internalizing symptoms". (Rothbart, 2011).

*Negative Affectivity* has been found to predict both externalizing and internalizing problems, especially in combination with adverse environmental factors ."So Negative Affectivity is a potentially negative constitutional factor that may be exacerbated through dysfunctional patterns of interaction. In children, Negative Affectivity encompasses both fear and frustration, and in adolescents mainly frustration" (Putnam,& Stifter, 2005).

"*Affiliation*, which refers to the desire for closeness with others, independent of extraversion or shyness. The affiliation system is supposed to play a role in maternal behaviors, attachment, pair bonding, and sexual behaviors. Girls tend to display a stronger affiliative style than boys, a difference that becomes more salient during adolescence. This increase in affiliative need has been proposed to make girls more sensitive to interpersonal stressors than boys who might explain why they show higher prevalence rates of internalizing disorder, starting in midpuberty. By contrast, high affiliative need might, through social support, protect against maladaptive outcomes" (Oldehinkel, Hartman, De Winter, Veenstra, and Ormel, 2004).

Moreover, early individual differences in affective temperament, particularly those reflecting emotional negativity and reactivity, appeared to influence the development of Emotion Regulation capacities (Shen, 2012).

Research has also found temperament differences in gender over numerous studies. Boys found to be more active and distractible and less persistent on tasks. Girls tend to show more effortful control, task persistence, personal/social adaptability, flexibility and reactivity (Richters, 2010)

Findings by Gresham, and Gullone, (2011) "provide evidence that the way in which individuals manage their emotions is not solely determined by predominantly dispositional factors such as personality, but also by interactions with caregivers".

A large number of researches indicated that the family care-giving environment also plays a crucial role along with temperament in children's development of Emotion Regulation skills. (Shen, 2012).

The current reviews show the importance of incorporating family environment along with temperament to understand the formation and maintenance of emotion regulation in the current sample.

## **Family Environment and Emotion Regulation**

Families and family relationships have been a major focus of research, particularly to identify risk and protective factors during adolescence. "One of the major developmental tasks that families have to accomplish is facilitating the development of self-regulation, more specifically, emotional regulation. The development of emotion regulation during adolescence occurs during the on-going dynamic process of individuals renegotiating their role in the family". (Yoon, 2012).

Family socialization shapes and influences children's expression and regulation of emotion in two ways. The first involves parents' immediate responses toward their children. These parenting behaviors both evoke the occurrence of specific types of emotion displays and shape the intensity and duration of those displays once they occur. The second source of emotion socialization in the family involves the more general emotional climate to which the child is exposed (Morris, Silk, Steinberg, Meyers, & Robinson., 2007). Beginning in infancy, children learn to regulate their emotions based on parental cues and the emotional availability of their caregivers. (Robinson, 2006)

Morris (2007) found the importance of family context in the development of Emotion Regulation (ER) in three important ways. "Firstly, children learn about ER through observation. Secondly, specific parenting practices and behaviors related to the socialization of emotion affect ER. Thirdly, ER is affected by the emotional climate of the family, as reflected in the quality of the attachment relationship, styles of parenting, family expressiveness and the emotional quality of the marital relationship". Socialization by parents can modify what events trigger children's emotional responses, the nature of those responses, and the manner in which emotions are expressed and regulated. Parents' overall expressivity, may affect children and adolescent's modeling of ER.

"When a child's emotional climate is negative, coercive or unpredictable, children are at risk in becoming highly emotionally reactive, due to frequent, unexpected emotional displays or because of emotional manipulations. In these kinds of environments, not only are children observing emotion dysregulation in

their parents, but they are less emotionally secure. In contrast, when children live in a responsive, consistent environment in which they feel accepted and nurtured, they feel emotionally secure and free to express emotions because they are certain that their emotional needs will be met. Children also feel secure emotionally when they know what behaviors are expected and what the consequences will be when they misbehave" (Eisenberg, Sheppard, Fabes, Murphy & Guthrie, 1998).

Family influences on emotion regulation have been established by many of the earlier studies. "Children raised in a home with little emotional expressiveness have difficulties reading emotion cues during conversations and exhibit less effective emotion expression. In families marked by a lack of cohesion and support, children who receive nonsupportive reactions to emotion are more likely to remain emotionally aroused, become more sensitive to anger, and become dysregulated when experiencing negative emotion. Family environments high in conflict and low in warmth place children at an increased risk for a variety of emotional and behavioral problems. In contrast, warm, responsive parents seem to have well-regulated children. Further, the effects of family conflict and support differ in impact depending on child gender, with girls appearing to be more sensitive to negative family emotional climate. In sum, parents' level of expressiveness, family conflict, support, and cohesiveness make important contributions to their adolescents' emotion learning history". (Adrian, Zeman, Erdley, Lisa, Homan & Sim, 2009).

"Children whose parents are accepting and responsive to their emotions are often able to adaptively regulate their emotions. However, children whose parents punish or disregard their emotions often have more difficulty regulating their emotions". (Hilt, Hanson and Pollak, 2011)

Families in which children are maltreated exemplify a toxic relational environment that poses considerable risk for maladaptation across diverse domains of development. Earlier studies suggest that maltreated children are at increased risk for internalizing and externalizing problems. Such children also exhibit greater difficulties in regulating and differentiating affective experiences than do nonmaltreated children. In maltreating families, due to the nonavailability of parents,

support and scaffolding can not be provided when their children are upset, from which children can learn constructive strategies to regulate their emotional states. (Morris, Silk, Steinberg, Myres & Robinson, 2007).

Houlberg and colleagues examined "the protective nature of family interactions for children and adolescents ages 7-15 years old who were living in high-risk communities and how these family interactions were related to anger regulation and exposure to violence. They found that more positive perceptions of family interactions by the adolescents were associated with better emotion regulation and less exposure to violence". Therefore when adolescents perceived greater cohesion, adaptability, and support from their parents, this created an emotional climate that enhanced their emotion regulation.( Houlberg, Henry, and Morris,2012).

"Another important mechanism through which the family impacts children's ER is through the amount of emotion, both positive and negative, expressed verbally and non-verbally in the family. Parental expression of positive emotion has been linked to children's prosocial behavior, social competence, emotion understanding, positive emotionality, and quality of the parent-child relationship" (Morris, Silk, and Robinson, 2007).

Family systems theory by Bowen, provides a model whereby adolescents and parents have mutual influence on each other throughout the development process. "intrapersonally, a well-differentiated adolescent is able to separate thinking and feeling, and is able to do both spontaneously and adaptively, whereas interpersonally, a well differentiated adolescent is able to separate his or her thoughts and feelings from those of the parents, and take definite positions on issues .Undifferentiated adolescents have trouble separating thoughts and feelings, are often psychologically overwhelmed by what they feel, and may be enmeshed with their parents' emotions. Cohesive and flexible family environments that provide warmth without excessive enmeshment may provide sufficient conditions to help adolescents regulate emotions and explore autonomy in emotion regulation with peers". (Kivisto, 2011).

Children with home environments that either lack support for emotion expression or that provide examples of poor emotion regulation are likely to have underdeveloped emotion regulation skills (Scanlon, 2010). Parental behaviour towards children's emotions plays an important part in the development of children's emotional self-regulation. (Roque, 2010)

"The models of emotion regulation the children develop based on family experiences, shape their perception and experience in interpersonal relationships in the broader social context. Consequently, girls with low levels of positive emotion and negative experience from family context may be less able to engage in positive, rewarding social interactions outside of the family, which may further exacerbate their vulnerability for depression" (Feng, 2009).

Many theorists propose that, Emotion Regulation processes are developed and shaped by an individual's interactions within close relationships such as the family (Saarni, 1999). Perceptions of family cohesion are associated with lower levels of depression and aggression. This conclusion was proven for girls when examining internalizing problems. "Given that girls tend to be more relationally oriented, it may be that they are more affected by both family discord and unity and girls with internalizing difficulties may be particularly sensitive to these family cohesion variables. It should also be acknowledged that adaptive ER behaviors could simply reflect low overall emotional reactivity (e.g., temperament) to a stressor or a lack of environmental challenge in which adaptive regulation efforts are readily enlisted". (Adrian, Zeman, Erdley, Lisa, Homan & Sim, 2009).

Children growing up in an environment failing to provide consistent and appropriate opportunities for development are more likely to internalize negative self-perceptions or self-schemas which, in turn, increase the risk of adult psychopathology, especially that of anxiety and depression (Josefsson, Jokela, Hintsanen, Cloninger, Pulkki-Råback, Merjonen, Hutri-Kähönen, & Keltikangas-Järvinen 2013).

"Adolescent girls with difficulties identifying and expressing their negative emotions within an invalidating environment were less equipped to manage strong

negative emotional experiences in adaptive ways" (Sim, Adrian, Zeman, Cassano, Friedrich, 2009).

The specific characteristics in child's temperament such as high negative emotions are more vulnerable to parenting styles. For example, children with difficult temperaments face a higher risk for adjustment problems under unfavorable family conditions or poor parenting (Richters, 2010).

Children with difficult temperaments are also more vulnerable or prone to the effects of family stress, discord, and negative child-parent relationships than children with easy temperaments, who are more resilient to such effects. "Children with difficult temperament in families of high conflict have the most susceptibility to both internalizing and externalizing behaviors, whereas children of easy temperaments displayed less internalizing and externalizing behaviors, regardless of family conflict" (Ramos, Guerin, Gottfried, Bathurst, & Oliver, 2005).

Thus family environment, temperament and emotion regulation / dysregulation have got an important role in the context of internalizing disorders.

### **Emotion Regulation, Temperament and Family Environment on Internalizing Disorders**

The most common forms of child and adolescent psychopathology have been categorized into two broad classes: internalizing and externalizing problems. Whereas externalizing problems are characterized by behaviors that are harmful and disruptive to others, internalizing disorders signify a core disturbance in introjective emotions and moods (Zhan–Waxler, Klimes–Dougan, Slattery, 2000). Recently one of the important goals for research in the field of developmental psychopathology was found to be Internalizing problems in childhood and adolescence, such as anxiety and depression (Bolger and Patterson, 2001).

Anxiety and depression are among the most prevalent mental health problems throughout childhood and adolescence. According to the recent findings, 15% - 24% of youth will experience an anxiety disorder, and 14% to 24% will suffer from major depression prior to age 18 years. Children with anxiety and



depression are vulnerable to a host of social and academic problems, including difficulties making friends and focusing on schoolwork, school refusal, and lower academic achievement. (Fox, 2010). These rates are likely to be an underestimation of actual prevalence, given that symptoms can be difficult to detect. Sometimes traditional, discrete methods of diagnosis may exclude subclinical cases of anxiety and depression in children (Fan, 2011).

A variety of emotional and social competence variables have been identified as important. Included in these are a number of interpersonal factors and family relationships as well as intrapersonal factors such as temperament. (Easterbrook, 2013)

Risk factors for anxiety and depressive disorders in children have got both genetic and environmental influences. Particularly, temperamental factors and environmental variables such as family environment have been strongly related to internalizing disorders. Relatively few researches have examined these variables in tandem and little is known about the mechanism through which they operate. In the current study emotion dysregulation has been treated as a mechanism through which temperamental factors and family environment influence anxiety and depressive disorders.

Temperament features are considered vulnerability/resilience traits, which, in the face of adversity, set in motion processes that cause the development of psychopathology, or protect against it. In other words, psychopathology is regarded as a possible outcome of an unfavorable person–environment interaction. Interactions between temperament and parenting behaviors, in that easily frustrated child is overly sensitive to parental overprotection and lack of emotional warmth; and fearful children (girls) tend to be sensitive to parental rejection in particular. "The interaction between parenting and temperament is interesting because it underlines that environmental influences may have differential effects, depending on an individual's temperamental make-up, and points to the potential effectiveness of integrating children's temperament in parent training programs" (Oldehinkel., Veenstra., Ormel., Winter., and Verhuls, 2006).

Comparatively few studies have been reported combining these variables. Also in adolescents the studies in Indian context was found to be very less in number. "Anxious children report they are less capable of flexible control of attention (i.e., the ability to pay attention to a task over time and the ability to voluntarily move attention from one stimulus to another), a crucial element in emotion regulation" (Muris, Ollendick 2006). "In a study by Suveg and Zeman (2004), anxious children reported lower self-efficacy in regulating sadness, worry or anger compared to non-anxious children".

Identifying early contributors to the development of internalizing problems could contribute to increased understanding of how early experiences influence human development, and could aid in the design of prevention and intervention efforts and reduce these risks (Bolger and Patterson, 2001).

Earlier researches have shown the strong relation between temperament, family environment and internalizing disorders, but relatively few research have examined these variables in detail and little is known about the specific mechanisms by which such effects operate. Apart from this, in the current study emotion regulation difficulties have been taken as a mediator between family environment factors and temperament. Our understanding about the above details can be utilized to form a model for the preventive work of internalizing disorders especially at an earlier stage by working with adolescents.

### **Significance of the Study**

The current reviews of the studies reveals that subclinical cases of anxiety and depression, clinically known as internalizing disorders, in children and adolescents were often neglected and most of the time this has been even misinterpreted. Research to date contributed to our knowledge about potential etiological and maintaining factors of internalizing disorders, anxiety and depression, but significant gaps remain. Very few studies have examined the actual mechanism of family environment and, temperamental factors which together helps in the development of emotion regulation in children and adolescents, which in turn contribute to the development of internalizing symptoms. The current study is an

attempt to address the role of emotion regulation as a mediator and the actual mechanism by which all these variables act upon anxiety and depression. It may help in the early identification of symptoms and provide a model for parents, teachers and clinicians to acknowledge the early signs and symptoms and even prevent the emergence of such problems.

### **Statement of the Problem**

Effective management of internalizing symptoms such as anxiety and depression in adolescent population is always under investigation. Better models are required for approaching the problem in a better way. The current study tried to propose a model for internalizing disorders in adolescent girls, from different parts of Kerala State, giving focus to some important variables such as emotion regulation, family environment and temperament. The problem of the study has been entitled as ‘Emotion Regulation Difficulties as a Risk Factor in Internalizing Disorders: A Path Model with Temperament and Family Environment’.

### **Definitions of the Key Terms**

#### **Emotion Regulation**

Emotion regulation consists of people’s active attempt to manage their emotional states. Emotion regulation subsumes the regulation of all states that are emotionally charged, including moods, stress, and positive or negative affect.

#### **Difficulties in Emotion regulation**

A maladaptive pattern of regulating emotions that may involve a failure of regulation or interference in adaptive functioning.

#### **Internalizing Disorders**

Internalizing disorders signify a core disturbance in introjective emotions and moods. Anxiety and depression are among the most prevalent mental health problems throughout childhood and adolescence. Anxiety is a natural response and a necessary warning adaptation in humans. Anxiety can become a pathologic disorder

when it is excessive and uncontrollable, requires no specific external stimulus, and manifests with a wide range of physical and affective symptoms as well as changes in behavior and cognition.

Depression in children and adolescents is characterized by persistent sadness of mood, irritability, low self esteem, somatic complaints, and recurring thoughts of death or suicide. In children both anxiety and depression are closely interlinked

### **Temperament**

Temperament, representing innate individual differences in emotional, behavioral, and biological reactivity to changes in environment (Rothbart & Bates, 1998). The major aspects of temperament are effortful control, surgency, negative affect and affiliativeness.

### **Family Environment**

Families and family relationships have been a major focus of research, particularly to identify risk and protective factors during adolescence. It indicates one's perception of the family climate at home. Family environment influence the development of emotion regulation of a child. Family environment is measured by relationship dimension, personal growth dimension and system maintenance dimension.

**CHAPTER 2**  
**REVIEW OF LITERATURE**

The present chapter provides a brief review of literature (both theoretical and empirical) related to the main variables under investigation. It also gives us an idea about the ongoing researches in the present area. The following studies provide us with the knowledge of the general conceptualization and specific challenges which can be expected in the ongoing research, and also helps the investigator to understand the problem from different dimensions. The review materials collected were classified under two main headings such as:

- ❖ Theoretical reviews and models
- ❖ Empirical Reviews:
  - Emotion Regulation and internalizing disorders
  - Emotion regulation, temperament and internalizing disorders
  - Emotion regulation, temperament, family environment and internalizing disorders

### **Theoretical Reviews on Emotion Regulation**

Contemporary research on emotion regulation has its roots in the study of psychological defenses, psychological stress and coping , attachment theory, and, of course, emotion theory. Emotion regulation first gained currency as a distinct construct in the developmental literature, and then subsequently in the adult literature. (Gross, 2006)

### **Models of Emotion Regulation**

Effective regulation of emotions has been viewed as a developmental achievement that serves as a prerequisite for numerous other developmental tasks. Specifically, because powerful emotions have the potential to disorganize and/or disrupt multiple psychological processes, modulation of their experience and expression (through both intrapsychic and interpersonal processes) has been considered essential for basic state regulation, behavioral exploration, cognitive processing, and social competence. Research on emotions in the past 20 years has increasingly portrayed emotions as highly functional phenomena of crucial

evolutionary significance and biological grounding—in individual as well as in social and cultural terms. The concept of emotion regulation has become popular in the psychological literature. Searches of general literature reveal hundreds of diverse studies that either used the term directly or indirectly. Emotion regulation refers to the attempts to influence the types of emotions people experience, when they experience these emotions, and how these emotions are expressed and experienced (Gross, 1998).

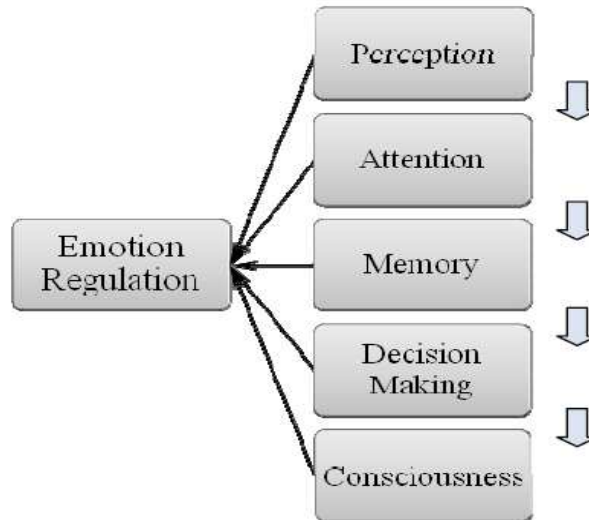
### **The Psychoanalytic Tradition**

One important precursor to the contemporary study of emotion regulation is the psychoanalytic tradition. "This tradition emphasizes the conflict between biologically based impulses and internal and external restraining factors. Freud used anxiety as a common term for negative emotions and a discussion of his views on anxiety regulation ideally would be couched in a general psychoanalytic theory of affect. Maladaptive defences are thought to develop as children associate situations or impulses with high levels of anxiety, and learn to regulate this anxiety through idiosyncratic and problematic forms of anxiety regulation. Treatment consists of learning new ways to regulate anxiety, in part through a 'corrective emotional experience' in which dreaded consequences of impulse expression fail to materialize".

### **The Cognitive Model of Emotion Regulation**

"Philippot, Baeyens, Douilliez and Francart (2004) suggested that emotion regulation may be not a simple phenomenon but a process consisting of several related systems: perception, attention, memory, decision making, and consciousness. For instance, one's perception of loss may trigger an emotional response. Although one can perceive a variety of information from various sources, he or she usually selectively pays attention to only a particular part of information. Moreover, the memory of one's past experiences, namely cognitive schemas, also influence human affective behavior and affect decision making. Actively making decisions and taking actions could also regulate emotions and minimize the potential negative effects of events. In addition, Philippot and his colleagues also recognized the importance of

the reflexive consciousness of emotional experience in the whole process of emotion regulation. Overall, Philippot and his colleagues' model offer a foundation for understanding the process of emotion regulation".



*Figure 2* The cognitive model of emotion regulation (adapted from Philippot, Baeyens, Douilliez and Francart.,2004).

### **Process Model of Emotion Regulation**

"Gross (2001) carefully examined how individuals experience, control, influence and express their emotions and proposed the process model of emotion regulation. Gross suggested that emotional response tendencies involve experiential, behavioral, and physiological systems, and could be modulated in various ways".

"This model suggests that emotions may be regulated either by manipulating the input to the system (antecedent-focused emotion regulation) or by manipulating its output (response-focused emotion regulation). Antecedent-focused emotion regulation includes situation selection, in which one approaches or avoids certain people or situations on the basis of their likely emotional impact; situation modification, in which one modifies an environment so as to alter its emotional impact; attention deployment, in which one turns attention toward or away from something in order to influence one's emotions; and cognitive change, in which one



reevaluates either the situation one is in or one's capacity to manage the situation so as to alter one's emotions. Response-focused emotion regulation also includes a multiplicity of types, such as strategies that intensify, diminish, prolong, or curtail ongoing emotional experience, expression, or physiological responding. The fundamental claim of this model is that emotion regulation strategies differ in when they have their primary impact on the emotion-generative process".

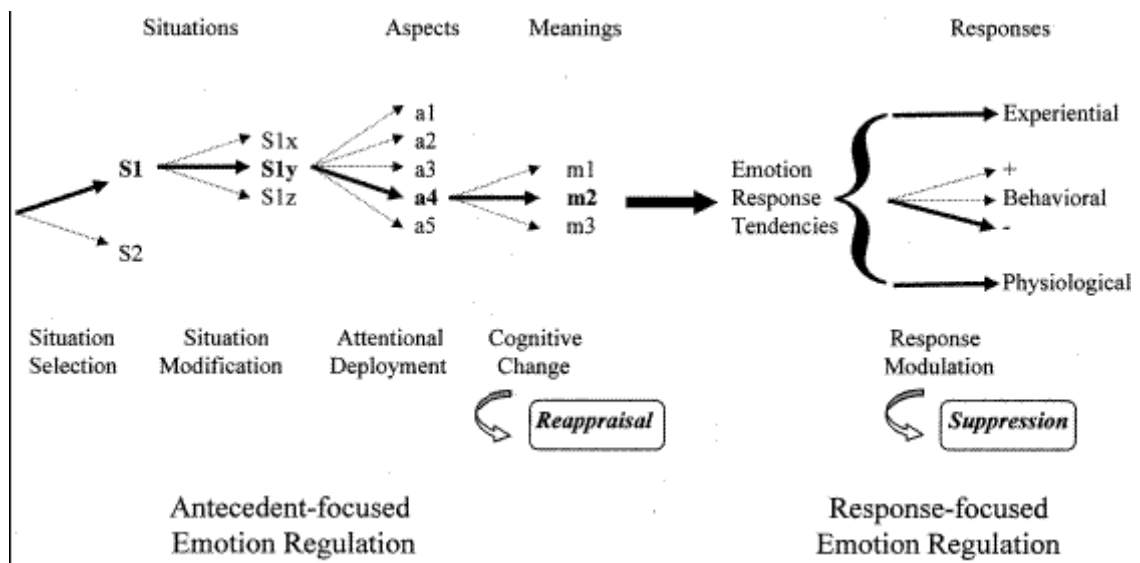


Figure 3 Process Model of Emotion Regulation (adapted from Gross, 1998).

"According to Process model of emotion begins with an evaluation of external or internal emotion cues. Certain evaluations trigger a coordinated set of behavioral, experiential, and physiological emotional response tendencies that together facilitate adaptive responding to perceived challenges and opportunities. However, these response tendencies may be modulated, and it is this modulation that gives final shape to manifest emotional responses".

### Functionalistic theory of emotion regulation

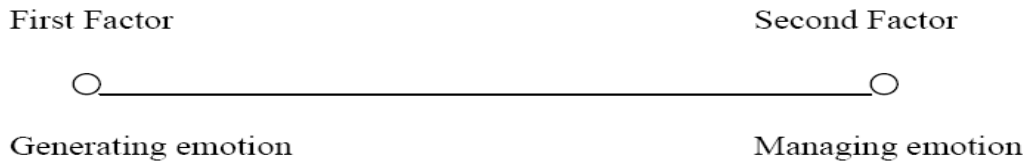
"The functionalist theory of emotion provides a foundation for understanding the importance of emotion regulation to adaptive psychosocial functioning. Functionalist theory defines emotions as "bidirectional processes of establishing,

maintaining, and/or disrupting significant relationships between an organism and the (external or internal) environment." Emotions may be experienced as subjective feeling states, physiological arousal, urges, cognitions, or behavioral expressions, and they function to alert the individual and persons in the environment to the occurrence of an important event and to organize goal-directed behavior (Barrett & Campos, 1987). From a functionalist perspective, each emotion is associated with a unique motivational function for the individual and the social environment. For example, sadness functions to signal the self and others that assistance is needed; anger organizes behavior to overcome an obstacle to goal-attainment".

"Functionalist theory suggests that emotional experience and expression are influenced by personal characteristics such as biological factors and learning history, the emotion-eliciting event, and the social context" (Barrett & Campos, 1987; Saarni, Mumme, & Campos, 1989). Learning to attend to emotional information and to modify emotional experience and expression is essential to goal attainment and adaptive functioning.

According to Thompson (1994), "Emotion regulation consists of the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions... to accomplish one's goals." (Thompson, 1994). "Coping strategies for managing negative affect represent only one facet of emotion regulation, and although emotion regulation is often associated with the diminishing of physiological arousal or the minimizing of emotional expression, effective emotion regulation depends on the context and at times may involve intensifying emotions (Thompson, 1994). Positive emotions should also be regulated and, the healthy emotion regulation is determined by ability to experience and maintain positive affect" (Cole, Michel, & Teti, 1994). "As implied in Thompson's (1994) definition, other aspects of emotion regulation include the ability to attend to and monitor emotional events, to correctly interpret internal and external emotion cues, and to implement effective regulatory strategies for the expression of positive and negative affect".

**Two factor models (Campos, Frankel, & Camras, 2004).**



*Figure 4* Two Factor Model of Emotion Regulation (adapted from Campos, Frankel, & Camras, 2004).

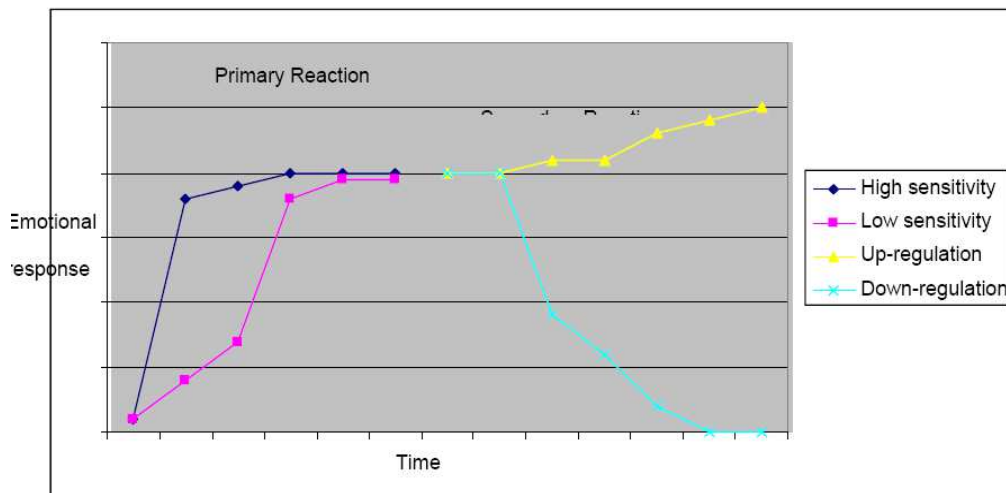
The first factor includes a process that generates emotion. The second factor takes account of managing an emotion after it is elicited. These two factors can be used to appropriately manage or mismanage emotion.

**Model of emotional sensitivity versus emotional regulation (Kuhl (2008) and Koole (2009))**

"Model of Emotion Sensitivity versus Emotion Regulation that takes into account biological factors such as temperament and individual differences in emotional sensitivities. The model consists of two reactions: (a) primary reaction, and (b) secondary reaction. The primary reaction implies that individuals' emotional experiences are heavily impacted by their level of emotional sensitivity. Individuals with high emotional sensitivity will quickly have a high level of emotional response. Individuals with low emotional sensitivity will take a longer time to reach high levels of emotional response. After individuals reach a high level of emotional response, they experience the secondary reaction which involves emotion regulation. The secondary response consists of two types of emotion regulation: (a) up-regulation, and (b) down-regulation. Up-regulation increases the degree of emotional response and down-regulation decreases the magnitude of emotional response".

Koole (2009) also organizes "the emotion regulation strategies using three emotion-generating systems: (a) attention, (b) knowledge representation, and (c) body manifestations of emotion, and three psychological functions: (a) need-oriented, (b) goal-oriented and (c) person-oriented. He also identified the relevant

empirical emotion regulation strategies in regard to these systems and functions. Need-oriented emotion regulation refers to individuals' needs to experience low levels of negative and high levels of positive emotion. Goal-oriented emotion regulation is driven by a single verbally describable goal, standard, or job that could be motivated by people's belief or emotionally charged information. Person-oriented emotion regulation sustains the truthfulness of individuals' personality systems, which include their desires, objectives, intention, and other personal-factors. It should be noted that unlike the aforementioned theorists' emotion regulation strategies, Koole (2009) does not formally include environmental factors as a part of his categorization of emotion regulation strategies, and does not include the manipulation of environment. This is additional evidence of how different theorists view emotion regulation".



*Figure 5* Model of emotional sensitivity versus emotional regulation (adapted from Koole, 2009).

Table 1

*Categorization of Emotion Regulation Strategies, Koole, 2009)*

Emotion generating system	Psychological function		
	Need-oriented	Goal-oriented	Person-oriented
Attention	Thinking pleasurable or relaxing thoughts; Attentional avoidance	Effortful distraction; thought suppression	Attentional counter-regulation, Meditation Mindfulness training
Knowledge	Cognitive dissonance reduction Motivated reasoning Self-defense	Cognitive reappraisal	Expressive writing, Specification of emotional experience; Activating stored networks of emotion knowledge
Body	Stress-induced eating Stress-induced affiliation	Expressive suppression Response exaggeration Venting	Controlled breathing Progress muscle relaxation

**Implicit theories of emotion and emotion regulation**

The major discussions under implicit theories of emotion comprises the ideas that, individuals who believe emotions are fixed should be less likely to believe that they can actually modify their own emotions. On the other hand, individuals who believe emotions are malleable should be more likely to believe that they possess the ability to control their emotions. Individuals who view emotion as fixed have little incentive to try to modify their emotions by using antecedent strategies such as cognitive reappraisal. On the other hand, individuals who view emotion as malleable should try to actively modify their emotions by changing their appraisal of emotion-eliciting events. Individuals frequently separate the experience of emotion from its expression. This, in part, is because individuals are able to suppress or mask the expression of their feelings in certain situations without modifying their emotion experience (Gross, 1998). Thus the current discussions suggest that implicit theories of emotion might be focused on emotion experience and thus has little or no bearing on emotion expression.

The review of literature has been divided into theoretical and empirical findings. Most of the theories restrict their explanations on Emotion Regulation to the experiential aspects without giving much importance to how it operates and how to manage the negative aspects. Psychodynamic theory explained the concept on anxiety regulation which is equated as emotion regulation. Also cognitive model described the basic cognitive determinants of emotion regulation. Functionalistic theory extended the determinants to social aspects and draws the relation between emotion regulation and motivation. Two factor theories pointed the two aspects such as how emotions are generated and what is the importance of managing emotions. In another theory Emotional Sensitivity Vs Emotion regulation, the proponents of the theory briefly describe the role of emotional sensitivity in emotion regulation. Implicit theory focuses on emotional experience rather than to emotional expression. None of the theories focuses on to the actual relation of emotion/emotion regulation on to the current behavior and its relation to psychological disturbances and also no further clarification regarding how to manage difficulties in emotion regulation.

But apart from the above theories, the Process theory of emotion proposed by James J Gross explained how individuals experience, control and express their emotions and the situational factors affecting them. He also proposed effective management of emotion by manipulating either the situational factors or outcome factor such as response to emotion arousing situations. Also suggested that emotion regulation strategies depend on the emotion generating processes.

The current models for emotion regulation and internalizing symptoms primarily focused on to the process theory by giving importance to the situational and predisposed factors and its role to the generation of Emotion Regulation, and how it is related to the psychopathological conditions. The antecedent factors determine whether emotion is regulated or dysregulated and which in turn influences the response such as whether the individual effectively manage their emotions or may end up in maladaptive behaviours.

### **Other explanations**

Izard and colleagues discuss emotion regulation from the perspective of Differential Emotions Theory, and Thompson discusses emotion regulation from the perspective of Developmental Systems Theory. Although very different, both analyses demonstrate how adult research on the neural correlates of emotion and emotion regulation informs developmental research on emotion regulation, and how the development of emotion regulation sheds light on healthy and unhealthy emotion regulation in adults. "Campos and colleagues offer a view of emotion regulation that is equally applicable to the developmental and the adult literatures; they review research in both traditions and point to implications for future research on emotion regulation, as studied by researchers from any discipline".(Tamir, 2011).

### **Empirical Reviews**

#### **Emotion Regulation**

The study about emotion and its regulation has been a focus of research for the past few years. The role of emotion in various aspects of human behaviour has been stressed by many researchers. General discussions about this concept have been presented below.

Difficulties in emotion regulation are common among a broad range of mental disorders, so that the effectiveness of current psychological interventions for mental disorders can be improved by: "(a) identifying general emotion-regulation skills that are integral to the development, maintenance, and treatment of a broad range of mental disorders; (b) developing non-disorder-specific interventions that can enhance these skills; and (c) incorporating these interventions into treatment packages that also contain disorder-specific components" (Gross & Munoz, 1995).

Ann-Margret (2003), "in their study investigated relations between emotionality, emotion regulation, and children's behavioral adaptation in a

longitudinal design. Mothers rated emotionality and emotion regulation related to anger, fear, and positive emotions-exuberance for 151 children at age 5 and later at age 6 years 6 months. Preschool ratings at age 6 (n=125), maternal ratings at age 6 years 6 months (n=133), and elementary school ratings at age 8 (n=135) of problems and competence were also collected. High anger emotionality and low regulation of positive emotions and exuberance predicted externalizing problem behavior and prosocial behavior. High fear emotionality and low fear regulation predicted internalizing problem behavior. There were few interactive effects of emotionality and regulation".

In a study of college students' daily emotion regulation strategies, Gross, Richards, and John (2006) noted that it was a novel experience for many young adults to think explicitly about their goals and strategies for emotion regulation. In their conclusion, Gross and colleagues suggest that one form of preventive intervention for high school and college students would be to increase their awareness of ideas from contemporary research on emotion regulation.

Mennin, Holaway, Fresco & Moore (2007) "conducted exploratory factor analyses on factors of emotion to demonstrate 4 factors—heightened intensity of emotions, poor understanding of emotions, negative reactivity to emotions, and maladaptive management of emotions—best reflected the structure of 4 commonly used measures of emotion function and dysregulation".

Kassel, Bornovalova, & Mehta (2007) in their prospective study "examined the predictive utility of Negative Mood Regulation (NMR) expectancies with respect to its ability to predict residual change in both depressive and anxiety symptoms over an 8-week time frame in a sample of 322 college students. Negative correlation was found between NMR expectancies and depressive and anxiety symptomatology, as well as with maladaptive coping style. NMR expectancies were positively associated with self-reported adaptive coping. Hierarchical regression analyses revealed that, even when controlling for age, sex, baseline levels of affective distress (depression or anxiety), and coping styles, NMR expectancies predicted change in both depressive and anxiety symptomatology".



Gratz (2007) when treating emotion dysregulation among deliberately self-injuring clients, a growing body of clinical and empirical literature suggests the value of psychological treatments that emphasize emotional acceptance and promote both adaptive ways of responding to emotional distress and the control of behaviors in the face of emotional distress. Two treatments targeting both emotion dysregulation and emotional avoidance have been developed to treat self-injury, and results of randomized controlled trials provide support for their efficacy. Teaching clients with self-injury with more adaptive ways of responding to their emotions may decrease emotion dysregulation and, consequently, the need for self-injury.

"There is empirical evidence that emotion-regulation skills are involved in the development, maintenance, and treatment of mental disorders. Cross-sectional studies also prove that psychopathology to be associated with deficits in various emotion regulation skills. Longitudinal studies have also demonstrated that emotion-regulation skills predict status of mental health at later points in time. Neuroimaging studies indicate that successful emotion regulation involves brain areas that have been found to be functionally impaired in subjects suffering from mental-health problems. Finally, mediational and experimental studies have demonstrated that emotion-regulation skills mediate the effects of a stressor on the development of psychopathological symptoms and influence emotional responses toward experimentally induced emotions and/or components of emotions". (Berking, Wupperman, Reichardt, Pejic, Dippel & Znoj., 2008)

Izard, Stark, Trentacosta & Schultz (2008) explained that individuals form emotional schemas during their life which interact dynamically and continually. Favourable behavioural outcomes can be attained with concepts and techniques that promote emotion regulation, utilization etc

The role of emotional dysregulation and coping responses to peer provocation in predicting peer victimization was investigated by Spence, Young, Toon, & Bond (2009). "255 children aged 11-14 years were participated in the study and assessed on two occasions at a 3-month interval. A cross-sectional study shows that, gender as a moderator between emotional dysregulation and victimization.

Girls who reported high levels of victimization tended to experience problems in the emotional regulation of anger and greater use of internalizing and aggressive coping strategies. Boys who reported high levels of victimization were more likely to experience emotional dysregulation of sadness and reported greater use of internalizing coping responses. Emotional dysregulation of anger, and coping responses to peer provocation that involve aggressive reactions or expressions of emotional distress, increased the risk of future victimization in both genders in longitudinal evaluation. Training in emotional regulation and coping skills for children at risk of persistent victimization was suggested by the investigators as a preventive measure".

Kivisto (2011) "investigated social regulation of emotion during adolescence and emotion regulation as mediating factor between multiple aspects of adolescent development and adjustment. 64 community adolescents completed self-report, interview, and physiological procedures (salivary cortisol and respiratory sinus arrhythmia), while one of their parents also completed survey measures. Emotion regulation was found to mediate the developmental context and adolescent depressive symptoms, alcohol problems, and peer aggression". The importance of intervening at the level of emotion regulation was stressed in the study.

Hopp, Troy, & Mauss (2011) "examined the importance of implicitly valuing emotion regulation translates into better psychological health in individuals who use adaptive emotion regulation strategies. Study was conducted in a community sample of 222 individuals (56% women) who had recently experienced a stressful life event. Results show that individuals who implicitly valued emotion regulation exhibited greater levels of psychological health, but only when they were high in cognitive reappraisal use. The findings suggest that salutary effects of unconscious emotion regulation processes depend on its interplay with conscious emotion regulation processes".

Anestis, Bagge, Tull, & Joiner (2011) in their study indicated that "emotionally dysregulated individuals - those with low distress tolerance and high negative urgency - exhibited higher levels of suicidal desire, as indexed by perceived

burdensomeness and thwarted belongingness. In contrast, emotionally dysregulated individuals exhibited lower levels of the acquired capability for suicide and physiological pain tolerance. Although emotion dysregulation may drastically increase the likelihood of suicidal desire, it simultaneously serves as a form of protection against lethal self-harm".

Dagne and Snyder (2011) studied a "community sample of 267, 5-year-old boys and girls, about relationship of maternal hostile and depressive moods to children's down regulation of unprovoked anger and sadness/fear. The speed of children's down regulation of unprovoked anger and sadness/fear was based on real-time observations during mother-child interaction. As mothers reported higher depressive mood, both boys and girls were faster to down regulate anger displays as those displays accumulated during mother child interaction. The speed of boys' down regulation of anger and of sadness/fear was not associated with maternal hostile mood. As mothers reported more hostile mood, girls were faster to down regulate displays of sadness/fear". It can be concluded from the data that frequent exposure to different negative maternal moods affect children's expression and regulation of emotions in relatively specific ways.

McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema. (2011). "Emotion dysregulation appears to serve as a risk factor for, rather than a consequence of, psychopathology in adolescents. These findings have important implications for preventive interventions targeting adolescents and suggest that techniques that promote emotional understanding and the adaptive expression and modulation of negative emotions should be incorporated into existing interventions".

Erisman and Roemer (2010) investigated the correlational relationship between mindfulness skills and emotion regulation in an attempt to elucidate the role of mindfulness in healthy emotion regulation. Questionnaires were distributed to 404 (254 female and 191 male) undergraduate students at a large, urban university. Results indicate that mindfulness does correlate with emotion regulation, even while controlling for symptoms of depression, anxiety and stress. These results provide

support for the usefulness of mindfulness skills in facilitating adaptive emotion regulation.

"In a Cross-sectional study by Larsen, et al, in 2012 has shown a positive association between expressive suppression and depressive symptoms. These results have been interpreted as reflecting the impact of emotion regulation efforts on depression. it is also possible that depression may alter emotion regulation tendencies".

Dennis, O'Toole, & DeCicco (2013). The neuroscience literature on emotion regulation has described the "neural architecture" of emotion regulation in a way that distinguishes between two complementary but highly interconnected neural systems: a ventral system that underlies emotional arousal, emotional significance evaluation, and motivational processes and a dorsal system that underlies relatively effortful, executive control functions such as attention regulation and cognitive control.

### **Emotion Regulation and Family Environment**

"General psychosocial theories of developmental psychopathology stresses that family environment plays a significant role in forming both adaptive and maladaptive functioning of children. Most of the theories of depression and anxiety assert that faulty parent-child relationships play a major role in the aetiology of these disorders. Several studies have shown that insecure attachment and parenting characterized by coldness, rejection, harsh discipline and unsupportive behaviour is positively related to adolescent internalizing symptoms. Pathogenetic factors within the family environment, such as parental psychopathology, changes of family structure, violence or neglect, can also contribute to internalizing disorders in adolescence" (Greszta, 2006).

Lau & Kwok (2000) "in their research analyzed the relationships among family environment, depression and self-concept of adolescents in Hong Kong. Results indicated that all the three domains of family environment (relationship, personal growth, and system maintenance) correlated significantly with the three

depression aspects (emotionality, lack of positive experience, and physiological irritation). The relationship domain of FES appeared to correlate more strongly than the other two domains with the depression aspects. Regression analyses showed that family relationship was most predictive of various aspects of depression and self-concept. Sex difference was found in the prediction of both boys' and girls' depression and self-concept. With boys, system maintenance was predictive only of self-concept. With girls, personal growth was predictive of depression, and personal growth and system maintenance were predictive of self-concept. Analysis of variance showed that students high on family relationship, personal growth, and system maintenance were low in different depression aspects, but high in various self-concept domains. It was concluded that a cohesive, orderly, and achieving family environment is conducive to more positive development in adolescents, in terms of lower depression and higher self-concept".

Morris, Silk, Steinberg, Myres & Robinson (2007) "reviewed current literature examining associations between components of the family context and children and adolescents' emotion regulation (ER). The review is organized around a tripartite model of familial influence. Study results showed that children learn about ER through observational learning, modeling and social referencing. Parenting practices specifically related to emotion and emotion management affect ER. Finally, ER is affected by the emotional climate of the family via parenting style, the attachment relationship, family expressiveness and the marital relationship".

Feng, et al (2009) "examined the prospective relations of preadolescent girls' emotion regulation and parenting style with depressive symptoms. For the study, 225 children and their biological mothers recruited from a larger longitudinal community study. Girls' observed positive and negative emotion during a conflict resolution task with mothers, their ability to regulate sadness and anger, and their perception of parental acceptance and psychological control were assessed at age 9. Depressive symptoms were assessed by self-report at ages 9 and 10. The results indicated that interactions between child emotion characteristics and parenting in predicting later depression. Low levels of positive emotion expression predicted

higher levels of depressive symptoms in the context of moderate to high parental psychological control. Also, low levels of sadness regulation were predictive of high levels of depressive symptoms in the context of low to moderate parental acceptance".

The family context is also known to be influential in protecting adolescents against mental stress, strain, and depression. It has long been known that supportive, cohesive, and less conflictual family relationships enhance adolescent protective factors, and encourage mental health maintenance under challenging situations. The impacts of negative family relationship quality include internalizing behavioral symptoms and depressive. But, positive family relationship qualities (supportive and cohesive) foster psychological well-being. Mason, Schmidt, Abraham, Walker and Tercyak (2009)

Adrian, Zeman, Erdly, Lisa, Homan & Sim (2009) "examined a model of factors that place psychiatrically hospitalized girls at risk for non-suicidal self-injury (NSSI). The role of familial and peer interpersonal difficulties, as well as emotional dysregulation, were examined in relationship to NSSI behaviors. Participants were 99 adolescent girls (83.2% Caucasian; M age = 16.08) admitted to a psychiatric hospital. Structural equation modeling indicated the primacy of emotional dysregulation as an underlying process placing adolescents at risk for NSSI and mediating the influence of interpersonal problems through the family and peer domains. When family and peer relationships were characterized by conflict and lack of support for managing emotions, adolescents reported more dysregulated emotion processes. Family relational problems were directly and indirectly related to NSSI through emotional dysregulation".

Parenting behaviors and the quality of the parent-child relationship resulting from repeated parent-child interactions may impact adolescents' affective experiences and regulation. Regarding affect and its (dys) regulation, both warmth, support, and acceptance on the one hand, and conflict on the other hand, are important aspects of close social relationships. The experience of a warm, accepting and supportive relationship is associated with the experience of positive affect.

Relationships characterized by high levels of conflict lead to the experience of elevated levels of negative affect, such as anger, sadness, or anxiety. It is clear that the quality of parent-child interactions, be it in the relationship or the parenting context, may both support a child's affect regulation competencies, or place it at risk for the development of maladaptive patterns of affect regulation (Neumann, 2010).

Upshur (2011) conducted study on families in which domestic violence and homelessness occurred. 60 families with children between the ages of 4-16 yrs who were living in a domestic violence shelter participated in the study. From the study it was found that each of the family functioning dimensions of communication, affective expression, and affective involvement, were significantly associated with children's Emotion Regulation (ER). Study demonstrated that dimensions of family functioning are directly tied to children's ER capacity.

"In a large community based study, girls whose mothers were low in warmth and support demonstrated an increase in depressive symptoms over a 4-year period from late childhood to adolescence. For girls without an adequate reserve of positive emotion, their chances for receiving rewards from parent-child interaction are likely to be further reduced if their parents are exerting high levels of psychological control which may in turn result in internalizing symptoms". (Feng, Shaw, & Moilanen, 2011).

Brenning, Soenens, Braet, & Bosmans (2012) studied "the differential associations between attachment dimensions (anxiety and avoidance) and emotion regulation (ER) strategies (dysregulation and suppression) in middle childhood and early adolescence. The study also investigated how attachment and ER relate to depressive symptoms and perceived parenting. Two cross-sectional studies (N = 339 and N = 746) supported the hypothesized associations between attachment, anxiety and avoidance and emotional dysregulation and suppression, respectively. Mixed evidence was found for ER as a mediator in associations between attachment and depressive symptoms. Study 2 found that parental responsiveness and autonomy-support are related differentially to the attachment dimensions".

Fosco, Caruthers, & Dishion (2012) tested models including family emotional climate, interparental conflict, and maternal and paternal warmth and emotional support in relation to children's emotion regulation, using a multimethod, multi-informant design with 150 ethnically diverse two-parent families. Three theoretically informed comprehensive models were tested and compared. The best fitting model highlighted positive family climate and maternal warmth and sensitivity as unique predictors. Interparental conflict was indirectly linked with children's emotion regulation through both processes.

Brown (2012) examined effects of negative conflict in parental relations during early adolescence on teens' emotion regulation strategies in later adolescence. Participants included a diverse community sample of 184 adolescents, their mothers, fathers, and peers, assessed over an 8 year period. Results indicated psychological aggression in parental relations and close friendship competence are related to the levels of problem solving, positive reappraisal, social support seeking, and denial teens employ. Results suggest parental behaviors, even when not directed at the child, may have an impact on teens' development of coping mechanisms.

Feng, et al (2009) "Examined the prospective relations of preadolescent girls' emotion regulation and parenting style with depressive symptoms. 225 children and their biological mothers recruited from a larger longitudinal community study. Girls' observed positive and negative emotion during a conflict resolution task with mothers, their ability to regulate sadness and anger, and their perception of parental acceptance and psychological control were assessed at age 9yrs. Results suggested that interactions between child emotion characteristics and parenting in predicting later depression. Low levels of positive emotion expression predicted higher levels of depressive symptoms in the context of moderate to high parental psychological control. Low levels of sadness regulation predicted high levels of depressive symptoms in the context of low to moderate parental acceptance. Findings from this study conclude that the prospective association between vulnerabilities in emotion regulation and depression are moderated by the caregiving environment".



## **Emotion Regulation and Temperament**

Anthony, Lonigan, Hooe, and Phillips (2002) in their study examined the tripartite model of personality, which emphasizes negative affectivity (NA) and positive affectivity (PA) as central organizing dimensions of personality that are useful for discriminating psychopathologies. "A community sample of 290 10- to 17-year-old youth completed the Emotionality, Activity, and Sociability Temperament Survey (EAS), Positive and Negative Affectivity Schedule, and measures of symptoms of anxiety and depression. Factor analysis replicated the 5-factor structure of the EAS and revealed 2 independent second-order factors, negative temperament (NT) and positive temperament (PT). NT and PT demonstrated convergent and discriminant relations with NA and PA. Consistent with the tripartite model, NT was associated with both anxiety and depression scores, but PT was related to depression scores only".

The relations of teachers' and parents' reports of children's shyness (i.e., social inhibition) at ages 6-8, 8-10, and 10-12 years to dispositional regulation, emotionality, and coping were examined by Eisenberg, Shepard, Fabes, Murphy, and Guthrie (1998) "Shyness was positively related to internalizing negative emotion, coping by doing nothing, and, for parent-rated shyness, behavioral inhibition/non impulsivity, attention focusing, and avoidant coping; it was negatively related to positive emotionality, instrumental coping, seeking support from teachers (at younger ages), and for teacher-rated shyness, attentional control. Highly negatively reactive children showed no correspondence between their mothers' attention-shifting strategies and their own attention shifting regulation behaviors. Findings of the study are consistent with the proposed process by which temperamentally reactive children become over aroused and unreceptive to mothers' socialization efforts". Children's reactivity did not moderate the effects of mothers' emotion-intensifying socialization on children's emotion intensifying regulation behaviors, a finding which deserves further study (Mirabile, 2005).

Rettew and McKee (2005) "explained that both a temperamental predisposition toward experiencing negative emotions and low inhibitory control are

linked to many psychiatric conditions. Early identification of temperamental risk factors could allow for the possibility of early interventions that could potentially shift children away from more pathological trajectories". Study proposed that a child with high negative emotionality but good effortful control may be better suited to take advantage of coping strategies, such as distraction or cognitive restructuring, than a child with lower levels of this trait. Conversely, children with poor effortful control may need proportionately more effort, at least initially, devoted to reduce directly the amount of environmental stressors or their physiological manifestations. They also suggested additional research to help further define the core dimensions of temperament and the complex mechanisms through which temperamental traits interact with other influences in affecting developmental trajectories.

"Both anxiety and depressive disorders share the relation to temperament factor, high negative affectivity. Low positive affectivity or surgency is thought to be more specifically related to depressive disorders, whereas high physiological arousal is associated more specifically with at least some childhood anxiety disorders. Lower effortful control, conscientiousness, task orientation, and flexibility have been reported in both cross-sectional and longitudinal studies, although not to the degree seen in children with externalizing disorders. Behavioral inhibition, which contains elements of high negative affectivity and low extraversion, has also demonstrated links with later depressive and anxiety disorders".(Clark and Watson,1992 c.f. Rettew and McKee (2005)

Feng, Shaw, Kovacs,Flannery, O'Rourke, ,& Alarcon (2007) examined "preschoolers' emotion regulation (ER) strategies and the association with temperament, maternal interactive style, and maternal history of childhood-onset depression (COD). Participants were 62 children and their mothers, 37 of whom had mothers with COD. Children's ER was assessed using a disappointment paradigm; temperament assessment also was laboratory-based. Maternal COD was inversely related to offspring's active ER and positive mood. Among children of COD mothers, behavioral inhibition was associated with passive regulation and sadness, and maternal positivity toward these children was associated with child active ER

and positive mood. Behavioral inhibition may place children of COD mothers at risk for developing maladaptive ways of regulating negative emotion, whereas mothers' positivity may serve as a protective factor for them".

"In anxiety disorders, a bias toward increased attention to potential threat cues has been proposed as a mechanism that may mediate the relation between anxiety symptoms and temperament dimensions of negative affectivity and effortful control. The mediating and moderating processes may, in turn, contribute to an individual's inability to regulate emotions which is a key feature that is likely involved in the link between temperamental predispositions and various forms of psychopathology" (Eisenberg, Fabes, Guthrie, and Reiser, 2000).

Feng, Shaw, Kovacs, Lane, O'Rourke, & Alarcon (2008) "tested a moderated mediation model that related early childhood shyness, emotion regulation and maternal negative control to school-age internalizing problems among 257 boys from low-income families. Shyness and maternal negative control was assessed at ages 1.5–2, emotion regulation was observed at age 3.5 and internalizing symptoms were assessed by mothers and teachers at age 6 or 7yrs. Results indicated that, the active distraction regulation strategy mediated the relations between early shyness and maternal report of internalizing symptoms. Also the passive or dependent regulation strategy mediated the relations between shyness and teacher report of internalizing symptoms".

Fox (2010) "examined whether negative affectivity (NA) and positive affectivity (PA) interacted with worry dysregulation (WD) and sadness dysregulation (SD) to predict and differentiate anxious and depressive symptoms at baseline (T1) and a one-year follow-up (T2). At T1, 184 children (ages 8-11yrs) completed self-report measures of NA, PA, WD, SD, life events, anxious symptoms, and depressive symptoms. At T2, 131 of these children repeated the measures of anxious and depressive symptoms. Regression analyses explained a significant two-way interaction between Negative Affect and Worry Dysregulation in the prediction of anxious symptoms at both T1 and T2, such that a combination of high NA and high WD was closely associated with anxious but not depressive symptoms. This

interaction most strongly predicted anxious symptoms at T1 in youth reporting low occurrence of negative life events, violating expectations".

"The longitudinal relations of emotion regulation profiles to temperament and adjustment in a community sample of preadolescents (N = 196, 8–11 years at Time 1) were investigated using person-oriented latent profile analysis (LPA). Temperament, emotion regulation, and adjustment were measured at 3 different time points, with each time point occurring 1 year apart. LPA identified 5 frustration and 4 anxiety regulation profiles based on children's physiological, behavioral, and self-reported reactions to emotion-eliciting tasks. The relation of effortful control to conduct problems was mediated by frustration regulation profiles, as was the relation of effortful control to depression. Anxiety regulation profiles did not mediate relations between temperament and adjustment" (Zalewski, Lengua, Wilson, Trancik & Bazinet, 2011).

Fan (2011) in their investigation used Structural equation modeling analyses to investigate both concurrent and longitudinal relationships between overregulation, negative parenting, and internalizing outcome variables. "235 children (113 girls) with elevated risk for behavior problems were participated in the study. Children's emotion dysregulation was assessed using a multi-method approach: 1) laboratory-based behavioral task; 2) mothers' reports of children's emotion overregulation-related temperament; and 3) teachers' reports of children's emotion dysregulated behavior. Negative parenting behaviors were assessed via maternal parenting questionnaires. Mothers and teachers reported on child internalizing outcomes at ages 3, 6, and 10 years. Several emotion overregulation variables predicted internalizing behaviors concurrently and longitudinally, and negative parenting predicted internalizing behaviors across time. Shy temperament, negative parenting, and internalizing behaviors were also stable from preschool to kindergarten, and the prediction models also suggested temporal stability of these variables from preschool to late school-age".

Yap, Allen, O'shea, Parsia, Simmons, & Sheeber (2011) examined the relations among temperament, emotion regulation, and depressive symptoms in early

adolescents. Adolescents with temperaments that were high in negative emotionality or low in effortful control displayed more emotionally dysregulated behaviors during the interaction tasks. They reported having maladaptive responses to negative affect more often and adaptive responses less often, and had more depressive symptoms. Adolescents with the high negative emotionality and low effortful control temperament combination reported the highest levels of depressive symptomatology. Adolescents' adaptive and maladaptive responses to negative affect mediated the relations between their temperament and concurrent depressive symptoms.

Shen,& Zhang (2012) "used Hierarchical linear modeling techniques to explore individual and contextual factors of emotion regulation in a sample of 2074 adolescents from grade 7 through grade 12 and 54 head teachers in China. Emotion Regulation Questionnaire (ERQ) and Early Adolescent Temperament Questionnaire-Revised (EATQ-R) were administered among students and Multi-Dimensional Emotional Empathy Scale (MDEES) among head teachers. Results showed that at the student level, Effortful Control and Affiliativeness were positively related to adolescents' reappraisal whereas Surgency was inversely correlated with reappraisal after gender, grade level and parent's education were controlled. And Negative Affect (NA) positively predicted suppression".

Dollar and Stifter (2012) "longitudinally examined the direct relationship between children's temperamental surgency and social behaviors as well as the moderating role of children's emotion regulation. A total of 90, 4.5-year-old children participated in a laboratory visit where children's temperamental surgency was rated by experimenters and children's emotion regulation abilities were assessed. Results revealed that children high in temperamental surgency developed more negative peer behaviors, whereas children low in temperamental surgency were more likely to develop behavioral wariness with peers. Emotion regulatory behaviors were found to moderate the relation between temperamental surgency and aggression. High-surgent children who showed high levels of social support seeking were less likely to be rated by their mothers as high in aggression. Results also revealed that low-

surgent children who showed high levels of distraction/self-soothing were more likely to show behavioral wariness around unfamiliar peers, whereas high-surgent children who used more distraction/self-soothing behaviors were rated by their mothers as lower in social competence".

Marco (2013) in their review study, focused on "the association between temperament and anxiety. Results showed a high direct correlation between the temperamental dimension of Harm Avoidance and anxiety symptoms and an high inverse correlation between the character dimension of Self-Directedness and anxiety symptoms. Also specific anxiety disorders have showed typical correlation with specific temperamental and character traits. The comparison between the longitudinal studies proposed a "precursor model" of explanation of these correlations whereby personality can be used to individuate early manifestations of anxiety disorder".

### **Emotion Regulation and Internalizing Disorders**

Cole, Michel & Teti (1994) "stressed the idea that it is particularly important to study children and their families in situations that challenge their emotional adaptation. The developmental tasks of emotional life evolve in exchanges between the child and the world of events and relationships. Early childhood emotional experiences appear to be very important in understanding how the child learns to regulate emotion. The experiences that accrue around emotional events influence the stable aspects of the developing personality and become trait-like aspects of the person. Dysregulation occurs when an emotional reaction loses breadth and flexibility. If a dysregulatory pattern becomes stabilized and part of the emotional repertoire, it is likely that this pattern is a symptom and supports other symptoms. When development and adaptation are compromised, the dysregulation has evolved into a form of psychopathology".

Kostiuk and Fouts (2002) "adolescent girls with conduct problems have relatively little understanding of their negative internal states and/or are unable to express them to others, especially to fathers. They have few successful strategies for regulating negative emotions in themselves and others and are unaware of

alternative strategies. This dysregulatory pattern likely prevents them from learning more appropriate ways of expressing and constructively handling their negative emotions that are necessary for healthy adjustment".

According to Silk, Steinberg, & Morris (2003) "adolescent who reported more intense and labile emotions and less effective regulation of these emotions reported more depressive symptoms and problem behavior. Greater use of strategies like disengagement or involuntary engagement was related to higher levels of depressive symptoms".

Suveg and Zeman (2004) "investigated emotion management skills in a small group of children aged 8–12 years who met diagnostic criteria for an anxiety disorder and compared them to a control group of children with no psychopathology. The study showed that children with an anxiety disorder reported significantly lower perceptions of self efficacy with regard to emotion regulation as well as higher intensity in their experience of worry and anger than controls, as well as a less constructive way of managing these emotions".

Three studies were conducted by Menin in 2004 provided support for an emotion dysregulation model of generalized anxiety disorder (GAD). In study 1, students with GAD reported heightened intensity of emotions, poorer understanding of emotions, greater negative reactivity to emotional experience, and less ability to self soothe after negative emotions than controls. A composite emotion regulation score significantly predicted the presence of GAD, after controlling for worry, anxiety, and depressive symptoms. In study 2, these findings were largely replicated with a clinical sample. In study 3, students with GAD, but not controls, displayed greater increases in self-reported physiological symptoms after listening to emotion-inducing music than after neutral mood induction. GAD participants had more difficulty managing their emotional reactions".

Baker, Holloway, Thomas, Thomas, and Owens (2004) suggests that nonclinical and clinical samples of individuals who experience panic attacks are more likely to rely on avoidant coping strategies in response to emotionally salient

events. Also PD patients, compared to healthy controls, reported a greater tendency to suppress and constrict the experience and expression of negative emotions.

Mennin,( 2004) recent conceptualization have highlighted the role of emotion acceptance, utilization and management as a core feature of Generalized anxiety disorder . Also an emotion regulation perspective may shed light on treatment approaches to GAD. An integrative approach to treating GAD, entitled Emotion Regulation Therapy (ERT) is presented through the case of a young woman. ERT addresses cognitive, emotional and contextual factors of GAD. ERT which gives more importance to emotion regulation skills, was shown to successfully treat symptomatic, functional and qualitative aspects of GAD.

"Garber and colleagues conducted a series of studies in which young adolescents reported on their typical emotion-regulation strategies. They found that adolescents diagnosed with a depressive disorder nominated fewer problem-focused and active distraction strategies, but more avoidant, passive, and aggressive strategies, than adolescents in a control group". (Eisenberg, Sadovsky & Spinard, 2005)

Robinson (2006) investigated the relationship between parenting, emotion regulation, and symptoms of psychopathology in maltreating and non-maltreating parent-child dyads. "The participants in this study were 114 children (67 maltreated and 57 non-maltreated) from ages 1 to 4yrs. Child affect and effortful control along with parent affect were observed during a parent-child interaction procedure. The maltreated children exhibited more irritability/anger, affect lability, and internalizing symptomatology, along with less positive affect than their normal treated peers. Parental affect is related to internalizing symptomatology; and is stronger for the maltreated group. Contrary to expectations emotion regulation did not fully mediate the relationship between parenting and psychopathology".

Oldehinkel, Veenstra, Ormel, Winter,and Verhulst (2006) "focused on the interaction between temperament, perceived parenting, and gender in relation to depressive problems in a Dutch population sample of preadolescents. The sample consisted of 2230 ten-to-twelve-year-olds from the North of the Netherlands. From



the results it was seen that all parenting and temperament factors were significantly associated with depressive problems. Frustration increased the depressogenic effect of parental overprotection and lack of emotional warmth. Fearfulness increased the effect of rejection in girls, but not in boys. The association between frustration and depression was stronger in boys".

Mennin, Holaway, Fresco, Moore & Heimberg (2007) "concluded that poor understanding, negative reactivity, and maladaptive management were found to relate to a latent factor of emotion dysregulation. In contrast, heightened intensity of emotions was better characterized separately, suggesting it may relate more strongly to dispositional emotion generation or emotionality. The 4 components- heightened intensity of emotions, poor understanding of emotions, negative reactivity to emotions, and maladaptive management of emotions- demonstrated both common and specific relationships to self-reported symptoms of generalized anxiety disorder, major depression, and social anxiety disorder".

Yap, Allen, & Sheeber (2007) argued that emotion regulation can provide an organizing rubric under which the role of various factors, such as adolescent and parent temperament and emotion regulation, and parental socialization of child emotion, as well as the interaction amongst these factors, can be understood to account for the role of the family in adolescents' risk for depression. Adolescent emotion regulation functions as a mechanism through which temperament and family processes interact to increase vulnerability to developing depression.

A review by Hannesdottir & Ollendick (2007), "examined the role of emotion regulation in the treatment of children with anxiety disorders. Cognitive-behavioral therapy (CBT) has been shown to "work" for children with anxiety disorders and it has been categorized as an evidence-based treatment. It has also been shown that many children with anxiety disorders demonstrate poor emotion regulation skills. Research showed that CBT programs do not work as well for a portion of children because their emotion regulation deficits, if present, are not being targeted sufficiently. The current review, suggested that adding an emotion regulation component could increase treatment efficacy. They also concluded that, strategies

aimed at improving emotion regulation at the individual level and at the family level will result in better outcomes".

"Emotion regulation difficulties among nonclinical uncued panickers were examined in two studies. In Study 1, participants with a recent history of uncued panic attacks (n=91), compared to a nonpanic sample (n=91), reported significantly greater levels of experiential avoidance, lack of emotional acceptance, and lack of emotional clarity. In Study 2, a subset of uncued panickers and nonpanickers from Study 1 (n=17 per group) viewed positive and negative emotion-eliciting film clips. Despite comparable levels of self-reported distress and physiological arousal, panickers reported using more emotionally avoidant regulation strategies during both film clips. Panic participants also responded with greater negative emotion to the positive emotion-eliciting clip". (Tull, and Roemer, 2007)

Suveg, Sood, Hudson and Kendall (2008) found that children aged 8–13 years with anxiety disorders use maladaptive emotion regulation strategies five times more than non-anxious youth .The authors suggest that deficits in emotional skills may be most evident in the actual enactment of emotion regulation in anxious children.

Moore, Zoellner,& Mollenholt (2008) In the current study examined "the relationship between reappraisal and expressive suppression and measures of psychopathology, particularly for stress-related reactions, in both undergraduate and trauma-exposed community samples of women. Generally, expressive suppression was associated with higher, and reappraisal with lower, self reported stress-related symptoms. Expressive suppression was associated with PTSD, anxiety, and depression symptoms in the trauma-exposed community sample, with rumination partially mediating this association. Based on factor analysis, expressive suppression and cognitive reappraisal appear to be independent constructs. Overall, expressive suppression, much more so than cognitive reappraisal, may play an important role in the experience of stress-related symptoms. Further, given their independence, there are potentially relevant clinical implications, as interventions that shift one of these emotion regulation strategies may not lead to changes in the other".

Emotion regulation difficulties in anxiety disorders were examined by Miller (2008). "Emotion regulation survey measures to a large undergraduate sample (N = 784). Scores on several symptom measures were used to create a SP analogue group, generalized anxiety disorder (GAD) analogue group (anxious control group), and non-anxious control group. A subset of these participants (SP = 19; GAD = 23; control = 40) then participated in computerized experience-sampling (ES). Group comparisons of traditional survey data revealed evidence of less positive affect, greater negative affect, and broad emotion regulation deficits in both the SP and GAD groups when compared with non-anxious controls. A greater tendency to suppress the expression of emotion and deficits in emotional awareness and clarity appeared to uniquely characterize the SP group".

Hastings, Nuselovici, Klimes-Dougan, Kendziora, Usher, Ho, & Zahn-Waxler (2009) "it has been hypothesized that effective emotion regulation should be reflected in greater coherence between physiological and subjective aspects of emotional responses. Youths with normative to clinical levels of internalizing problems (IP) and externalizing problems (EP) watched emotionally evocative film-clips while having heart rate (HR) recorded, and reported subjective feelings. Hierarchical linear modeling revealed weaker coherence between Heart Rate and negative feelings in youths, especially boys, with more EP. Youths with IP showed coherence between HR and negative feelings that did not match the affect portrayed in the eliciting stimuli. Youths without problems predominantly showed normative emotional coherence. Youths with EP and IP experience atypical patterns of activation across physiological and experiential emotion systems which could undermine emotion regulation in evocative situations. The role of emotion regulation in both IP and EP was stressed in the study".

Adrian, Zeman, Erdley, Lisa, Homan, and Sim (2009) "studied the relations among Emotion Regulation, social-contextual factors (family), and psychological adjustment (internalizing, externalizing). Participants were 140 adolescents (71% female, 83.3% Caucasian, M age = 16.03 years) who were consecutive psychiatric admissions over a one-year period. Discriminant analyses showed that two

functions, ER skills and impulsivity/lability, differentiated among adolescents who were elevated in internalizing symptoms only, in externalizing symptoms only, in both domains, or in neither domain. Regarding social contextual variables, family cohesion was associated with adaptive ER behaviors for girls along the internalizing dimension and all adolescents reporting externalizing behaviors".

Suveg,Sood,Comer,&Kendall (2009) "This study examined emotion-related functioning following cognitive-behavioral therapy (CBT) with 37 youth with anxiety disorders (22 boys, 15 girls) ranging in age from 7 to 15 with a principal diagnosis of generalized anxiety disorder (n = 27), Separation anxiety disorder (n = 12), and/or Social Phobia (n = 13). Treated youth exhibited a reduction in anxiety and increased anxiety self-efficacy and emotional awareness at post treatment. Treated youth also demonstrated improved coping and less emotional dysregulation with worry but not with anger or sadness. The results suggest that the gains made in worry regulation do not generalize to other emotions that are not specifically targeted within the CBT protocol".

Schuppert, Giesen-Bloo, van Gemert, Wierseman, Minderaa, Emmelkamp, & Nauta (2009) "Emotion Regulation Training (ERT) was developed for adolescents who were affected with symptoms of borderline personality disorder (BPD) and emotion dysregulation. ERT is adapted from the Systems Training for Emotional Predictability and Problem Solving (STEPPS) programme. The effectiveness of the training was examined in a randomized controlled pilot study with 43 youth (aged 14-19 years) in five mental health centers in the Netherlands. Subjects were assessed before and after random assignment to ERT plus treatment as usual (TAU) (n = 23) or to TAU alone (n = 20). Outcome measures included assessment of BPD symptoms, locus of control, and internalizing and externalizing behaviour. Both groups showed equal reductions in BPD symptoms over time. Group receiving ERT plus TAU (and not the TAU-only group) had a significant increase in internal locus of control: ERT participants reported more sense of control over their mood swings, and attributed changes in mood swings not only to external factors".

Smith-Israel (2009) Adolescents, who, lack emotion regulation capabilities are more prone to expressions of anger, which commonly yield further symptoms of aggression, depression, and drug use. Factors contributing to low levels of emotion regulation during adolescence include stress, influence of childhood, parental influence, and maltreatment. A pre and post test were used to examine the effects of anger in a seven week creative therapy group for ten 9th grade students in a small, public high school in Rhode Island. From the results, adolescents are more likely to seek out help during times when they feel upset through their development of a better understanding of emotion regulation and recognition.

"Diminished levels of mindfulness (awareness and acceptance/nonjudgment) and difficulties in emotion regulation have both been proposed to play a role in symptoms of generalized anxiety disorder (GAD). These relationships were investigated in nonclinical and clinical samples. In the first study, among a sample of 395 individuals at an urban commuter campus, self-reports of both emotion regulation difficulties and aspects of mindfulness accounted for unique variance in GAD symptom severity, above and beyond variance shared with depressive and anxious symptoms, as well as variance shared with one another. In the second study, individuals with GAD (n=16) reported significantly lower levels of mindfulness and significantly higher levels of difficulties in emotion regulation than individuals in a nonanxious control group (n=16). Results are discussed in terms of directions for future research and potential implications for treatment development". (Roemer, Lee, Salters-Pedneault, Erisman, Orsillo, & Mennin, 2009).

In a recent study Allen and Barlow (2009) "examined the relationship of emotion regulation skills to obsessive-compulsive disorder (OCD) symptoms. The participants with a principal diagnosis of OCD in a multiple-baseline across subjects design were taught the skill of prevention of emotional avoidance in the context of emotion provocation procedures to clinically irrelevant (nonspecific) cues prior to practicing this skill with clinically relevant (OCD-specific) cues. Results indicated successful acquisition of emotion regulation skills (as evidenced by decreased thought suppression and increased acceptance of thoughts and feelings) in

clinically irrelevant contexts. Acquisition of the above skill was associated with decreases in obsessive-compulsive symptoms, even though clinically relevant cues were not introduced during this phase. Reductions in OCD symptoms were associated with the implementation of skills in clinically relevant contexts".

Carthy, Horesh, Apter, Edge, & Gross (2010) "examined whether anxious children suffer both negative emotional hyper-reactivity and deficits in cognitive emotion regulation. Participants were 49 children aged 10–17yrs with generalized anxiety disorder, social anxiety, or separation anxiety disorder as their primary diagnosis, as well as 42 age- and gender-matched non-anxious controls. A diagnostic interview was completed and self-report questionnaires and participants were presented with pictures of threatening scenes with the instructions either to simply view them or to use reappraisal, a cognitive emotion regulation strategy, to decrease their negative emotional response. Emotion ratings, content analysis of reappraisal responses, and reports of everyday use of reappraisal were used to assess negative emotional reactivity, reappraisal ability, efficacy and frequency. Relative to controls, children with anxiety disorders (1) experienced greater negative emotional responses to the images, (2) were less successful at applying reappraisals, but (3) showed intact ability to reduce their negative emotions following reappraisal and also (4) reported less frequent use of reappraisal in everyday life".

"Deficits in emotional clarity, the acceptance of emotions, the ability to engage in goal-directed behaviors when distressed, the ability to control impulsive behaviors when distressed, and access to effective regulation strategies (all constructs measured via the Difficulties in Emotion Regulation Scale, were significantly related to analogue GAD status" (Cisler, et al , 2010)

Lanius, Frwen, Vermetten, & Yehuda (2010) "discussed about two pathways describing the relationship between fear and other emotion regulation systems in PTSD. The first pathway describes emotion dysregulation as an outcome of fear conditioning through stress sensitization and kindling. The second pathway views emotion dysregulation as a distal vulnerability factor and hypothesizes a

further exacerbation of fear and other emotion regulatory problems, including the development of PTSD after exposure to one or several traumatic events later in life".

"In another study Carthy, Horesh, Apter,& Gross (2010) examined whether anxious children display negative emotional hyper-reactivity and deficits in emotion regulation, using a new task that presents ambiguous situations with potentially threatening meanings. Forty-nine children diagnosed with either generalized anxiety disorder, social anxiety, or separation anxiety disorder, were compared with 42 non-anxious controls. Relative to controls, anxious children demonstrated (a) greater intensity and frequency of negative emotional responses, (b) deficits in using reappraisal in negative emotional situations and corresponding deficits in reappraisal self-efficacy, and (c) greater reliance on emotion regulation strategies that increase the risk of functional impairment, intense negative emotion, and low emotion regulation self-efficacy".

Ehring ,Tuschen-Caffier ,Schnülle ,Fischer, and Gross (2010) "tested the hypothesis that depression vulnerability is related to difficulties with emotion regulation by comparing recovered-depressed and never-depressed participants (N = 73). In the first phase, participants completed questionnaires assessing their typical use of emotion regulation strategies. In the second phase, sad mood was induced using a film clip and the degree to which participants reported to have spontaneously used suppression versus reappraisal to regulate their emotions was assessed. In the third phase, participants received either suppression or reappraisal instructions prior to watching a second sadness-inducing film. Suppression was found to be ineffective for down-regulating negative emotions, and recovered-depressed participants reported to have spontaneously used this strategy during the first sadness-inducing film more often than controls. However, the groups did not differ regarding the effects of induced suppression versus reappraisal on negative mood. These results provide evidence for a role for spontaneous but not instructed emotion regulation in depression vulnerability".

In a recent study by Joormann and Gotlib (2010) "studied about cognitive processes that may be associated with the use of emotion-regulation strategies and to

elucidate their relation to depression. They used a negative affective priming task to assess the relations among inhibition and individual differences in the habitual use of rumination, reappraisal, and expressive suppression in clinically depressed, formerly depressed, and never-depressed participants. Results showed that depressed participants exhibited the predicted lack of inhibition when processing negative material. Also, within the group of depressed participants, reduced inhibition of negative material was associated with greater rumination. The entire sample shows, reduced inhibition of negative material was related to less use of reappraisal and more use of expressive suppression. The formerly depressed group indicated, less use of reappraisal, more use of rumination, and greater expressive suppression were related to higher levels of depressive symptoms. The study concluded that individual differences in the use of emotion-regulation strategies play an important role in depression, and that deficits in cognitive control are related to the use of maladaptive emotion-regulation strategies in depression".

Sumida (2010) "studied the relation between emotion regulation problems and clinical depression. regulation subscales used were: (a) Difficulty Identifying Feelings (TAS-20 subscales); (b) Limited Accessed to Emotion Regulation Strategies (DERS subscale); (c) Positive Refocusing (CERQ subscale); (d) Self-Blame Iv (CERQ subscales); and (e) Refocus on Planning (CERQ subscales). From the study it was concluded that the two emotion regulation constructs specifically distinguish DSM mood disordered from nondisordered subjects: Factor 2: Loss of Control over Behavior and Perceived Helplessness; and Factor 6: Assuming, Accepting Blame or Responsibility. Results of the study suggest that the above two emotion regulation factors seem to be the most important in predicting not only severity of depression, but also in helping to provide diagnostic information of clinical depression".

Kashdan and colleagues (2008 cf. Cisler, Olatunji, Feldner, and Forsyth, 2010) "found that non-acceptance of emotions and limited access to emotion regulation strategies moderated the effect of anxiety sensitivity on anxious arousal, worry, and agoraphobic cognitions. They also suggested that social anxiety and



expressive suppression interacted to predict low positive emotion and low positive events. The above mentioned data converge in suggesting that emotion regulation may potentiate the contribution of emotional reactivity (e.g., anxiety sensitivity, social anxiety, and disgust) towards anxiety disorder symptoms. Thus, emotion regulation may function in anxiety disorders as a moderator of the relation between emotion reactivity and anxiety disorder symptoms".

Neumann, van Lier, Frijns, Meeus, and Koot (2011) examined "the role of the level and variability of happiness, anger, anxiety, and sadness in the development of adolescent-reported anxiety disorder symptoms, depressive symptoms, and aggressive behavior in 452 adolescents (250 male) followed from age 13 to 14yrs. Variability of emotions contributed to changes in anxiety disorder symptoms, while heightened levels of negative emotions and diminished happiness contributed to changes in depression. Results showed somewhat stronger effects of negative affect on aggressive behavior for females than for males. Elevated levels of negative emotions, diminished levels of happiness, and elevated emotional variability are all indices of emotion dysregulation, which add to a growing body of evidence showing that emotion dysregulation predicts symptoms of anxiety, depression and aggressive behavior in children and adolescents".

McLaughlin (2011) "examined the longitudinal and reciprocal relationships between emotion regulation deficits and psychopathology in adolescents. Emotion dysregulation and symptomatology (depression, and anxiety, ) were assessed in a large, diverse sample of adolescents (N=1065) at two time points separated by seven months. Structural equation modeling was used to examine the longitudinal and reciprocal relationships between emotion dysregulation and symptoms of psychopathology. The three distinct emotion processes examined here (emotional understanding, dysregulated expression of sadness and anger, and ruminative responses to distress) formed a unitary latent emotion dysregulation factor. Emotion dysregulation predicted increases in anxiety symptoms, and aggressive behavior, after controlling for baseline symptoms, but did not predict depressive symptoms. In contrast, anxiety and depressive of psychopathology not predicted increases in

emotion dysregulation after controlling for baseline emotion dysregulation. It has been concluded that Emotion dysregulation appears to be an important transdiagnostic factor that increases risk for a wide range of psychopathology outcomes in adolescence".

Esbjørn, Bender, Reinholdt-Dunne, Munck & Ollendick (2011) "in their review examined the link between emotion regulation and anxiety. It also explores the unique contributions of attachment style and dysfunctional emotion regulation to the development of anxiety disorders. A search in PsycINFO and PubMed was made. Both theory and evidence suggest that there may be an association between dysfunctional emotion regulation abilities and childhood anxiety disorders. Concluded that an insecure-ambivalent attachment style was associated with the development of ineffective emotion regulation strategies which in turn end up with anxiety disorders".

Rajappa, Gallagher, & Miranda (2011) investigated "the predictive utility of a six-dimensional conceptualization of emotion dysregulation for suicidal ideation, as well as its ability to distinguish among individuals with differing histories of suicidality. Young adults (N = 96) with current suicidal ideation but no suicide attempt history (n = 17), a history of a single (n = 20) or multiple attempts (n = 17), or no current ideation/no past attempts (n = 42) participated in the study. Multiple suicide attempters differed from participants with no suicidal ideation/no past attempts on emotion dysregulation dimensions such as ,nonacceptance of emotional responses and perceived limited access to emotion regulation strategies. Even after adjusting for depression symptoms and the presence of a mood or anxiety diagnosis, limited access to emotion regulation strategies significantly predicted current suicidal ideation, a relation that was found to be statistically mediated by hopelessness".

Remmes (2012) examined associations between parent emotion regulation strategies and supportive, minimizing, punitive, and distress-oriented responses when faced with youth negative affect. A sample of 76 adolescents (ages 12-18) referred to a University based research clinic for anxiety and/or depressive disorders.

Overall results indicate a positive relationship between parental use of reappraisal as an emotion regulation strategy and supportive responses to youth negative affect, as well as a negative relationship between parental use of reappraisal and distress reactions. Supportive parenting responses were associated with better adolescent treatment outcomes in an emotion focused treatment protocol for anxiety and depression. Dysfunctional parenting may interact with children's vulnerability for dysregulated emotion and intensify the risk for depression.

Hsieh (2012) examined "the relationships among adolescents' emotion regulation strategies (suppression and cognitive reappraisal), self-concept, and internalizing problems using structural equation modeling. The sample consisted of 438 early adolescents (13 to 15 years old) in Taiwan, including 215 boys and 223 girls. For both boys and girls, suppression was negatively associated, and cognitive reappraisal was positively associated with self-concept. Self-concept negatively predicted adolescents' internalizing problems. The findings support the hypothesis that self-concept mediates the relationship between emotion regulation and internalizing problems".

"The possibility of gender differences in the relation between emotion dysregulation and anxiety in a community sample of 544 children and adolescents (298 girls and 246 boys) in the age of 9–16 years was investigated. Anxiety was assessed using the Screen for Child Anxiety Related Emotional Disorders-Revised (SCARED-R). Emotion dysregulation was measured by the Difficulties in Emotion Regulation Scale (DERS). The results shows that (1) girls experience more anxiety and greater difficulties regulating their negative emotions than boys, and (2) emotion dysregulation has a significant impact on anxiety (3) emotion dysregulation is more predictive of anxiety in girls than in boys, and (4) different types of emotion regulation difficulties account for anxiety in girls and boys. Participants' age did not have an impact on anxiety scores".(Bender, Reinholdt-Dunne, Esbjørn, Pons, 2012).

Rusch , Westermann, and Lincoln (2012) "conducted an explorative study to examine the associations between emotion regulation facets and social anxiety in the

normal population . 149 healthy volunteers participated in an internet-based survey. Emotion regulation deficits were measured by the Difficulties in Emotion Regulation Scale. Social anxiety was measured by the Social Phobia Scale and the Social Interaction Anxiety Scale. Hierarchical regression analyses showed that anxiety of interactive social situations is associated with non-acceptance of negative emotions, impulse control difficulties, and lack of functional emotion regulation strategies over and above the impact of age and general psychopathology. But anxiety of being observed by others was not specifically associated with emotion regulation strategies. The conclusion was that specific emotion regulation deficits are relevant to specific aspects of social anxiety".

Farmer and Kashdan (2012) Examined "how the use of two emotion regulation strategies, emotion suppression and cognitive reappraisal, predict the generation of emotions and social events in daily life. 89 participants completed daily diary entries on emotions during 14 consecutive days, positive and negative social events, and their regulation of emotions. A multilevel modeling was used and, it was found that when people high in social anxiety relied more on positive emotion suppression, they reported fewer positive social events and less positive emotion on the subsequent day. But people low in social anxiety reported fewer negative social events on days subsequent to using cognitive reappraisal to reduce distress".

Nolen-Hoeksema (2012) reported that women use most emotion regulation strategies more than men do, and emotion regulation strategies are similarly related to psychopathology in women and men. More rumination in women compared to men partially accounts for greater depression and anxiety in women compared to men.

In another recent study on Obsessive Compulsive disorder by Smith, Wetterneck, Hart,. Short, "orgvinsson (2012) emphasized the idea that management of OCD should focus on the aspects of emotion.

In a study that aims at "predicting the Obsessive-Compulsive Disorder (OCD) based on the emotion regulation and anxiety sensitivity in university students, the results of regression analysis showed that reappraisal and anxiety

sensitivity are the best indicators of OCD in students. The results indicated that the reappraisal and anxiety sensitivity play a significant role in predicting OCD in students" (Ghasempour, Akbari , Azimi, Ilbeygi , and Hassanzadeh, 2013).

Social Phobia (SP) involves emotional hyper-reactivity and emotion dysregulation. Few studies have investigated emotion regulation in individuals with SP, and no study has used a theoretically derived framework in order to investigate multiple emotion regulation strategies within one research paradigm. Main finding from previous research regarding emotion regulation in SP is that, like other anxiety disorders, overt and subtle avoidance of threatening situations maintains SP. Little is known regarding specific emotion regulation habits of people with SP. While excess fear and anxiety characterizes SP, little work has been done to systematically characterize the role of emotion regulation in maintaining these heightened levels. (Werner,Jazaleri, Goldin, Ziv, Heimberg and Gross, 2012 )

### **Emotion Regulation, Family Environment and Temperament on Internalizing Problems**

Recent studies focused on preparing models for Internalizing disorders based on the emotion regulation construct. The current conceptualization is that emotion regulation acts as an important risk factor for many psychological and behavioural problems. Studies in this perspective provided several insights to the researchers and practitioners to incorporate emotion regulation as an important factor for skills training in children and adolescents. More studies are emerging in this area for better understanding about these concepts.

Chang (2002) "presented a model of harsh parenting that has an indirect effect, as well as a direct effect; on child aggression in schools through the mediating process of child emotion regulation. This model was cast within the family system framework that controlled for marital conflict and parental depression. Tested on a sample of 325 Chinese children and their parents, the model showed adequate goodness of fit. After controlling for emotion regulation, harsh parenting showed a reduced effect on child aggression. Harsh parenting was also found to mediate the family subsystem malfunctioning on child behaviors. Also

hypothesized and tested were interaction effects between parents' and children's genders. Harsh parenting of fathers affected sons more than daughters, whereas mothers' harsh parenting had a similar effect on children of both sexes".

Anthony, Hooe, and Phillips in 2002 "examined the tripartite model of personality, which emphasizes negative affectivity (NA) and positive affectivity (PA) as central organizing dimensions of personality that are useful for discriminating psychopathologies. The study was conducted in a community sample of 290, 10- to 17-year-old youth. Factor analysis revealed 2 independent second-order factors, negative temperament (NT) and positive temperament (PT). NT and PT demonstrated convergent and discriminant relations with NA and PA. Consistent with the tripartite model, NT was associated with both anxiety and depression scores, but PT was related to depression scores only".

Developmental research indicates that emotional sensitivity follows an intrinsic path of development that is largely independent of environmental influences, whereas competencies at emotion regulation are strongly influenced by the quality of children's social interactions with their caregivers and continue to improve even into old age. As such, there are grounds for suspecting that emotion regulation is more susceptible to training than emotional sensitivity. Training studies indicate that the regulation of various emotion response systems can be improved through training, including the regulation of attention, cognitive appraisals, and expressive responses. (Koole, van Dillen, and Sheppes, 2009)

Neumann, van Lier, Frijns, Meeus and Koot (2011) in a study "examined the co-development of the parent-adolescent relationship, adolescent negative affect and internalizing and externalizing problems from age 13 to age 15, using parallel growth curve models. Findings from the study lend strong longitudinal support to the notion that negative and dysregulated affect underlies the development of psychopathology. They also suggest that future studies should focus on factors that potentially moderate association between relationship quality and adolescent developmental outcomes. Candidate variables for such moderator effects might be attachment security and emotion regulation difficulties, which should be focused in future".

Betts , Gullone and Allen (2009) "investigated both traditional (temperament and parenting) and novel (emotion regulation strategy) risk factors associated with adolescent depression. Forty-four adolescents (12-16 years; 64% females) with high scores on a self-report depressive symptomatology questionnaire were compared to a similar group of 44 adolescents with low scores, matched for age, gender, and ethnicity. From the results, the presence of high depressive symptomatology was found to be associated with (1) low levels of temperamentally based positive mood, flexibility, and approach behaviours, (2) a parenting style with low nurturance and high overprotection, and (3) emotion regulation characterized by higher levels of expressive suppression and lower levels of cognitive reappraisal. Use of particular emotion regulation strategies is associated with varying levels of depressive symptomatology in addition to specific temperament characteristics and parenting style".

Using an emotion regulation framework, Suveg, Morelen, Brewer, and Thomassin (2010) conducted "a preliminary investigation of a model, the Emotion Dysregulation Model of Anxiety (EDMA), which examined the impact of both temperamental (behavioral inhibition) and environmental (family emotional environment) variables on current anxiety levels. Findings suggested that High child temperamental reactivity was expected to contribute to child emotion dysregulation because high reactivity in response to novel situations and people is likely to make adaptive emotion regulation difficult. The current study found that one way in which aspects of the family emotional environment influence anxiety levels is through emotion dysregulation. Family interactions laden with negative affect influence youth through the direct modeling of dysregulated emotions. This study identifies emotion dysregulation as one way in which high temperamental reactivity and family emotional environment influence anxiety. In the present study this model has been followed up to form new models for internalizing disorders in the Kerala population".

Laible (2010) "Emotionality and emotion regulation are presumed to interact to produce social behavior. Prior empirical evidence for this interaction has been

weak. Researchers have tended to take a variable-centered approach to predicting social behavior and this may have obscured the relations between negative emotionality, emotion regulation, and social behavior. Therefore, a person-centered approach was used to examine the links among these variables. Two-hundred and three adolescents (M age = 13.3 years) completed measures of negative emotionality, emotion regulation, and socioemotional behavior. Cluster analysis suggested four profiles of adolescents: those moderate on regulation and negative emotionality, those low in both, those high in negative emotionality and low in regulation, those low in negative emotionality and high in regulation. LDF analysis suggested that these profiles of adolescents differed along two dimensions on socioemotional behavior. Adolescents who were moderate on both negative emotionality and emotion regulation tended to be the best adjusted. Adolescents who were low in both negative emotionality and emotion regulation were the least well-adjusted of all four groups. The present findings suggest, there is a high cost to the preciseness of a variable-centered approach that is not incurred using a person-centered approach".

"In a theoretical model that grounded emotion regulation between developmental circumstances and adolescent adjustment. Specifically; they emphasized the importance of emotion regulation as a mediating factor between multiple aspects of adolescent development (e.g. adolescent temperament, parenting, attachment, and observational learning) and adolescent adjustment including internalizing and externalizing symptoms". (Morris and colleagues (2007) c.f. Kivisto, 2011).

"The relationship between child negative affect, effortful control, maternal negative affect, family functioning, and internalizing symptoms in a sample of preschool-aged children was examined by Crawford, Schrock, and Woodruff-Borden (2011) using a path analysis approach. Sixty-five children, aged 3-5 years and their mothers completed measures on child temperament, family environment, maternal personality, and child internalizing symptoms. Results support a complex



model for the influence of both direct and indirect factors on internalizing symptoms in preschool-aged children".

Another study by Besharat, Nia, and Farahani (2012) attempted to examine the relationship among anger, depression, emotion regulation, and anger rumination in people with major depressive disorder. Research has emphasized the importance of emotional functioning and deficits in emotion regulation for depression and related psychological disorders. Path analysis revealed that emotion regulation and anger rumination played a mediating role on the relation between anger and major depression.

Bottoms (2013) evaluated "participants included 41 individuals with Severe Mental Illness recruited from a day rehabilitation program. There were some evidence of a relationship between psychiatric symptom severity and Emotion Dysregulation. Individuals with poorer emotion regulation tended to have poorer self-reported social functioning, and positive symptom severity accounted for some of the variance in this relationship. Path analysis modeling summarized these relationships".

D'Avanzato, Joormann, Siemer, and Gotlib (2013) investigated "(1) the specificity of use of emotion regulation strategies in individuals diagnosed with current major depressive disorder (MDD), with social anxiety disorder (SAD), and in never-disordered controls (CTL); and (2) the stability of strategy use in formerly depressed participants (i.e., remitted; RMD). Path analysis was conducted to examine the relation between strategy use and symptom severity across diagnostic groups. When compared with the CTL group, participants in both clinical groups endorsed more frequent use of rumination and expressive suppression, and less frequent use of reappraisal. Specific to SAD were even higher levels of expressive suppression relative to MDD, as well as a stronger relation between rumination and anxiety levels. Higher levels of rumination and lower levels of reappraisal were found for MDD".

Based on the above theoretical and empirical reviews the following objectives and hypotheses were formulated in the current research.

## **OBJECTIVES OF THE STUDY**

1. To examine the relation between family environment, temperament, Emotion regulation Difficulties and internalizing disorders.
2. To examine family environment & temperament pathways through Difficulties in emotion regulation on social phobia
  - To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on social phobia.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on social phobia
  - To understand the mediating role and impact of Difficulties in emotion regulation on social phobia.
3. To examine family environment & temperament pathways through Difficulties in emotion regulation on panic disorder
  - To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on panic disorder.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on panic disorder
  - To understand the mediating role and impact of Difficulties in emotion regulation on panic disorder.
4. To examine family environment & temperament pathways through Difficulties in emotion regulation on separation anxiety

- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on separation anxiety.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on separation anxiety
  - To understand the mediating role and impact of Difficulties in emotion regulation on separation anxiety.
5. To examine family environment & temperament pathways through Difficulties in emotion regulation on generalized anxiety.
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on generalized anxiety.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on generalized anxiety.
  - To understand the mediating role and impact of Difficulties in emotion regulation on generalized anxiety.
6. To examine family environment & temperament pathways through Difficulties in emotion regulation on obsessive compulsive symptoms
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on obsessive compulsive symptoms.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on obsessive compulsive symptoms.

- To understand the mediating role and impact of Difficulties in emotion regulation on obsessive compulsive symptoms.
7. To examine family environment & temperament pathways through Difficulties in emotion regulation on depression.
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on depression.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on depression.
  - To understand the mediating role and impact of Difficulties in emotion regulation on depression.

### **Hypotheses of the Study**

Form the review of literature it was evident that internalizing disorders are characterized mainly with the difficulties in managing their emotions. Emotion regulation is a key component in the etiology of internalizing disorders such as anxiety and depression. Early developmental factors influence the development of emotion regulation in adolescents. The current study emphasized the role of temperamental factors and family environment. Although the temperamental factors are believed to be inherited, the immediate environment has got certain influences on the expression of the temperamental dispositions. So it has been assessed from the earlier studies that family environment and temperamental factors have got impact on emotion regulation or dysregulation. Dyregulated emotions act as risk factors for internalizing disorders. Therefore in the current study six mediated models were proposed for internalizing disorders such as Social Phobia, Panic Disorder, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive Symptoms, and Depression .

The following hypotheses and sub hypotheses will be discussed.

1. There will be significant relation between Difficulties in emotion regulation, temperament, family environment and internalizing disorders.
  - 1.1. There will be significant relation between Difficulties in emotion regulation and temperament factors.
  - 1.2. There will be significant relation between Difficulties in emotion regulation and dimensions of family environment.
  - 1.3. There will be significant relation between Difficulties in emotion regulation and different types of Internalizing disorders.
  - 1.4. There will be significant relation between temperamental factors and dimensions of family environment.
  - 1.5. There will be significant relation between temperamental factors and different types of internalizing disorders.
  - 1.6. There will be significant relation between dimensions of family environment and different types of internalizing disorders.

To examine the mediating role of emotion regulation with temperament and family environment to internalizing disorders, six models were proposed. The common hypotheses for the models were as follows:

**Path model for Social Phobia the following hypotheses were proposed.**

2. The effect of family environment and temperament on Social Phobia will be mediated by Difficulties in Emotion Regulation.
  - 2.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact upon Social Phobia.
  - 2.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Social Phobia.

- 2.3. Temperamental factor, Negative affect will have direct positive impact up on Social Phobia.
- 2.4. Difficulties in Emotion Regulation will have direct positive impact up on Social Phobia.

**Path model for Panic Disorder the following hypotheses were proposed.**

3. The effect of family environment and temperament on Panic Disorder will be mediated by Difficulties in Emotion Regulation.
  - 3.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Panic Disorder.
  - 3.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Panic Disorder.
  - 3.3. Temperamental factor, Negative affect will have direct positive impact up on Panic Disorder.
  - 3.4. Difficulties in Emotion Regulation will have direct positive impact up on Panic Disorder.

**Path model for Separation Anxiety the following hypotheses were proposed.**

4. The effect of family environment and temperament on Separation Anxiety will be mediated by Difficulties in Emotion Regulation.
  - 4.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Separation Anxiety.
  - 4.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Separation Anxiety.

- 4.3. Temperamental factor, Negative affect will have direct positive impact up on Separation Anxiety.
- 4.4. Difficulties in Emotion Regulation will have direct positive impact up on Separation Anxiety.

**Path model for Generalized Anxiety the following hypotheses were proposed.**

5. The effect of family environment and temperament on Generalized Anxiety will be mediated by Difficulties in Emotion Regulation.
  - 5.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Generalized Anxiety
  - 5.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Generalized Anxiety.
  - 5.3. Temperamental factor, Negative affect will have direct positive impact up on Generalized Anxiety.
  - 5.4. Difficulties in Emotion Regulation will have direct positive impact up on Generalized Anxiety.

**Path model for Obsessive Compulsive Symptoms the following hypotheses were proposed.**

6. The effect of family environment and temperament on Obsessive Compulsive Symptoms will be mediated by Difficulties in Emotion Regulation.
  - 6.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Obsessive Compulsive Symptoms

- 6.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Obsessive Compulsive Symptoms.
- 6.3. Temperamental factor, Negative affect will have direct positive impact up on Obsessive Compulsive Symptoms.
- 6.4. Difficulties in Emotion Regulation will have direct positive impact up on Obsessive Compulsive Symptoms.

**Path model for Depression the following hypotheses were proposed.**

7. The effect of family environment and temperament on Depression will be mediated by Difficulties in Emotion Regulation
  - 7.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Depression.
  - 7.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Depression.
  - 7.3. Temperamental factor, Negative affect will have direct positive impact up on Depression.
  - 7.4. Difficulties in Emotion Regulation will have direct positive impact up on Depression.



**CHAPTER 3**  
**METHOD**

This chapter deals with the general plan of the work done. The method formulated for the purpose consists mainly the following four sections:

- **Section 1: Participants for the investigation**
- **Section 2: Measures Used**
- **Section 3: Procedure**
- **Section 4: Statistical Technique Used**

### **SECTION-1: PARTICIPANTS**

In research, two terms namely population and sample are involved to each other. So we define the population as total collection of elements and sample as a part of such population that is selected according to some rules and statistics.

Selection of participants is the crucial step in any research. The sample should be representative and sample size should be adequate in order to draw valid inferences from the research. The adequacy of the sample is determined by its similarity to its population.

Two sampling method are probability sampling techniques and non-probability sampling techniques that the most emphasis of this study is on probability techniques.

Sample for the study was selected from educational institutions mainly from the Middle, Middle East and Middle West part of Kerala. The sampling was done using stratified random sampling. Adolescent girls studying in 8<sup>th</sup> standard to plus two classes were taken for study. Age ranges between 13yrs-17yrs were included in the present study.

Table 1

*Distribution of the sample based on Age*

SI No	Age	No of Respondents	%
1	13-15 YRS	1112	54.5%
2	16-17 YRS	929	45.5%

From the above table it is evident that 54.5% of the students are of the age category 13-15 yrs and 45.5 % of the students belong to 16-17 yrs category.

Table 2

*Distribution of the sample based on Place of Residence*

Sl No	Place of Residence	No of Respondents	%
1	Middle	912	44.68%
2	East	490	24%
3	South	639	31.3%

The data was collected using stratified random sampling mainly considering the Kerala population into three main areas such as middle, South and North part. The table shows that 44.68% of the respondents are from middle part of Kerala including Thrissur, Palakkad, and Ernakulam. 24% of the participants are from East part of Kerala which consists of Malappuram, Kozhikode and Kannur districts. Finally, 31.3% of the participants are from the south part of Kerala, including Kottayam, Alapuzha, Kollam and Thiruvananthapuram.

Table 3

*Distribution of the sample based on religion*

Sl. No.	Religion	No of Respondents	%
1	Hindu	980	48%
2	Christian	944	46.3%
3	Muslim	117	5.7%

Table shows that 48% of the students are Christians, 46.3% of the students are Hindus and only 5.7% of the students are Muslims.

Table 4

*Distribution of the sample based on Syllabus*

Sl No	Syllabus	No of Respondents	%
1	State	1200	59%
2	CBSE	841	41%

It was evident from the table that 59% of the students are from Schools following State Syllabus and 41% of the students are from schools following CBSE syllabus.

Table 5

*Distribution of Sample Based On Type of School*

Sl No	Type of School	No of Respondents	%
1	Girls only	1070	52.4%
2	Co-education	971	47.5%

Table 5 shows that 52.5% of the adolescent girls belong to girls' only schools and 47.5 % of the girls undergoing co- education.

**SECTION 2: MEASURES USED**

This section deals with the measures used for the study. Questionnaires are mainly used to extract data. The psychometric properties of the questionnaires are described along with the variables they measure. The major measures selected for the study are:

- Difficulties in Emotion Regulation Questionnaire (DERS)
- The Early Adolescent Temperament Questionnaire-Revised (EATQ-R)
- Family Environment Scale (FES)
- Revised Children's Anxiety and Depression Scale
- Personal data sheet

The scales were translated into Malayalam by a Psychology and an English professor and proof read by two bilingual research scholars in Psychology. The translated scale was piloted with an independent group of students before its use in this study.

### **DIFFICULTIES IN EMOTION REGULATION SCALE (DERS)**

The construct of emotion dysregulation increasingly has been used to explain diverse psychopathologies across the lifespan. "The Difficulties in Emotion Regulation Scale (DERS) represents the most comprehensive measure of the construct to date and exhibits good reliability and validity in adolescents, with a particular emphasis on negative emotions. It is a 36-item self-reported questionnaire to provide a comprehensive measure of the difficulties in emotion regulation in adolescents.

The six dimension include

- lack of awareness of emotional responses,
- lack of clarity of emotional responses,
- nonacceptance of emotional responses,
- limited access to emotion regulation strategies perceived as effective
- difficulties controlling impulses when experiencing negative emotions
- Difficulties engaging in goal-directed behaviors when experiencing negative emotions." (Gratz & Roemer, 2004)

### **Reliability and Validity**

Weinberg and Klonsky, (2009)," examined the psychometric properties of the DERS in a community sample of 428 adolescents (ages 13–17 years). Exploratory factor analysis well supported a 6-factor structure consistent with the 6 DERS subscales. Internal consistencies for the subscales were found to be good to excellent (alphas ranged from .76 to .89). The DERS exhibited robust correlations with psychological problems reflecting emotion dysregulation, specifically depression, anxiety, suicidal ideation; eating disorders, alcohol use, and drug use,

supporting the measure's construct validity. In general, results support the reliability and validity of the DERS as a measure of emotion dysregulation in adolescents. In undergraduates, the overall internal consistency ( $\alpha$ ) is .93, ranging from .80 to .89 on subscales. Item-total correlations ( $r$ ) range from .16 to .69".

### **The Early Adolescent Temperament Questionnaire-Revised (EATQ-R)**

"The Early Adolescent Temperament Questionnaire-Revised (EATQ-R; Ellis & Rothbart, 2001) was a revision of a measure developed by Capaldi & Rothbart (1992). It is a 65-item questionnaire. The revised questionnaire assessed 10 aspects of temperament related to self-regulation in adolescents. Items were rated on a 5-point scale ranging from 1 "almost always untrue of you" to 5 "almost always true of you". Temperament Scales include:

**Activation Control:** The capacity to perform an action when there is a strong tendency to avoid it.

**Activity Level:** Participation in activities requiring high levels of physical activity.

**Affiliation:** The desire for warmth and closeness with others, independent of shyness or extraversion.

**Attention:** The capacity to focus attention as well as to shift attention when desired.

**Fear:** Unpleasant affect related to anticipation of distress.

**Frustration:** Negative affect related to interruption of ongoing tasks or goal blocking.

**High Intensity Pleasure:** The pleasure derived from activities involving high intensity or novelty.

**Inhibitory Control:** The capacity to plan, and to suppress inappropriate responses.

**Perceptual Sensitivity:** Detection or perceptual awareness of slight, low-intensity stimulation in the environment.

**Pleasure Sensitivity:** Pleasure related to activities or stimuli involving low intensity, rate, complexity, novelty, and incongruity.

**Shyness:** Behavioral inhibition to novelty and challenge, especially social.

## Behavioral Scales

**Aggression:** Hostile and aggressive actions, including person- and object-directed physical violence, direct and indirect verbal aggression, and hostile reactivity.

**Depressive Mood:** Unpleasant affect and lowered mood, loss of enjoyment and interest in activities".

"The major Superscales/factors taken for the study are:

### **Effortful Control (EC)**

It is the ability to regulate attention and behavior, is believed to make major contributions to social adaptation children high on Effortful Control may be able to regulate their emotional state by deploying their attention and thus reduce the probability of internalizing problems. It is composed of Attention, Inhibitory Control, Activation Control variables of the present scale

### **Surgency (SU)**

Surgency, manifested as orientation to and exploration of novelty, was comprised of high-intensity pleasure (positive loading), shyness (negative loading), and fear (negative loading), indicating that this factor largely reflects the relative activation of the BIS (behavioural inhibition system) and BAS system (behavioral activation system)

### **Negative Affect (NA)**

Negative Affectivity is a potentially negative constitutional factor that may be exacerbated through dysfunctional patterns of interaction. In children, Negative Affectivity encompasses both fear and frustration, in adolescents mainly frustration.

### **Affiliativeness (AF)**

Which refers to the desire for closeness with others, independent of extraversion or shyness. Composed of Affiliation, Perceptual Sensitivity, Pleasure Sensitivity subscales.

### **Reliability and Validity**

Alpha reliabilities ranged from .79 to .84 for the 10 temperament scales. The correlation coefficients between the subscales and the total scale were more than .90. Convergence with parent report was high for most scales. In summary, EATQ was a reliable tool for the measurement of temperament in adolescents" (Ellis & Rothbart, 2001).

### **FAMILY ENVIRONMENT SCALE (FES)**

"The Family Environment Scale (FES) is used to measure the social-environmental characteristics of family. The scale was developed by Moos & Moos (1994). Three forms are available which measure the family environment in three ways: Real (Form R), Ideal (Form I) and Expected (Form E). The Real Form is used here which measures the real perceptions about the family by the particular member. The scale is a 90-item inventory that has 10 subscales measuring Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual - Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization and Control. The ten subscales assess three underlying domains, or sets of dimensions: the Relationship dimensions, the Personal Growth Dimensions, and the System Maintenance Dimensions".

#### **The Relationship dimension**

"The sub variables cohesion, expressiveness, and conflict together contribute to Relationship Dimension. Cohesion is the degree of commitment and support family members provide for one another, expressiveness is the extent to which family members are encouraged to express their feelings directly, and conflict is the amount of openly expressed anger and conflict among family members".

**Personal Growth Dimension:** "composed of independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious emphasis. Independence assesses the extent to which family members are assertive, self-sufficient and make their own decisions. Achievement Orientation reflects how much activities are cast into an achievement oriented or



competitive framework. Intellectual-cultural orientation measures the level of interest in political, intellectual, and cultural activities. Active-recreational orientation measures the amount of participation in social and recreational activities. Moral-religious emphasis assesses the emphasis on ethical and religious issues and values.

The final two subscales, organization and control, are for **System Maintenance**. This measures how much planning is put into family activities and responsibilities and how much set rules and procedures are used to run family life".

### **Reliability & validity**

"Internal consistency reliability estimates for the Form R subscales range from .61 to .78. Intercorrelations among these 10 subscales range from -0.53 to 0.45. These data suggest that the scales are measuring relatively distinct characteristics of family environment and with reasonable consistency. Test-retest reliabilities for the Form R subscales for 2-month, 3-month, and 12-month intervals range from .52 to .91. These estimates suggest that the scale is reasonably stable across these time intervals.

The face and content validity of the instrument are supported by clear statements about family situations that relate to subscale domains. Evidence of construct validity is presented in the manual through comparative descriptions of distressed and normal family samples; comparisons of parent responses with those of their adolescent children; descriptions of responses by families with two to six or more members; and descriptions of families with a single parent, of minority families, and of older families. Additional validity evidence is provided in the manual through summaries or references to approximately 150 additional research studies".

### **Revised Children's Anxiety And Depression Scale (RCADS)**

The tool was prepared by Weiss and Chorpita (2011) . The Revised Child Anxiety and Depression Scale (RCADS) is a 47-item, youth self-report questionnaire with subscales including:

- Social phobia (SP),
- Panic disorder (PD),
- Separation anxiety disorder (SAD),
- Generalized anxiety disorder (GAD),
- Obsessive compulsive disorder (OCD), and
- Major depressive disorder (MDD).

It also yields a Total Anxiety Scale (sum of the 5 anxiety subscales) and a Total Internalizing Scale (sum of all 6 subscales). Items are rated on a 4-point Likert-scale from 0 (“never”) to 3 (“always”).

### **Reliability and Validity**

"Based on 405 youth aged 8 to 18yrs from community sample from Australian the psychometric properties of the scale were established. Internal consistency for the overall scale and its subscales was found to be adequate. Overall, within scale reliability was excellent with a Chronbach’s alpha of 0.96. All subscales also showed good to excellent internal reliability such as Generalized Anxiety (0.90), Depression(0.86), Separation Anxiety(0 .75), Social Phobia(0.75), Obsessive Compulsive(0.77), Panic Anxiety (0.84.).

Good convergent validity was demonstrated through moderate to strong correlations between the subscales of the RCADS with scores on the Revised Children's Manifest Anxiety Scale (RCMAS) and the Children's Depression Inventory (CDI). Confirmatory factor analysis suggested reasonable fit for the six-factor model by Chorpita et al. Notwithstanding the need for additional validation, it is concluded that the RCADS is a promising instrument for use in both clinical and research settings". (Ross, Gullone & Chorpito, 2002)

### **Personal Data Sheet**

Personal Data Sheet includes the general information about the participants such as age, place of residence, religion, syllabus, type of school, etc.

### **SECTION 3: PROCEDURE AND ADMINISTRATION**

Prior appointment was taken from the Principals of the schools which have been selected for the present study. An awareness programme, lasting for 40 minutes, was conducted for students about “Psychological Problems of Children and Adolescents”. After the awareness programme, those students who were willing to participate in the study were provided with Questionnaires, and the purpose of the study was explained to them. Confidentiality was assured. The four questionnaires: 1) Difficulties in Emotion Regulation Questionnaire (DERS) 2) The Early Adolescent Temperament Questionnaire-Revised (EATQ-R) 3) Family Environment Scale (FES) 4) Revised Children’s Anxiety and Depression Scale along with personal data sheet were distributed among them.

All the materials had printed information. The investigator explained the instructions clearly and read out each questions clearly, so that all the students were able to mark their responses in the respective places at the same time and with same speed. This was done in order to rectify the reading difficulties of students and also to prevent incomplete responses. Clarifications were done whenever required.

The collected questionnaires were checked for incomplete responses. Incomplete questionnaires were excluded and the complete data sets were scored according to the norms and guidelines of each scale, as described below.

#### **SCORING**

##### **Difficulties in emotion regulation Scale (DERS)**

"DERS was scored based on the responses ranging from 1 to 5, where 1 is almost never (0–10%), 2 is sometimes (11–35%), 3 is about half the time (36–65%), 4 is most of the time (66–90%), and 5 is almost always (91–100%). DERS is scored so that the overall score, as well as all subscale scores, reflect greater difficulties in emotion regulation. Thus the maximum expected score for a subject in the tool was 180 and minimum score was 36. DERS items were recorded so that higher scores in every case indicated greater difficulties in emotion regulation (i.e., greater emotion dysregulation)".

### **The Early Adolescent Temperament Questionnaire-Revised (EATQ-R)**

"The scores for the items were 1,2,3,4,5 and for reversed score items it becomes 5,4,3,2,1. The major Super scales/factors were taken for the study. The total scores for the subscales such as effortful control, surgency, negative affect and affiliativeness were calculated".

### **3) Family Environment Scale (FES)**

"Family Environment Scale –Form R was used in the present study. Scoring was done as per the manual. The scores of 10 subscales measuring Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual - Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization and Control were calculated using the scoring key and by taking the total scores for the subvariables. The ten subscales assess three underlying domains, or sets of dimensions: the Relationship dimensions, the Personal Growth Dimensions, and the System Maintenance Dimensions. The total scores of subscales Cohesion, Expressiveness, Conflict, contribute to Relationship Dimension. Personal Growth Dimension is the total scores of the subscales such as Independence, Achievement Orientation, and Intellectual -Cultural Orientation, Active-Recreational Orientation, and Moral-Religious Emphasis. Finally, the total scores of Organization and Control subscales contribute to the System maintenance Dimension".

### **4) Revised Children's Anxiety and Depression Scale (RCADS-R)**

"The RCADS can be scored either manually or by using an automated scoring procedure. To score the RCADS manually, each item is assigned a numerical value from 0-3, where 0 = Never, 1 = Sometimes, 2 = Often, and 3 = Always. The subscales were Social Phobia, Panic Symptoms, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive Symptoms and Depression. For each subscale add the numerical values for each item together. The items that comprise each subscale are listed below. For example, for Generalized Anxiety add the

numerical values for items 1, 13, 22, 27, 35, and 37. Thus, the highest score possible is 18, the lowest 0. In the same way all the other subscales were calculated.

Subscale Related Items:

Social Phobia - 4, 7, 8, 12, 20, 30, 32, 38, 43

Panic Symptoms - 3, 14, 24, 26, 28, 34, 36, 39, 41

Separation Anxiety- 5, 9, 17, 18, 33, 45, 46

Generalized Anxiety- 1, 13, 22, 27, 35, 37

Obsessive-Compulsive Symptoms- 10, 16, 23, 31, 42, 44

Depression - 2, 6, 11, 15, 19, 21, 25, 29, 40, 47"

## **Standardization of the Tools**

### **1) Difficulties in Emotion Regulation Scale**

#### **Adaptation, translation and re-administration**

Difficulties in emotion regulation scale was adapted from the original scale developed by Gratz & Roemer and the adolescent form was standardized by Weinberg and Klonsky, (2009). For the present study the inventory was given in English and in Malayalam (attached to the appendix). The Malayalam translation was re- standardized.

#### **Item analysis**

A pilot study was conducted for the adaptation and re-standardization of the scale. On the basis of the pilot study the total score for each individual was obtained by finding out the sum of the scores for each dimension. Thus a subject could score from a minimum 36 to a maximum of 180. The high score indicated greater difficulties in regulating emotions. The total score obtained by the subjects were subjected to statistical analysis. Later, on the basis of each one's total score, the respondents were buffered in to high and low score groups. Item analysis of the scale was done by Likert method.

### Item selection

On the basis of the item analysis, out of the 36 items in the tool named DERS only 29 items were selected for the final study. Other 7 items were removed as these items were found to be insignificant for the teenagers of Kerala population. "Lack of Emotional Awareness; Lack of Emotional Clarity; Difficulties Controlling Impulsive Behavior When Distressed; Difficulties Engaging in Goal-Directed Behavior When Distressed; Nonacceptance of Negative Emotional Responses; Limited Access to Emotion Regulation Strategies were the sub variables in the scale. Items are scored on a 5-point scale ranging from 1 (*almost never*) to 5 (*almost always*). Subscale scores are obtained by summing the corresponding items. It was maintained as in the original scale".

Thus participants could score from a minimum 29 to maximum of 145. The high score indicated high difficulties in regulating emotions. The 't' value of the 40 items of the DERS measure are given below.

Table 6

*The t values of the 36 items of the Difficulties in Emotion Regulation Scale*

Sl. No.	t value	Sl. No.	t value
1	-1.517	19	-7.631**
2	-2.696**	20	0.904
3	-4.745**	21	-5.609**
4	-6.026**	22	-7.428**
5	-5.373**	23	-5.334**
6	-.561	24	1.419
7	-1.558	25	-5.978**
8	-1.470	26	-9.012**
9	-5.752**	27	-7.873**
10	-2.726**	28	0.247
11	-5.851**	29	-7.375**
12	-5.420**	30	-7.272**
13	-7.880**	31	-6.442**
14	-9.146**	32	-7.451**
15	-5.639**	33	-9.186**
16	-7.696**	34	-5.077**
17	-3.617**	35	-8.022**
18	-5.5938**	36	-7.804**

\*\*P < 0.01

## **Reliability and Validity**

"The Chronbach's alpha was used to assess the instrument reliability. The reliability coefficient of DERS was found to be 0.875 the total scale. For the subscales the reliability was found to be Lack of Emotional Awareness (0.339 ),Lack of Emotional Clarity (0.629 ), Difficulties Controlling Impulsive Behaviours when Distressed (0.694 ), difficulties engaging in Goal Directed Behaviours when Distressed (0.656), Nonacceptance of Negative Emotional Response (0.704 ), Limited Access to ER strategies (0.621 ).The scale shows good face validity".

## **2) Early Adolescent Temperament Questionnaire-Revised (EATQ-R)**

### **Adaptation, translation and re-administration**

"The Early Adolescent Temperament Questionnaire-Revised (EATQ-R; Ellis & Rothbart, 2001) was a revision of a measure developed by Capaldi & Rothbart (1992). It is a 65-item questionnaire. For the present study the inventory was given in English and in Malayalam (attached to the appendix). The Malayalam translation was re- standardized".

### **Item analysis**

A pilot study was conducted for the adaptation and re-standardization of the scale. The scale is a 65-item inventory that has 4 main subscales measuring Temperamental factors such as Effortful control (EC), Surgency (SU), Negative Affect (NA) and Affiliativeness (AF). On the basis of the pilot study the total score for each individual was obtained by finding out the sum of the scores for each dimension. The total score obtained by the subjects were subjected to statistical analysis. Later, on the basis of each one's total score, the respondents were buffered in to high and low score groups. Item analysis of the scale was done by Likert method.

Table 7

*The t values of the 65 items of the Early Adolescent Temperament Questionnaire-Revised*

SI No.	t-value	SI No.	t-value
1	-3.933**	34	-2.461**
2	-2.025**	35	-2.760**
3	-2.064**	36	-3.474**
4	-5.302**	37	-4.485**
5	-3.211**	38	-0.192
6	-7.178**	39	-3.627**
7	-2.850**	40	0.975
8	-2.836**	41	-7.575**
9	-2.702**	42	-4.554**
10	-0.014	43	-7.641**
11	-5.358**	44	-5.911**
12	-4.773**	45	-3.206**
13	-2.054**	46	2.106**
14	-2.618**	47	-3.402**
15	-3.389**	48	-6.978**
16	-5.399**	49	-2.038**
17	-4.438**	50	-3.175**
18	0.491	51	0.378
19	-2.855**	52	-3.383**
20	-3.835**	53	-4.391**
21	-7.825**	54	-3.786**
22	-1.652**	55	-0.558
23	-7.139**	56	.168
24	-6.852**	57	-.543
25	-4.052**	58	-0.442
26	-0.104	60	-2.846**
27	-5.637**	61	-0.372
28-	2.465**	62	-3.046**
29	-2.296**	63	-3.861**
30	-3.942**	64	-2.388**
31	-6.277**	65	-3.543**
32	-3.840**		
33	-6.392**		

\*\*p < 0.01

The table shows that in the final adapted scale consists of 49 items. After standardization items 10, 18, 40, 51, 55, 56, 57, 58, 61 were removed from the final Malayalam adapted scale.



### Reliability and Validity

Chronbach's alpha of the total scale EATQ-R was found to be 0.811. for the subscales the Chronbach's alpha was found to be Effortful Control (0.77), Surgency (0.75), Negative Affect (0.80) and for Affiliativeness (0.69). The scale has got good face validity.

### 3) Family environment scale

#### Adaptation, translation and re-administration

Family environment scale was originally constructed by Moos and Moos (1994). For the present study the inventory was given in English and in Malayalam (attached to the appendix). The Malayalam translation was re-standardized.

#### Item analysis

A pilot study was conducted for the adaptation and re-standardization of the scale. The scale is a 90-item inventory that has 10 subscales measuring interpersonal Relationship dimension, the Personal Growth, and the System Maintenance. On the basis of the pilot study the total score for each individual was obtained by finding out the sum of the scores for each dimension. The total score obtained by the subjects were subjected to statistical analysis. Later, on the basis of each one's total score, the respondents were buffered in to high and low score groups. Item analysis of the scale was done by Likert method.

Table 8

*The t values of the 90 items of the Family Environment Scale*

Sl. No.	t-value
1	-6.501**
2	-1.786**
3	3.955**
4	-2.591**
5	-5.873**
6	-3.342**
7	-2.355**
8	-6.311**

Sl. No.	t-value
9	-6.019**
10	3.492**
11	-4.991**
12	-4.301**
13	4.507**
14	-5.669**
15	-5.847**
16	-2.409**

Sl. No.	t-value
17	-2.114
18	-6.804**
19	-5.560**
20	-.718
21	-.216
22	-1.911*
23	2.651**
24	-6.165**
25	-.235
26	-7.897**
27	-7.049**
28	-6.772**
29	-5.222**
30	4.408**
31	-5.557**
32	-7.721**
33	3.763**
34	-1.214**
35	-6.966**
36	-8.508**
37	-9.845**
38	-3.947**
39	-7.935**
40	-4.692**
41	-3.275**
42	-2.642*
43	-.074
44	-2.939*
45	-8.509**
46	-10.401**
47	-8.498**
48	-9.045**
49	-8.791**
50	-5.882**
51	-3.429**
52	.345
53	4.717**
54	.051

Sl. No.	t-value
55	-4.653**
56	-4.177**
57	-6.818**
58	-2.922**
59	-8.899**
60	4.533**
61	-9.622**
62	-7.255**
63	5.730**
64	-8.326**
65	-5.583**
66	-6.397**
67	-7.211**
68	-.109
69	-4.943**
70	4.534**
71	-4.534**
72	4.301**
73	2.591**
74	-4.656**
75	-5.103**
76	-7.033**
77	-3.882**
78	-7.048**
79	-7.261**
80	-1.427**
81	-5.882**
82	-6.437**
83	.817
84	-4.991**
85	1.694**
86	-7.203**
87	-4.027**
88	-5.412**
89	-3.984**
90	-2.714**

\*\*p < 0.01

The table shows that after standardization of the Malayalam scale, items 20,21,25,43,52,54,68 and 82 were removed from the final scale.

### **Reliability and Validity**

The reliability of the total scale was found to be 0.70. The Chronbach's alpha for the major subscales were found to be Relationship Dimension (0.75), Personal Growth Dimension (0.70), and System Maintenance Dimension (0.73). The face validity of the scale was found to be adequate.

### **Revised Children's Anxiety and Depression Scale (RCADS)**

#### **Adaptation, translation and re-administration**

The scale prepared by Weiss and Chorpito (2011), consists of 47 items and 6 subscales measuring symptoms of Social Phobia, Panic Disorder, Separation Anxiety, Generalized anxiety, Obsessive Compulsive Disorder and Depression. For the present study the inventory was given in English and in Malayalam (attached to the appendix). The Malayalam translation was re- standardized.

#### **Item analysis**

A pilot study was conducted for the adaptation and re-standardization of the scale. On the basis of the pilot study the total score for each individual was obtained by finding out the sum of the scores for each dimension. The total score obtained by the subjects were subjected to statistical analysis. Later, on the basis of each one's total score, the respondents were buffered in to high and low score groups. Item analysis of the scale was done by Likert method.

Table 9

*The t values of the 47 items Revised Children's Anxiety and Depression Scale (RCADS)*

Sl. No.	t-value	Sl. No.	t-value
1	-7.245**	25	-8.935**
2	-9.118**	26	-6.840**
3	-7.113**	27	-11.745**
4	-8.248**	28	-9.503**
5	-7.310**	29	-14.196**
6	-5.918**	30	-10.580**
7	-9.878**	31	-6.998**
8	-11.465**	32	-11.201**
9	-5.602**	33	-9.094**
10	-9.992**	34	-8.417**
11	-6.211**	35	-12.988**
12	-8.530**	36	-4.676**
13	-10.812**	37	-9.747**
14	-8.006**	38	-7.587**
15	-5.937**	39	-6.968**
16	-6.531**	40	-6.948**
17	-6.696**	41	-8.732**
18	-9.004**	42	-8.208**
19	-10.522**	43	-10.201**
20	-11.485**	44	-8.002**
21	-8.377**	45	-7.963**
22	-12.171**	46	-8.219**
23	-10.617**	47	-8.097**
24	-9.189**		

\*\*P < 0.01

RCADS which contains 47 items in the original English version, after standardization, carry over all the 47 items to the final Malayalam adapted scale.

### **Reliability and Validity**

The Chronbach's Alpha for the scale Revised anxiety and Depression Scale was found to be 0.920. For the subscales the score alpha was found to be Social Phobia (0.77), Panic Disorder (0.73), Separation Anxiety (0.72), Generalized anxiety (0.75), Obsessive Compulsive (0.66) and for Major Depression (0.75). The Scale has got adequate face validity.

### **Consolidation of Data**

The raw scores obtained by the subjects on different measures under study and all the background information collected from the subjects were coded and entered into the SPSS (The Statistical Package for Social Sciences). SPSS version 17 for windows and "AMOS was used to analyze information gathered in organizing and analyzing data. Path analysis can be performed using computer programmes such as: LISREL, AMOS or EQS. AMOS has been used for the current analysis. AMOS is a more recent program that allows researchers to utilize either a user friendly graphical interface to draw path diagrams or a programming language called BASIC, to estimate path models. An advantage of AMOS is that it produces high quality path diagrams and reads SPSS system files".

## **SECTION 4: STATISTICAL TECHNIQUES USED**

The main purpose of statistical analysis is to draw inferences or make generalization. Statistical technique enables to estimate parameters on the basis of participants' statistics. Statistical treatment of the data went in accordance with the purpose of the study and also based on the objectives and the hypotheses formulated. The entire study was designed in view of meeting the purpose of testing the tenability of the hypothesis formulated and to formulate models using the variables.

The statistical techniques used for the analysis of the data are as follows:

- Correlation analysis
- Path way analysis

### **Correlation Analysis**

Correlation is concerned with describing the relationship between two variables. In social sciences co-efficient of correlation is used as a precise estimate of the direction and the degree of relationship between the pairs of variables. A co-efficient of correlation is a single member that tells us to what extent the two variables are related, that is to what extent variation in one goes with variation in the other (Guilford, 1982).

The most widely used measure of correlation is Pearson's Product Moment Correlation Coefficient ( $r$ ). The value of the correlation co-efficient ranges from -1 through 0 to +1. Zero indicated no correlation, 1 indicated perfect correlation and the signs indicate the direction of relationship.

For the present study Karl Pearson Product Moment Correlation test is used to find out the correlation between the variables.

### **PATH WAY ANALYSIS**

"Path analysis was originally developed by geneticist Sewall Wright in the 1920's. Sociologists Peter Blau and Otis Dudley Duncan were among the first to utilize path analysis extensively in their research on the processes involved in status attainment. During 1970's path analysis became more popular in Psychology, Sociology Economics and other fields".

Path way analysis was conducted on the regression to further understand the direct and indirect effects of the variables such as family environment, temperament and emotion regulation difficulties of adolescent girls on internalizing disorders such as anxiety and depression in order to propose a model for future management of these disorders. It has been also hypothesized that the emotion regulation difficulties

also mediate the relation between family environment, temperament to anxiety and depression.

Currently there is no consensus in the literature regarding the appropriate sample size to path analysis. In general, the larger the sample size, the better (Keith, 2006). According to Kline (2005), sample sizes over 200 are considered large. The sample for this study is 2041 which may be considered large by Kline's standards. The complexity of the model, however, is important to consider when determining the sample size needed to achieve adequate power. In other words, the more complex the model is (ie. A large number of parameters), the more subjects are needed to obtain adequate power. Kline suggests the minimum requirement is a ratio of 5: 1 for the number of subjects to parameters in research design. Given the number of parameters in the hypothesized path analysis, the sample size for this study was adequate based upon the minimum ratio requirement.

"Key components of path analysis:

- Path Diagram: A path Diagram represents the hypothesized casual model in path analysis. Path Diagrams was developed by Wright, refer to models that are linear in the parameters exogenous variables, endogenous variables, determined by variables within the model.
- Exogenous variables are variables whose cause is external to the model and whose role is to explain other variables or outcomes in the model. Endogenous variables are variables that are caused by one or more variables within the model.
- Residual Error (e) is exogenous independent variables that are not directly measured and reflect unspecified causes of variability in the outcome or unexplained variances plus any error due to measurement.
- Path coefficients measure the relative strength and sign of the effect from a casual variable to an endogenous variable in the model.

- Decomposing of direct and indirect path effects. Direct effects are effects that go directly from one variable to another. Indirect effects occur when the relationship between two variables is mediated by one or more variables. Total effect is the sum of direct and indirect effects.(Streiner,2005)
- Estimation of path models: Models where the hypothesized causality flows in a single direction, the estimation can be done relatively simply by using Ordinary Least Squares (OLS) regression or Maximum Likelihood estimation (MLE) to solve the equations for each endogenous or outcome variable in the model.(Lleras,2005)
- Model Specification is most helpful in the testing of well-specified theories about the relationships between variables and not for exploratory purposes.
- Model Fit Statistics or Goodness of Fit: There are varieties of goodness of fit statistics that can be used to assess model fit and evaluate competing path models. The common fit indices are: GFI (goodness of fit index, This should exceed 0.9 for a good model.), AGFI (adjusted GFI, should exceed 0.9 for a good model ),NFI (The Normed Fit Index Values of 0.9 or higher indicate good fit ), CFI (The Comparative Fit Index, Acceptable model fit is indicated by a CFI value of 0.90 or greater.), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC (Akaike information Criterion, the model with smallest AIC is preferred)". (Ingram, Cope, Harju, & Wuensch, 2000).



**CHAPTER 4**  
**RESULT AND DISCUSSION**

This chapter deals with data analysis, descriptive statistical procedures and some inferential assessments. Descriptive statistical analysis is utilized to present the preliminary analysis of the sample. Further analysis involves detailed analysis of the variables using the following analyses. The results have been presented in sections in accordance with the sequence of hypotheses formulated earlier. This makes the presentation of the study findings systematic and enhances the meaningfulness of the interpretation of the results.

- **Section1 : Preliminary Analysis**
- **Section 2: Correlation Analysis between Difficulties in Emotion Regulation, Family Environment, Temperamental Factors and Internalizing Disorders.**
- **Section 3: Path way analysis**

## **SECTION 1**

### **PRELIMINARY ANALYSIS**

The fundamental Descriptive Statistics like Arithmetic Mean, Median, Mode, Standard Deviation, Skewness and Kurtosis of the variables were calculated. A particularly useful descriptive value in any distribution is the arithmetical average of all the results. This value is called the mean. The standard deviation is a measure of the extent to which a distribution is grouped around the average (the mean) or spread out away from the mean. The smaller the standard deviation in a distribution, the more all the values will tend to cluster around the mean; the larger the standard deviation the more the values will be distributed away from the mean. The two concepts kurtosis and skewness are used to get an idea about the shape of the frequency curve of a distribution. Skewness is measure of the lack of symmetry, whereas Kurtosis is a measure of the relative peakedness of the top of a frequency curve. In a normal distribution the mean equals the median exactly and there is no skewness. In a negatively skewed distribution the value of median will be higher than that of the mean value. When a frequency curve is more peaked than the normal curve it is called leptokurtic and when it is more flat than the normal curve it is

called platykurtic. When a curve is neither peaked nor flat topped, it is called mesokurtic (normal). When the distribution and related curve is normal, the value of Kurtosis is 0.263( $Ku=0.263$ ). If the value of the  $Ku$  is greater than 0.263, the distribution and related curve obtained will be Platykurtic. When the value of  $Ku$  is less than 0.263, the distribution and related curve obtained will be Leptokurtic (Garrett, 1999).

### **Descriptive Analysis of the Whole Sample**

Mean, median, mode, standard deviation, skewness and kurtosis of the distributions of the variables difficulties in emotion regulation, temperamental factor, family environment and internalizing disorders for the whole sample. Details of the results are presented in the Table.

From the Table it is evident that the values of the major measures of central tendency, viz; the Arithmetic Mean, Median, Mode for all the variables under investigation are almost equal. The standard deviation, Skewness and Kurtosis values of all the measures indicates that all the variables are almost normally distributed.

From the table it is clear that the values of the major measures of central tendency, viz; Arithmetic mean, Median, and Mode for the measure Difficulties in emotion regulation Total Score was found to be 76.89, 76.00, 76.00 respectively. These values were found to be almost equal. The standard deviation is 20.283. Regarding the symmetry of the distribution, the value of skewness is 0.252 which means the distribution is positively skewed. The value of kurtosis, the measure of peakedness, is -0.575, which suggests that the distribution is slightly leptokurtic. Therefore the distribution of difficulties in emotion regulation score for the whole sample is normal.

The next variable is temperament. The first temperamental factor Effortful Control has got values for measures of central tendency, mean (25.86), median (26.00) and mode (24.00), which shows almost similar values. Standard Deviation was found to be 4.703.

Table 10

*Basic descriptive statistics of all the variables under investigation (n=2041)*

Variables	Mean	Median	Mode	S.D	Skewness	Kurtosis
DIFFICULTIES IN EMOTION REGULATION	76.89	76.00	76.00	20.283	0.252	-0.575
TEMPERAMENT						
Effortful Control	25.86	26.00	24.00	4.703	-0.035	0.081
Surgency	16.93	17.00	15.00	4.946	0.234	-0.452
Negative Affect	29.69	29.00	32.00	6.127	0.054	0.153
Affiliativeness	32.28	33.00	34.00	5.319	-0.693	0.82
FAMILY ENVIRONMENT						
Relationship dimension	9.11	9.00	11	2.062	-0.948	0.969
Personal growth dimension	24.33	25.00	24	4.284	-.760	1.392
System maintenance dimension	10.64	11.00	11	2.098	-0.569	0.283
INTERNALIZING DISORDERS						
Social Phobia	11.61	11.00	12	4.869	0.443	0.003
Panic Disorder	7.33	7.00	5	4.387	0.817	0.512
Separation Anxiety	8.15	8.00	7.00	4.415	0.858	1.062
Generalized Anxiety	7.45	7.00	5.00	4.198	0.450	-0.311
Obsessive Compulsive	6.40	6.00	6.00	3.518	0.640	0.116
Major Depression	6.63	6.00	6.00	3.461	0.377	-0.309

The values for skewness and kurtosis were found to be -0.035 and 0.081 respectively. This shows that the distribution is negatively skewed and the value of kurtosis which is approximately equal to zero, indicates that the distribution is mesokurtic.

The temperamental factor Surgency has got values for measures of central tendency, mean (16.93), median (17.00) and mode (15.00), which shows almost similar values. Standard Deviation was found to be 4.946. The values for skewness and kurtosis were found to be 0.234 and -0.452 respectively. This shows that the distribution is positively skewed and the value of kurtosis indicates that the distribution is slightly leptokurtic.

Negative affect is the next temperamental factor which has got values for measures of central tendency, mean (29.69), median (29.00) and mode (32.00), which shows almost similar values. Standard Deviation was found to be 6.127. The values for skewness and kurtosis were found to be 0.054 and 0.054 respectively. This shows that the distribution shows only slight skewness and the value of kurtosis indicates that the distribution is almost mesokurtic.

The next temperamental factor affiliativeness shows values for measures of central tendency, mean (32.28), median (32.00) and mode (34.00), which shows almost similar values. Standard Deviation was found to be 5.319. The values for skewness and kurtosis were found to be -0.693. This shows that the distribution is negatively skewed and the value of kurtosis 0.82 which is higher than 0.26, indicates that the distribution is slightly platykurtic.

Other important variable was Family Environment Dimensions. The first dimension, Relationship Dimension, was found to have values for measures of central tendency, mean (9.11), median (9.00) and mode (11.00), which shows almost similar values. Standard Deviation was found to be 2.062. The values for skewness and kurtosis were found to be -0.948. This shows that the distribution is slightly negatively skewed and the value of kurtosis 0.969 which is higher than 0.26, indicates that the distribution is slightly platykurtic.

The second dimension of family environment which is known as Personal Growth Dimension was found to have values for measures of central tendency, mean (24.33), median (25.00) and mode (24.00), which shows almost similar values. Standard Deviation was found to be 4.284. The value for skewness was found to be -0.760. This shows that the distribution is slightly negatively skewed and the value of kurtosis 1.392 which is higher than 0.26, indicates that the distribution is slightly platykurtic.

For the third dimension system maintenance dimension of family environment the mean, median and mode was found to be 10.64, 11.00, and 11.00 respectively. All the values were found to be almost equal. Standard Deviation was found to be 2.098. The value for skewness was found to be -0.569. This shows that the distribution is slightly negatively skewed and the value of kurtosis 0.283 which is almost equal to 0.26 indicates that the distribution is slightly mesokurtic.

Preliminary analysis for internalizing disorders for social phobia it was found that the mean, median mode values as 11.61, 11, 12 respectively. The values were almost equal. Standard Deviation was found to be 4.869. The value for skewness was found to be -0.443. This shows that the distribution is slightly negatively skewed and the value of kurtosis 0.003 which is almost equal to zero, which shows that the distribution is slightly mesokurtic.

For the symptoms of panic disorder panic disorder the values for central tendency measures such as mean, median and mode was found to be 7.33, 7.00 and 5.00. The values were found to be almost equal. The standard deviation value was found to be 4.387. The value for skewness was found to be 0.817. This shows that the distribution is slightly positively skewed and the value of kurtosis 0.512 which is slightly greater than 0.26, which shows that the distribution is slightly platykurtic.

For the next internalizing disorder separation anxiety the central tendency values such as mean, median and mode was found to be 8.15, 8.00, and 7.00 respectively. The standard deviation was found to be 4.415. The value for skewness was found to be 0.858. This shows that the distribution is slightly positively skewed

and the value of kurtosis 1.062 which is slightly greater than 0.26, which shows that the distribution is slightly platykurtic.

For symptoms of generalized anxiety disorder the central tendency values such a mean, median and mode was found to be 7.45, 7.00, and 5.00 respectively. The standard deviation was found to be 4.198. The value for skeweness was found to be 0.450. This shows that the distribution is slightly positively skewed and the value of kurtosis -0.311 which is slightly less than 0.26, which shows that the distribution is slightly leptokurtic.

For symptoms of obsessive compulsive disorder the central tendency values such a mean, median and mode was found to be 6.40, 6.00, and 6.00 respectively. The standard deviation was found to be 3.518. The value for skeweness was found to be 0.640. This shows that the distribution is slightly positively skewed and the value of kurtosis 0.116 which is slightly less than 0.26, which shows that the distribution is slightly leptokurtic.

For symptoms of Major Depression the central tendency values such a mean, median and mode was found to be 6.63, 6.00, and 6.00 respectively. The standard deviation was found to be 3.461. The value for skeweness was found to be 0.377. This shows that the distribution is slightly positively skewed and the value of kurtosis -0.309 which is slightly less than 0.26, which shows that the distribution is slightly leptokurtic.

Form the above it is evident that all the measures under study are almost normally distributed.

Thus the variables under investigation are amenable for the parametric techniques of analysis like Pearson Product Moment coefficient of correlation, Linear Regression Analysis and Path way Analysis.

## SECTION 2

**CORRELATION ANALYSIS BETWEEN DIFFICULTIES IN EMOTION REGULATION, DIMENSIONS OF FAMILY ENVIRONMENT, TEMPERAMENTAL FACTORS AND INTERNALIZING DISORDERS.**

In order to find out the correlation between emotion dysregulation, dimensions of family environment, temperamental factors and internalizing disorders by the Karl Pearson Product Moment Correlation Test. The coefficients of correlation obtained between the different variables are presented in Table.

Table 11

*Correlation between Emotion Regulation Difficulties and Temperament (n=2041)*

Temperament ↓	Difficulties in Emotion Regulation
Effortful control	-0.242**
Surgency	0.022
Negative affect	0.460**
Affiliativeness	0.144**

\*\*p<0.01, \*p<0.05

Temperament and difficulties in emotion regulation are closely related.

The first temperamental factor Effortful control (EC) and Difficulties in Emotion Regulation has got significantly high negative correlation. The correlation coefficient  $r = -0.242$  ( $p < 0.01$ ).

"A temperamentally reactive child with poor effortful control would be more likely to react with unmitigated negative affect and inadequate attempts at goal achievement. Conversely, a reactive child with better effortful control would be more likely to employ strategies aimed at modulating their emotional responses". (Zalewski, Lengua, Wilson, Trancik, and Bazinet, 2011)



The temperamental factor surgency (SU) has got positive correlation with difficulties in emotion regulation. The correlation coefficient  $r = 0.022$ . The correlation was not significant in the present study. But earlier studies observed that emotion regulatory behaviors were found to moderate the relation between temperamental surgency and aggression, where high-surgent children who showed high levels of social support seeking were less likely to be rated by their mothers as high in aggression (Dollar and Stifter, 2012)

Negative affect (NA) is the third temperamental factor which has got significantly high positive correlation with difficulties in emotion regulation with correlation coefficient  $r = 0.460$  ( $p < 0.01$ ). Temperamental reactivity and negative affective tone have been associated with negative behaviors (e.g., aggression, angry outbursts) and behavioral problems in child and adolescence (Eisenberg, 1995). One of the most extensively studied emotion regulation strategies that can lessen negative affect is cognitive reappraisal. Frequent use of reappraisal to reduce negative affect is associated with low levels of depressive symptoms and high levels of well-being factors, including more positive social relationships and greater life satisfaction (John & Gross, 2004).

Affiliativeness (AF) has got significantly high positive correlation ( $r = 0.144$ ,  $p < 0.01$ ) with difficulties in emotion regulation.

Table 12

*Correlation between Family Environment and Difficulties in Emotion Regulation (n=2041)*

<b>Family Environment</b>	<b>Difficulties in Emotion Regulation</b>
relationship dimension	-0.156**
personal growth dimension	-0.074**
system maintenance dimension	-0.074**

\*\* $p < 0.01$

**Correlation between Family Environment and Difficulties in Emotion Regulation**

Family environment and emotion regulation are closely interlinked. Relationship dimension (RD) and Emotion Regulation Difficulties has got significantly high negative correlation with  $r = -0.156$  ( $p < 0.01$ ). In the same manner Personal Growth Dimension (PG) of Family Environment Scale has got significantly high negative correlation with Emotion Regulation Difficulties  $r = -0.074$  ( $p < .01$ ). System Maintenance Dimension (SA) of Family Environment also shows significantly high negative correlation with Emotion Regulation Difficulties with  $r = -0.074$  ( $p < .01$ ). As the family environment becomes more stressful and demanding the chances for developing emotion regulation difficulties in children also increases.

"Dysfunctional family environments do not provide children many of the experiences that are necessary for normal development and adaptation" (Cicchetti and Toth, 2005). Adolescent girls with difficulties identifying and expressing their negative emotions within an invalidating environment were less equipped to manage strong negative emotional experiences in adaptive ways. ( Sim, Adrian, Zeman, Cassano, and Friedrich, 2009).

Table 13

*Correlation between Emotion Regulation Difficulties and Internalizing Symptoms (n=2041).*

Variables	Social phobia	Panic disorder	Separation anxiety	Generalized anxiety	Obsessive compulsive	Major depression
Emotion regulation difficulties	0.428**	0.396**	0.219**	0.443**	0.426**	0.440**

\*\* $p < 0.01$

**Correlation between Emotion Regulation Difficulties and Internalizing Symptoms**

Theoretically there is evidence that difficulties in emotion regulation causes internalizing symptoms. The total score of emotion dysregulation (DERS) has got

significantly high positive correlation with internalizing symptoms such as social phobia(SP,  $r = 0.428$ ,  $p < 0.01$ ), panic disorder(PD,  $r = 0.396$ ,  $p < 0.01$ ), Separation Anxiety(SA,  $r = 0.219$ ,  $p < 0.01$ ), Generalized Anxiety (GA,  $r = 0.443$ ,  $p < 0.01$ ), Obsessive Compulsive (OC,  $r = 0.426$ ,  $p < 0.01$ )and Depression (MD,  $r = 0.440$ ,  $p < 0.01$ )

Campbell-Sills and Barlow (2007) emphasize that particular mainstream therapies for anxiety and mood disorders reflect an awareness of the need to improve patients' emotion regulation.

Problems in up-regulating positive emotion and down-regulating negative emotions have been linked with depression (Cole, Michel, & Teti, 1994).

With regard to emotion expression, study by Feng et al (2009) found that the lack of positive emotion expression was a risk factor for preadolescent depression and that high level of positive emotion protected girls from developing depressive symptoms.

A study of youth aged 7–15 referred for treatment to a specialized clinic also showed a correlation between emotion regulation skill deficits and anxiety, and that an improved ability to regulate worry predicted reduced levels of anxiety after CBT treatment (Suveg et al. 2009).

Reviews conducted by Esbjørn, Bender, Reinhold-Dunne, Munck, and Ollendick, (2011) indicate that "children, adolescents, and adults who exhibit elevated levels of anxiety symptoms or suffer from anxiety disorders have emotion regulation difficulties. These difficulties include problems with emotional awareness, strategies for dealing with emotions, and attentional and cognitive biases. Anxious adults are also reported to have less access to emotion regulation strategies in general".

Anxious children report they are less capable of flexible control of a crucial element in emotion regulation. Anxious individuals seem to share a combination of factors that may influence their typical pattern of emotion regulation, including: "a) heightened emotion reactivity, which challenges emotion regulation processes, b)

difficulties in generating specific regulation strategies (e.g., reappraisal) , and c) a family environment that encourages maladaptive strategies in negative emotional situations (e.g., avoidance) . Hence, anxious individuals may be suffering not only negative emotional hyper-reactivity, but also maladaptive regulatory responses" (Carthy, Horesh, Apter,and Gross 2010).

Table 14

*Correlation between Family Environment and Temperament ( n= 2041)*

<b>Temperament</b>	<b>Family Environment</b>		
	Relationship Dimension	Personal growth Dimension	System maintenance Dimension
Effortful control	0.189**	0.228**	0.231**
Surgency	-0.064**	0.051*	-0.037
Negative affect	-0.214**	-0.130**	-0.100**
Affiliativeness	0.211**	0.275**	0.157**

\*\*p<0.01,\*p<.05

**Correlation between Family Environment and Temperament**

Family Environment has got close association between family environment. Protective "family factors foster adaptive temperamental factors and in turn reduce the risk for problematic behaviour in children. Family factors influence the degree to which the problematic temperaments will thwart goal achievement and thus lead to problem behavior" (Sentse, Veenstra, Lindenberg, Verhulst,and Ormel,2009).

Results of the correlation between Relationship Dimension of family environment scale and temperament Effortful Control has got very high positive correlation ( r = 0.189,p< 0.01),and also with temperamental factor Affiliativeness ( r = 0.211, p<0.01). This can be interpreted as positive family atmosphere enhances Effortful control which act as a protective factor in preventing behaviour problems in children. Significantly high negative correlation was found between Relationship Dimension and temperament Negative Affect ( r = -0.214, p<0.01) and also with

Surgency ( $r = -0.064$ ,  $p < 0.01$ ). As family cohesion decreases and conflict increases the negative affect also increases. At the same time Relationship dimension temperamental Surgency have got inverse relation in the current sample of adolescent girls.

Results also indicates that Personal Growth Dimension of family environment has got very high positive correlation with Effortful Control ( $r = 0.228$ ,  $p < .01$ ), Surgency ( $r = 0.051$ ,  $p < .05$ ) and Affiliatveness ( $r = 0.275$ ,  $p < .01$ ). The family which promotes independence and autonomy also influences the temperament of the child in a positive way. Significantly high negative correlation was found between PG and negative affect ( $r = -0.130$ ,  $p < .01$ ). Negative affect is an important temperament which is molded by the influence of family environment.

From the table it was evident that System Maintenance Dimension of Family Environment has got significantly high positive correlation with Effortful Control ( $r = 0.231$ ,  $p < .01$ ) and Affiliativeness ( $r = 0.157$ ,  $p < .01$ ). System maintenance dimension which is composed of Organization and Control sub variables positively influence effortful control and affiliativeness of adolescent girls. Significantly high negative correlation was found between System maintenance dimension and Negative Affect ( $r = -0.100$ ,  $p < .01$ ). High control and organization influences the negative affect in the adolescent population. But only Less significant negative correlation was found between Surgency and system maintenance dimension ( $r = -0.037$ ).

"Dysfunctional family environments do not provide children many of the experiences that are necessary for normal development and adaptation (Cicchetti and Toth, 2005). Family factors influence the degree to which the problematic temperaments will thwart goal achievement and thus lead to problem behavior. In short, they act as possible moderators for the associations between frustration and externalizing problems and between fearfulness and internalizing problems" (Sentse, Veenstra, Lindenberg, Verhulst, and Ormel, 2009).

The correlation between family environment and temperament has been established in a study conducted by Lemery-Chalfant, Kao, Swann, and

Goldsmith(2013) . "Home environments were less chaotic for children with high effortful control. Children with high extraversion/surgency experienced more chaotic home environments. Heritability of children's temperament was moderated by home environments, such that effortful control and extraversion/surgency were more heritable in chaotic homes, and negative affectivity was more heritable under crowded or unsafe home conditions".

Table 15

*Correlation between Temperament and Internalizing Symptoms (n=2041)*

Temperament	Internalizing Symptoms					
	Social phobia	Panic disorder	Separation anxiety	Generalized anxiety	Obsessive compulsive	Major depression
Effortful control	-0.301**	-0.065**	0.093**	-0.264**	-0.216**	0.407**
Surgency	-0.065**	-0.034	-0.277**	0.006	0.010	-0.010
Negative affect	0.407**	0.404**	0.292**	0.409**	0.395**	0.426**
Affiliativeness	0.093**	0.080**	0.084**	0.076**	0.130**	0.012

\*\*p< 0.01, \*p< 0.05

**Correlation between Temperament and Internalizing Symptoms**

The relation between temperamental factors and internalizing symptoms are established in earlier studies also. In the present study the following correlations were established. The first temperamental factor Effortful control (EC) has got significantly high negative correlation with internalizing symptoms such as Social phobia( $r = -0.301, p < 0.01$ ), panic disorder ( $r = -0.065, p < 0.01$ ), Generalized Anxiety (GA,  $r = -0.264, p < 0.01$ ), Obsessive Compulsive (OC,  $r = -0.216, p < 0.01$ ), Depression (MD,  $r = -0.407, p < 0.01$ ). Significant positive relation to Separation Anxiety (SA,  $r = 0.093, p < 0.01$ ),

The temperamental factor surgency (SU) has got significantly high negative correlations with internalizing symptoms such as social phobia (SP,  $r = -0.065, p < 0.01$ ), Separation Anxiety (SA,  $r = -0.277, p < 0.01$ ), and Depression (MD,  $r = -0.010$ ). Positive correlation was found between panic disorder (PD,  $r = -0.034$ ,

p<0.01), Generalized Anxiety (GA, r = 0.006), Obsessive Compulsive (OC, r = .010).

Negative affect (NA) has got significantly high positive correlation with internalizing symptoms such as social phobia(SP, r= 0.407,p<0.01),panic disorder(PD, r= 0.404, p<0.01), ,Separation Anxiety(SA, r= 0.292 , p<0.01), Generalized Anxiety (GA, r= 0.409,p<0.01),Obsessive Compulsive (OC, r= 0.395,p<0.01) and Depression (MD, r= 0.426,p<0.01)

Affiliativeness (AF) has got significantly high positive correlation with internalizing symptoms such as social phobia (SP, r = 0.093,p<0.01),panic disorder(PD, r = 0.080, p<0.01), Separation Anxiety(SA, r = 0.084, p<0.05), Generalized Anxiety (GA, r = 0.076, p<0.01), Obsessive Compulsive(OC, r = 0.130,p<0.01).Less significant positive correlation was found with Major Depression (MD, r = 0.012).

Table 16

*Correlation between Family Environment and Internalizing Symptoms ( n= 2041)*

Family Environment	Internalizing Symptoms					
	Social phobia	Panic Anxiety	Separation anxiety	Generalized anxiety	Obsessive Compulsive	Depression
relationship dimension	-0.129**	-0.181**	-0.238**	-0.024	-0.173**	-0.171**
personal growth dimension	-0.098**	-0.101**	-0.175**	-0.030	-0.085**	-0.063**
system maintenance dimension	-0.123**	-0.043	-0.108**	0.018	-0.113**	-0.037

\*\*p<0.01, \*p< 0.05

**Correlation between Family Environment and Internalizing Symptoms**

The Important Family environment variables were Relationship Dimension (RD), Personal Growth Dimension and System Maintenance Dimension.The Major

Internalizing symptoms were Social Phobia, Panic Anxiety, Separation Anxiety, Generalized Anxiety Disorder and Obsessive Compulsive Symptoms and Depression

Significantly high negative correlations were found between RD and internalizing symptoms. The internalizing symptoms analyzed were social phobia ( $r = -0.129$ ,  $p < 0.01$ ), Panic Symptoms ( $r = -0.181$ ,  $p < 0.01$ ), Separation Anxiety ( $r = -0.238$ ,  $p < 0.01$ ), Generalized Anxiety ( $r = -0.024$ ), Obsessive Compulsive ( $r = -0.085$ ,  $p < 0.01$ ), and Depression ( $r = -0.249$ ,  $p < 0.01$ ). All the above findings indicate that as family relationship dimensions become poorer the chances of developing internalizing symptoms also will be higher.

Personal Growth Dimension (PG) of Family Environment Scale has got significantly high negative correlation with internalizing symptoms such as Social Phobia (SP,  $r = -0.098$ ,  $p < 0.01$ ), Panic Disorder (PD,  $r = -0.101$ ,  $p < 0.01$ ), Separation Anxiety ( $r = -0.175$ ,  $p < 0.01$ ) Generalized Anxiety ( $r = -0.030$ ), Obsessive Compulsive (OC,  $r = -0.085$ ,  $p < 0.01$ ), Major Depression (MD,  $r = -0.063$ ,  $p < 0.01$ ). Personal growth dimension is thus an important factor which has got significant role in the development of internalizing symptoms in adolescents.

System Maintenance Dimension (SA) of Family Environment Scale shows significantly high negative correlation with Social Phobia ( $r = -0.123$ ,  $p < 0.01$ ), Separation Anxiety (SA,  $r = -0.108$ ,  $p < 0.01$ ), and less significant negative correlation with Panic Disorder (PD,  $r = -0.043$ ), Obsessive Compulsive (OC,  $r = -0.113$ ), Depression (MD,  $r = -0.037$ ),

But with Generalized Anxiety (GA,  $r = 0.018$ ) the relation is not significant. "Children raised in a home with little emotional expressiveness have difficulties reading emotion cues during conversations and exhibit less effective emotion expression" (Halberstadt, 1998).

In families marked by a lack of cohesion and support, children who receive nonsupportive reactions to emotion are more likely to remain emotionally aroused,



become more sensitive to anger, and become dysregulated when experiencing negative emotion (Eisenberg, Fabes, & Murphy, 1996).

Family environments high in conflict and low in warmth place children at an increased risk for a variety of emotional and behavioral problems. In contrast, warm, responsive parents seem to have well-regulated children). "The effects of family conflict and support differ in impact depending on child gender, with girls appearing to be more sensitive to negative family emotional climate. Parents' level of expressiveness, family conflict, support, and cohesiveness make important contributions to their adolescents' emotion learning history" (Adrian, Zeman, Erdley, Lisa, Homan, and Sim, 2009).

### **SECTION 3.**

#### **PATH WAY ANALYSES**

Path analysis was conducted on the regression to further understand the direct and indirect effects of the variables such as family environment, temperament and emotion regulation difficulties of adolescent girls on internalizing disorders such as anxiety and depression in order to propose models for effective early management of these disorders. It has been also hypothesized that the emotion regulation difficulties also mediate the relation between family environment, and temperament to anxiety and depression.

In order to test the hypothesized models path analyses were conducted using AMOS, to further understand the direct and indirect effects of all the variables under study on different internalizing symptoms/disorders. Six models predicting internalizing symptoms /disorders were tested. First, mediated models were prepared and tested hypothesizing that Difficulties in Emotion Regulation serves as a mediator between independent variables -family environment, temperament and dependent variable internalizing disorders.

In the next steps the direct effect models were tested based on the hypothesis that family environment, temperament and emotion dysregulation have got direct effects on internalizing disorders.

In the next stage based on the significance of the path coefficients and model fit indices, significant paths were considered for the final accepted model.

The following indices were used to estimate the fit of the current tested models. The  $\chi^2$  model fit statistic was not used. Chi square tends to reach significance rather readily as sample size increases, so it is not generally the best indicator of fit when the sample size is high. It could still be useful though, even if it were significant for all models, because it would rather differentiate the models, if its value was much smaller for one model than for other (Byrne, 2001). A number of other indices of fit were used including GFI (goodness of fit index, This should exceed 0.9 for a good model.), AGFI (adjusted GFI, should exceed 0.9 for a good model ),NFI (The Normed Fit Index Values of 0.9 or higher indicate good fit ), CFI (The Comparative Fit Index, Acceptable model fit is indicated by a CFI value of 0.90 or greater.), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred). (Ingram, Cope, Harju, & Wuensch, 2000).

Previous research has implicated family environment and temperamental factors in internalizing disorders. It was expected from the previous research that these variables would influence internalizing symptoms through emotion dysregulation (Suveg, Morelen, Brewer & Thomassin, 2010., Hsieh, 2010., Arndt, Wendy, Hoglund & Fujiwara,2013).

In order to select the best accepted model for different disorders, first a full mediation model with difficulties in Emotion Regulation was prepared. Then alternative models were prepared by adding new paths based on the hypotheses, in order to compare with the full mediation model. Finally the best accepted model was selected based on the significance of the models. Six important models were

prepared for Social Phobia, Panic Anxiety, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive Anxiety and Depression.

### **PATH MODEL FOR SOCIAL PHOBIA**

As stated in the fourth revised edition of the Diagnostic and Statistical Manual of Mental Disorders, social phobia is a psychological disorder marked by evident and constant fear and anxiety in situations involving social evaluation or unfamiliar people. The onset of social phobia is estimated to occur between the ages of 12 to 15yrs and usually affects 3 to 5% of youths. "Social anxiety would hinder or change one's ability to be fully expressive. There are many potential factors involved in the development of social phobia such as temperamental factors, familial factors etc" (Chan, 2010). In the current study an attempt has been made to understand how these factors are mediate by the influence of difficulties in regulating emotions which has been considered to be one of the important factors in anxiety disorders.

### **MODEL 1 FOR SOCIAL PHOBIA**

In the first Model, which was shown in Figure 6, which is considered as Baseline Model or Full Mediation Model was assessed statistically for the fit of the data. The model was prepared assuming that all the paths were mediated by Difficulties in Emotion Regulation (DERS), considering this variable as a mediator. The direct path from DERS to Social Phobia (SP) Symptoms was assessed. The output from AMOS shows that the path coefficient was significant with  $\beta = 0.086$ ,  $p = 0.000$ . Also the model fit indices were found to be GFI=0.953, AGFI=0.899, NFI=0.898, CFI=.0900, AIC = 525.331, RMSEA=0.088. The model fit indices shows that the data fit was adequate for the model. The path coefficient shows a significant positive effect of Difficulties in Emotion Regulation (DERS) on Social Phobic symptoms. This indicates that a unit change in Difficulties in Emotion Regulation (DERS) results in 0.09 unit changes in Social phobic symptoms.

This model has been taken as Baseline model. Additional models were assed to find out whether DERS completely or only partially mediated the relations

between Family Environment variables such as Relationship Dimension, Personal Growth Dimension, and System maintenance Dimension and temperamental variables, such as effortful control, surgency, negative affect and affiliativeness to internalizing symptoms of Social Phobia in adolescent girls.

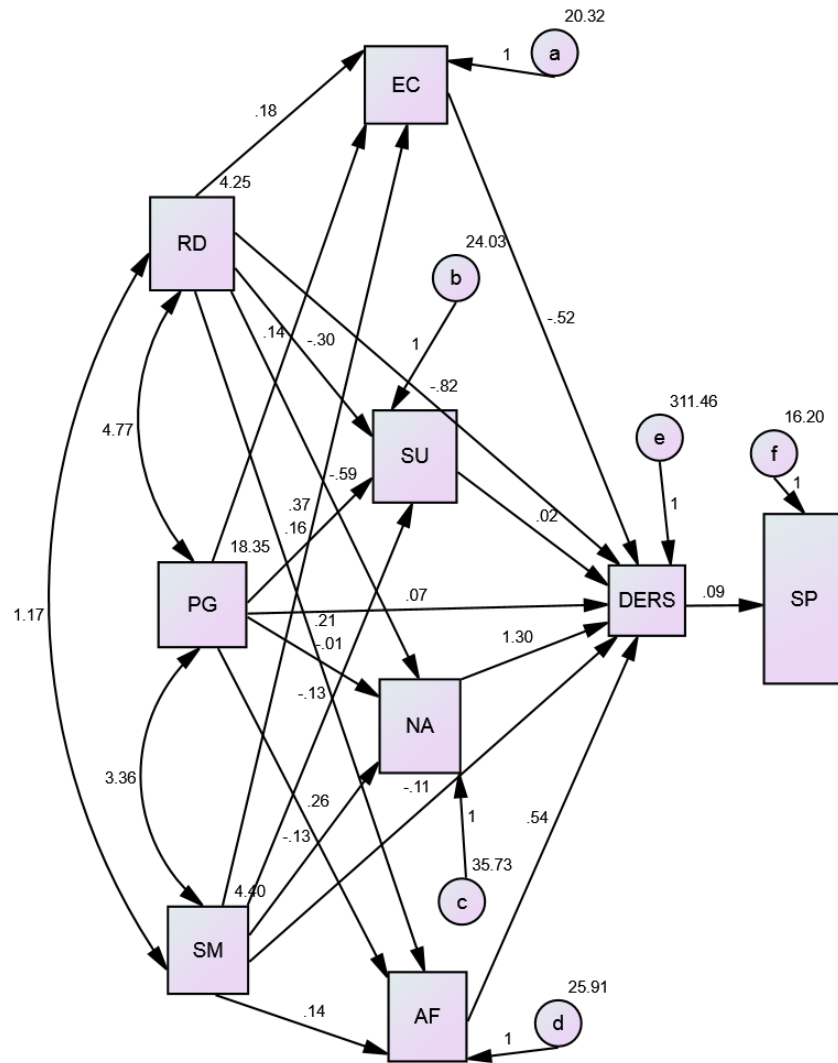


Figure 6 Model 1 DERS mediates paths from Family Environment Variables (RD, PG,SM), Temperament Variables ( EC,SU,NA and AF) and Social Phobia (SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia.

Recent studies have taken the importance of emotion regulation difficulties as an important risk factor for internalizing symptoms and the current findings are in line with current research studies. "A weak emotional understanding is found to be the best predictor of social anxiety disorder and emotional rejection is the best predictor of the social anxiety disorder along with GAD. Poor emotional understanding best predicted a diagnosis of Social Phobia and non-acceptance of emotions best predicted comorbid Generalized Anxiety and Social Phobia" (Mennin, McLaughlin, and Flanagan, 2009).

Evidence suggests a contributing role of exaggerated negative emotional reactions, attenuated positive emotional reactions, and emotion regulation difficulties in producing functional impairment (Farmer and Kashdan, 2012).

Children whose parents shows more positive affect tended to display more positive emotion with peers and be more socially competent at preschool. Parental involvement has also been found to support children's initial attempts to use active Emotion Regulation strategies. Also, parental support for autonomy is thought to relate to children's capacity for effective self-regulation (Feng, Shaw, Kovacs, Lane, O'Rourke, and Alarco, 2008).

According to Gross & Munoz (1995), "People require adequate selfregulatory resources to effectively monitor their emotional responses and simultaneously attend to situational cues during a successful social interaction which is deficient in people with social anxiety symptoms".

## **MODEL 2 FOR SOCIAL PHOBIA**

As shown in Figure 7, Model 2 was prepared by adding a direct path from Relationship Dimension (RD) of the family environment variables. It has been compared with the Baseline model. The path coefficient  $\beta$  was found to be -0.261,  $p = 0.000$ . The path was found to be significant. It was interpreted as, a unit change in Relationship Dimension (RD), according to this model, results in -0.261 unit changes in Social Phobic symptoms. Also the fit indices were found to satisfy the acceptance of the model. The current path also improved the overall model with values such as GFI=0.956, AGFI=0.901, NFI= 0.902, CFI=0.910, AIC = 491.560, RMSEA=0.079. From overall results it was found that the direct path from Relationship Dimension

(RD) enhanced the model fit compared to Baseline Model, indicating that RD has got both direct and indirect effect on Social Phobia (SP) and Difficulties in Emotion Regulation (DERS) only partially mediates the path. Thus this path was taken up for the next model testing.

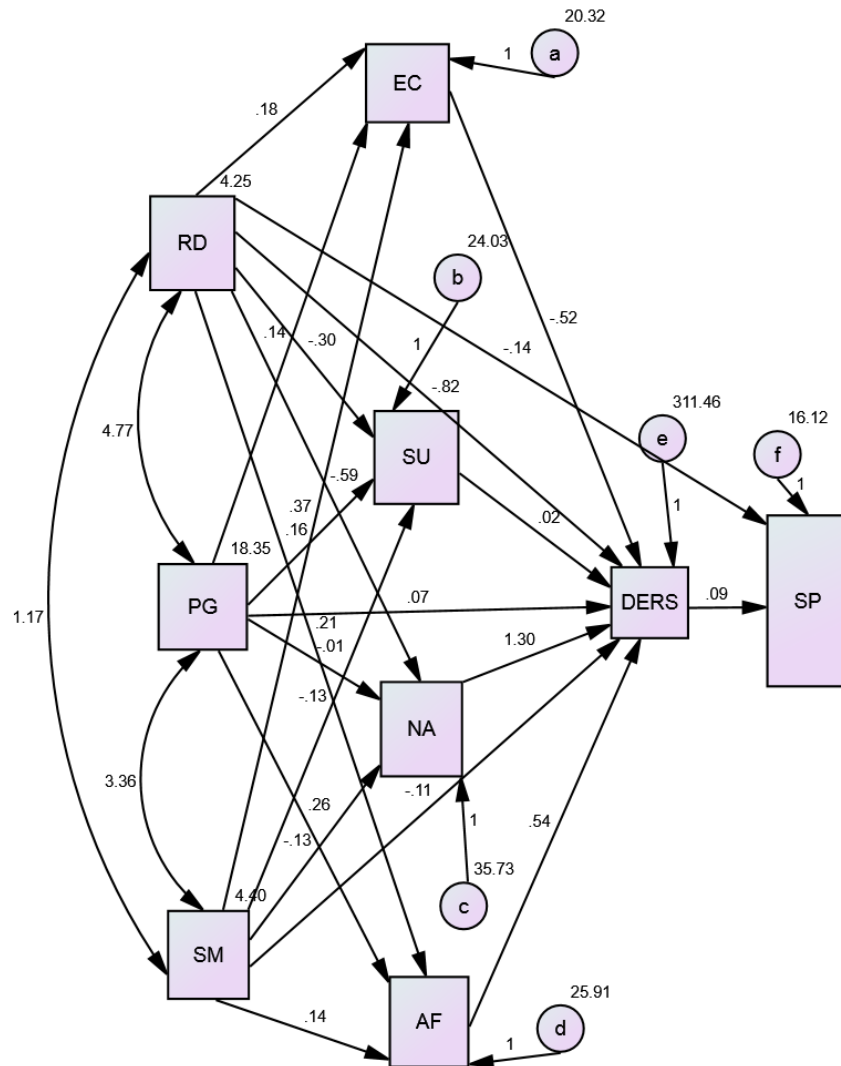


Figure 7 Models 2 DERS mediates paths from Family Environment Variables (PG,SM), Temperament Variables ( EC,SU,NA and AF) and Social Phobia and partially mediates the paths between RD and Social Phobia(SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia

Relationship between family communication patterns and difficulties in emotion regulation in a recent study showed that there is a direct relationship between conformity and conversation orientation and difficulties in emotion regulation. Thus if conformity increases, difficulties in students' emotion regulation will also increase. At the same time, if conversation orientation increases, difficulties in emotion regulation will decrease. "Emotion regulation process is greatly the outcome of interactions between family and the environment which affect the way the individual adapt with various situations. Thus in short, families' interactions can affect this adaptability both in a direct way as well as with mediation of emotion regulation". ( Reisy, AliJavanmard, Shojaei, Ahmadzade, and Monfared, 2013).The finding in our study was supported by the above research work.

Thus further paths were added to the model in order to understand the actual role of Emotion regulation difficulties.

### **MODEL 3 FOR SOCIAL PHOBIA**

In this model an additional path was drawn from Personal Growth Dimension (PG) of the family environment variables to internalizing Behaviour, i.e. Social Phobic symptoms(Figure 8). The model fit indices were checked and noted as GFI=0.956, AGFI=.0901, NFI=0.902, CFI=0.910, AIC = 493.384, RMSEA= 0.079). The model fit indices were in the acceptable range. But not resulted in an improved fit compared to Model 2. Moreover the path coefficient ( $\beta = -0.010$ ,  $p = 0.675$ ), from Personal Growth Dimension (PG) to Social Phobia (SP) was found to be not significant. Personal Growth Dimension (PG) independently exerts very little influence on Social Phobia, but the influence through Difficulties in Emotion Regulation (DERS) was found to be significant. So the direct path from Personal Growth Dimension (PG) to Social Phobic symptoms was not taken for further calculations for a better model, with the assumption that the effect of Personal Growth Dimension (PG) was fully mediated by Difficulties in Emotion Regulation (DERS). Personal Growth Dimension, when in combination with DERS results in

increased chance for the development of internalizing symptoms such as Social Phobia.

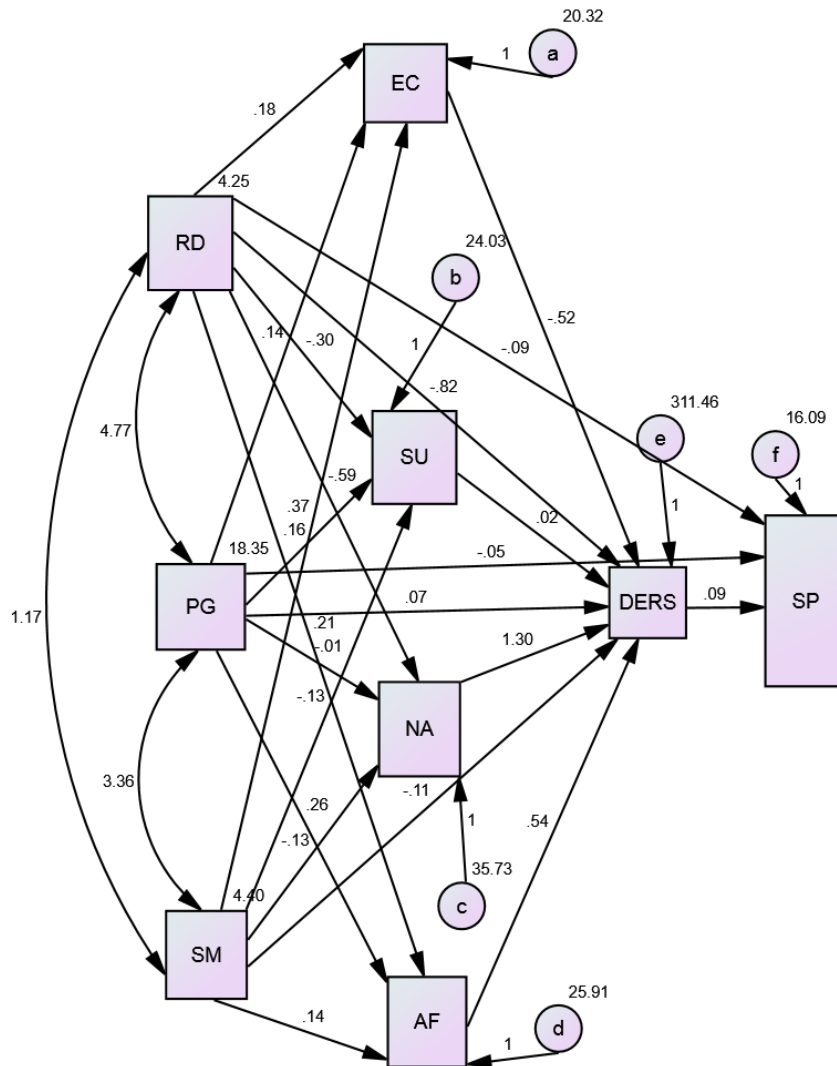


Figure 8 Model 3 DERS mediates paths from Family Environment Variables ( SM), Temperament Variables ( EC,SU,NA and AF) and Social Phobia and partially mediates the paths between RD ,PG and Social Phobia(SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia



Four important components of the emotional environment of the family that likely affect the development of Emotion regulation in children according to Morris, Silk, Steinberg, Myers, and Robinson (2008). "The overall predictability and emotional stability of the environment; parental expectations and maturity demands; the degree of positive emotionality expressed in the family; and the degree of negative emotionality expressed in the family. Research in developmental psychopathology in this context stresses the role of emotion regulation (ER) in development, and has linked difficulty in regulating negative emotions such as anger and sadness to emotional and behavioral problems".

#### **MODEL 4 FOR SOCIAL PHOBIA**

As shown in Figure 9, in the present model a direct pathway was specified from System Maintenance Dimension (SM) to Social Phobia (SP). The path coefficient from System Maintenance Dimension (SM) to Social Phobia (SP) was not statistically significant ( $\beta=0.049$ ,  $p = 0.280$ ). The model was checked and interpreted with the Path model fit indices and reported as, GFI=0.956, AGFI=0.901, NFI=0.902, CFI=0.900, AIC = 494.215, RMSEA= 0.080). As path coefficient was insignificant and model fit indices not resulted in any improvement in the model fit compared to Model 2. So this path was also removed from the next step of model testing. Difficulties in Emotion Regulation (DERS), here fully mediates the path from System Maintenance Dimension to Social Phobia.

Suveg, Morelen, Brewer and Thomassin (2010) from their investigation model for Emotion Dysregulation concluded that family environment influence anxiety levels through emotion dysregulation. Family interactions laden with negative affect influence youth through the direct modeling of dysregulated emotions.

Remens (2012) examined "the positive relationship between parental use of reappraisal as an emotion regulation strategy and supportive responses to youth negative affect helped frequent outcomes in an emotion focused treatment protocol for anxiety and depression".

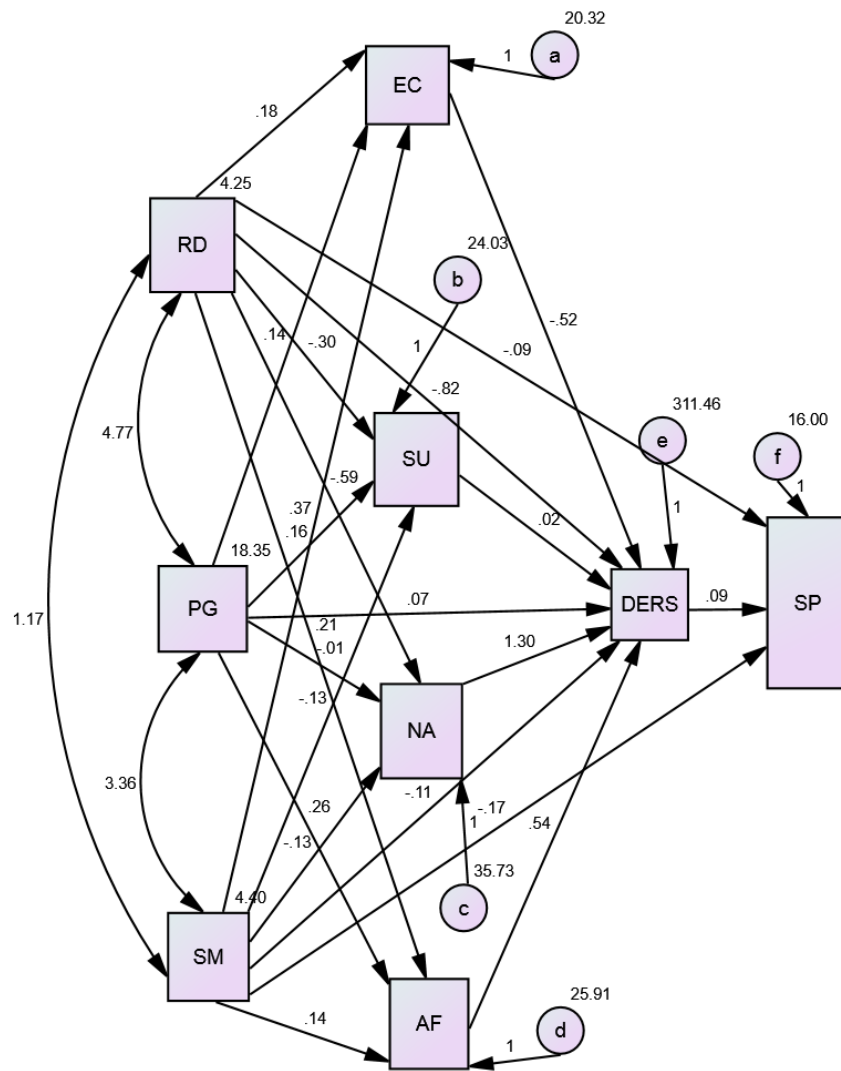


Figure 9 Model 4 DERS mediates paths from Family Environment Variable (PG), Temperament Variables ( EC,SU,NA and AF) and Social Phobia and partially mediates the paths between RD ,SM and Social Phobia(SP)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia

## **MODEL 5 FOR SOCIAL PHOBIA**

Figure 10 shows that, a direct pathway was specified from Temperamental variable Effortful Control (EC) to Social Phobia (SP) in order to check the mediating role of Difficulties in Emotion Regulation to Temperament Effortful Control. As can be seen in Table , this model fit the data well and resulted in an improved fit as compared with Model 2 . The path from Effortful Control (EC) to Social Phobia (SP) was significant ( $\beta = -.119$ ,  $p = 0.000$ ). The model fit indices were (GFI=0.962, AGFI= 0.922, NFI= 0.921, CFI=0.914, AIC = 456.430, RMSEA=0.072). The model resulted in an improved fit over Model 2. Thus suggesting direct and indirect effects of Effortful Control (EC) on Social Phobia (SP). The negative path coefficient shows that higher effortful control is a good indicator against internalizing symptoms even in the presence of difficulties in motion regulation. So the model incorporated the direct path from Effortful Control with the assumption that Difficulties in Emotion Regulation (DERS) only partially mediates the relation between Effortful Control and Social Phobic Symptoms.

Effortful control is the ability to voluntarily focus and shift attention and to voluntarily inhibit or initiate behaviors, and includes behaviors such as delaying and these processes are integral to emotion regulation. "Effortful control is believed to reflect dispositional differences in regulation, and can be used to manage emotional, as well as less emotional, facets of functioning". (Rothbart and Bates, 2006).

Low effortful control is associated with and predicts behavior problems in preschool and school-aged populations. "Children who are able to control their attention and behavior are expected to manage their emotions, plan their behavior, and develop and utilize skills needed to get along with others and to engage in socially appropriate behavior" (Eisenberg, Hofer, and Vaughan, 2007)

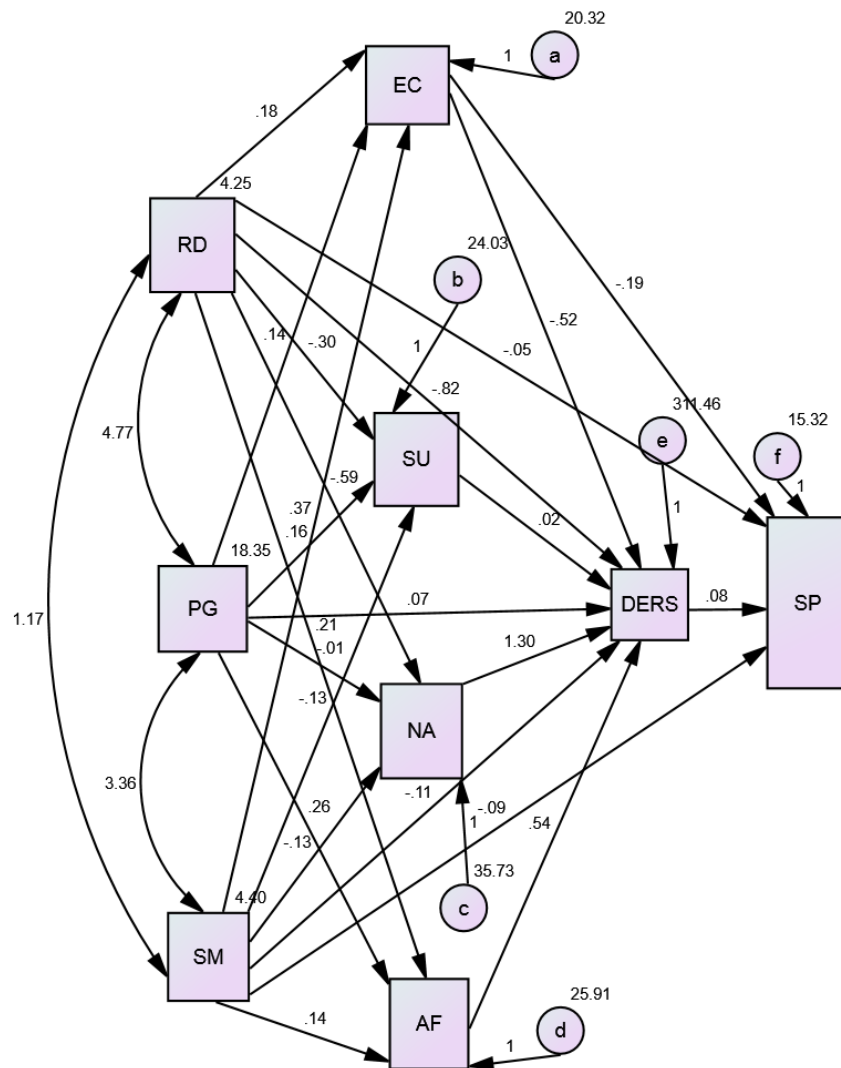


Figure 10 Model 5 DERS mediates paths from Family Environment Variable (PG,SM) and Temperament Variables (SU,NA and AF) to Social Phobia and partially mediates the paths between RD and EC to Social Phobia (SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia

## **MODEL 6 FOR SOCIAL PHOBIA**

The next stage comprises all the accepted paths from model 5 and direct path from Temperament Surgency (SU). As shown in figure 11, a direct path from the temperamental Sugency (SU) was checked through regression analysis. The Model fit indices obtained (GFI=0.963, AGFI=0.932, NFI=0.925, CFI=0.918, AIC = 451.525, RMSEA=0.065) better fit was indicated from the above model 5. Also the path coefficient was found to be significant indicated by  $\beta = -0.047$ ,  $p = 0 .009$ . The negative effect of Surgency (SU) on Social Phobia indicates that low surgency leads to Social phobic symptoms in girls along with Difficulties in emotion regulation. Also Surgency exerts independent effect on Social Phobic Symptoms. The significant path coefficient along with slightly better fit indices shows acceptance of the model. So this direct path was carried over to the next stage of analysis. Thus Difficulties in Emotion Regulation (DERS) partially mediates the path from Surgency (SU) to Social Phobia (SP).

The current findings were supported by a Dutch study of 10- to 12-year-old children showed that Shyness and High-Intensity Pleasure (both of which loaded onto a Surgency factor) were associated with degree of problems. "Shyness was positively related to internalizing problems and negatively with externalizing problems. The reverse relationship was observed for High-Intensity Pleasure" (Oldehinkel, Hartman, De Winter, Veenstra, & Ormel, 2004).

Another recent study concluded that "Anxiety symptoms were predicted by Behavioural Inhibition, early negative family affect and family stress in middle childhood. Findings stressed the relative importance of temperament and family factors in the development of both shyness and anxiety symptoms during childhood" ( Volbrecht & Goldsmith, 2013)

Eisenberg, Fabes & Murphy (1996) found that low emotion regulation and high emotionality (whether positive or negative) predicted behavior problems.

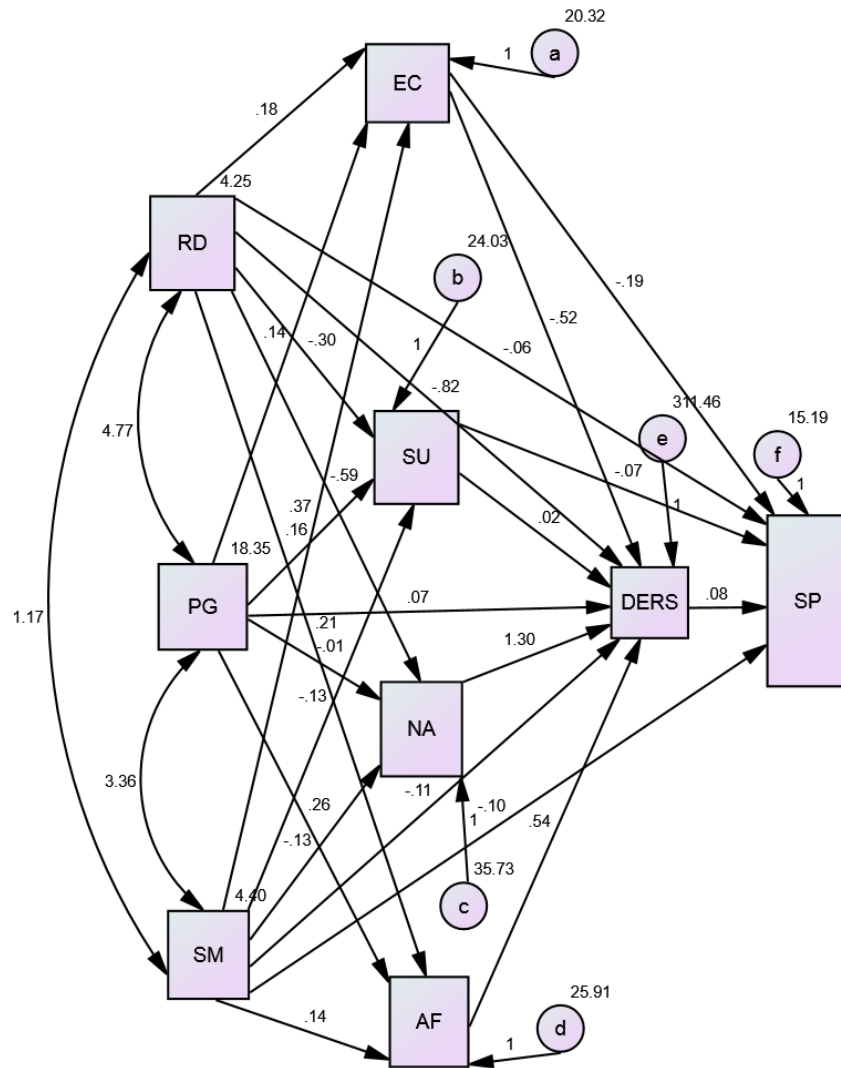


Figure 11 Model 6 DERS mediates path and Social Phobia and partially mediates the paths between RD , EC , SU and Social Phobia(SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia

## **MODEL 7 FOR SOCIAL PHOBIA**

Model 7 was prepared by adding a direct path from Negative Affect (NA) to Social Phobia (SP), along with other paths from Model 6 s shown in figure 12. The path coefficient was found to be  $\beta = 0.177$ ,  $p = 0.000$ , statistically significant indicating a direct positive effect of Negative Affect on Social Phobic Symptoms. The model fit indices were also significant and noted as (GFI=0.975, AGFI=0.945, NFI=0.934, CFI=0.920, AIC = 338.595, RMSEA=0.055). The new path significantly improved the fit of the model compared to Model 6. Thus Negative Affect (NA) has got both direct and indirect effect on Social Phobia (SP). Difficulties in Emotion Regulation (DERS) only partially mediate the path from Negative Affect to Social Phobia. The positive effect of Negative Affect on Social Phobic Symptoms indicates that as negative affect exist as a predisposition in adolescents , there is high chance for internalizing behaviour, which is again complicated by the presence of Difficulties in Emotion Regulation (DERS). Thus it has been assumed that Negative Affect as important risk factor in Psychopathology of emerging anxiety symptoms. The path was preserved for the final model.

The variable Negative affect was identified as most important variable in the prediction of emotion dysregulation or difficulties in emotion regulation in a recent study (Anto and Jayan, 2013).

"Socially anxious people have decreased positive affect and other positive psychological experiences, even after controlling depressive symptoms, and have less frequent and less intense emotional response to positive social events. Also Socially anxious people express less positive emotions, overall pay less attention to their emotions and have more difficulty in describing their emotions". (Juretić and Živčić-Bećirević, 2013)

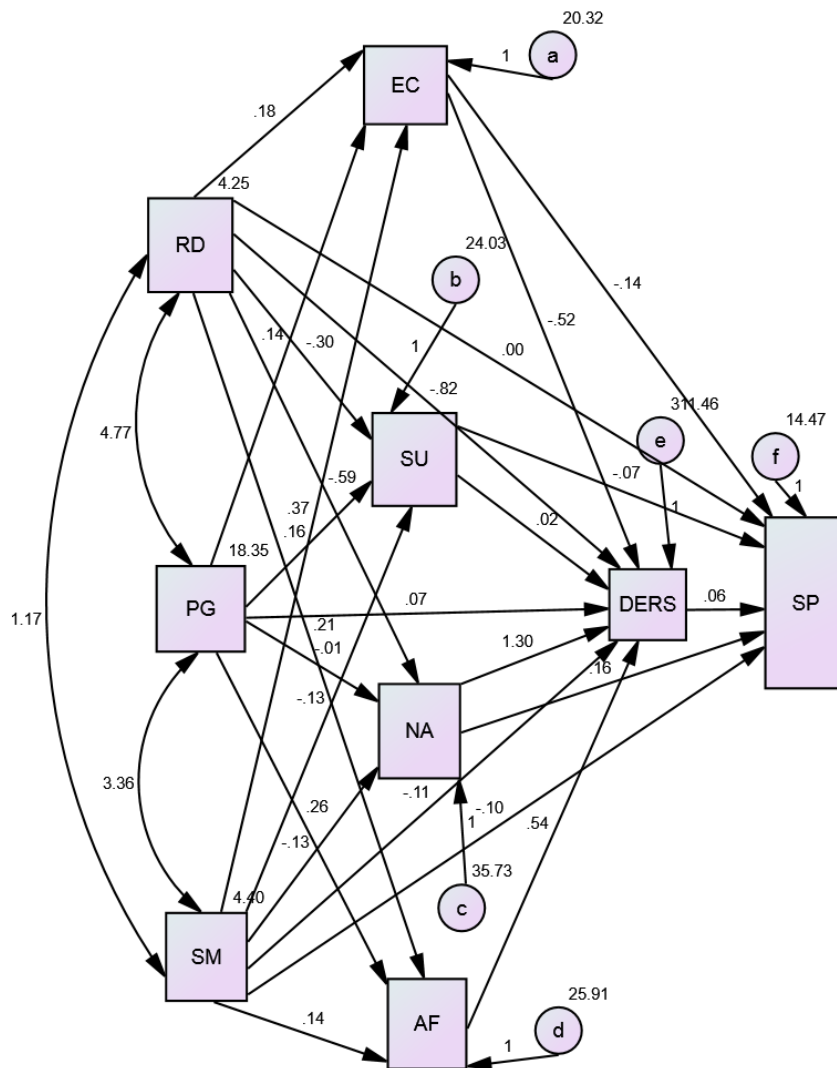


Figure 12 Model 7 DERS mediates paths from Family Environment Variable (PG,SM), Temperament Variable ( AF) and Social Phobia and partially mediates the paths between RD , EC ,SU ,NA and Social Phobia (SP).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia



## **MODEL 8 FOR SOCIAL PHOBIA**

The final figure 13 represents ,Model 8,which incorporated a direct path from Affiliativeness Temperament (AF) to Social Phobic Symptoms (SP).The path coefficient form AF to SP was found to be  $\beta = 0.045$ ,  $p = 0.006$ . It was found to be statistically significant. The fit indices GFI=0.975, AGFI=0.956, NFI=0.945, CFI=0.924, AIC = 333.489, RMSEA= 0.050 indicates that the current path can be added to the present model. Thus Afiliativenes has got both direct and indirect effect to Social Phobic Symptoms. DERS only partially mediates the current path. Thus in the final accepted model Difficulties in Emotion Regulation (DERS) fully mediates paths from PG and SM. All other paths are partially mediated by Difficulties in Emotion Regulation (DERS).

In a study conducted by Shen and Zhang (2012) showed that at the student level, Effortful Control and Affiliativeness were positively related to adolescents' reappraisal whereas Surgency was inversely correlated with reappraisal after gender, grade level and parent's education were controlled. And Negative Affect (NA) positively predicted suppression.

Thus the current model for Social Phobic symptoms in adolescent girls indicated that Difficulties in Emotion regulation is a core factor. Along with family and temperament variables. The early detection and management based on the above relations may help children to manage the early signs of the symptoms of internalizing symptoms such as Social Phobia.

Recent researches also support the same findings. Rusch, Westermann, and Lincoln (2012) conducted an explorative study to "examine the associations between emotion regulation facets and social anxiety in the normal population. N= 149 healthy volunteers participated in an internet-based survey. Hierarchical regression analyses showed that anxiety of interactive social situations is associated with non-acceptance of negative emotions, impulse control difficulties, and lack of functional emotion regulation strategies over and above the impact of age and general psychopathology".

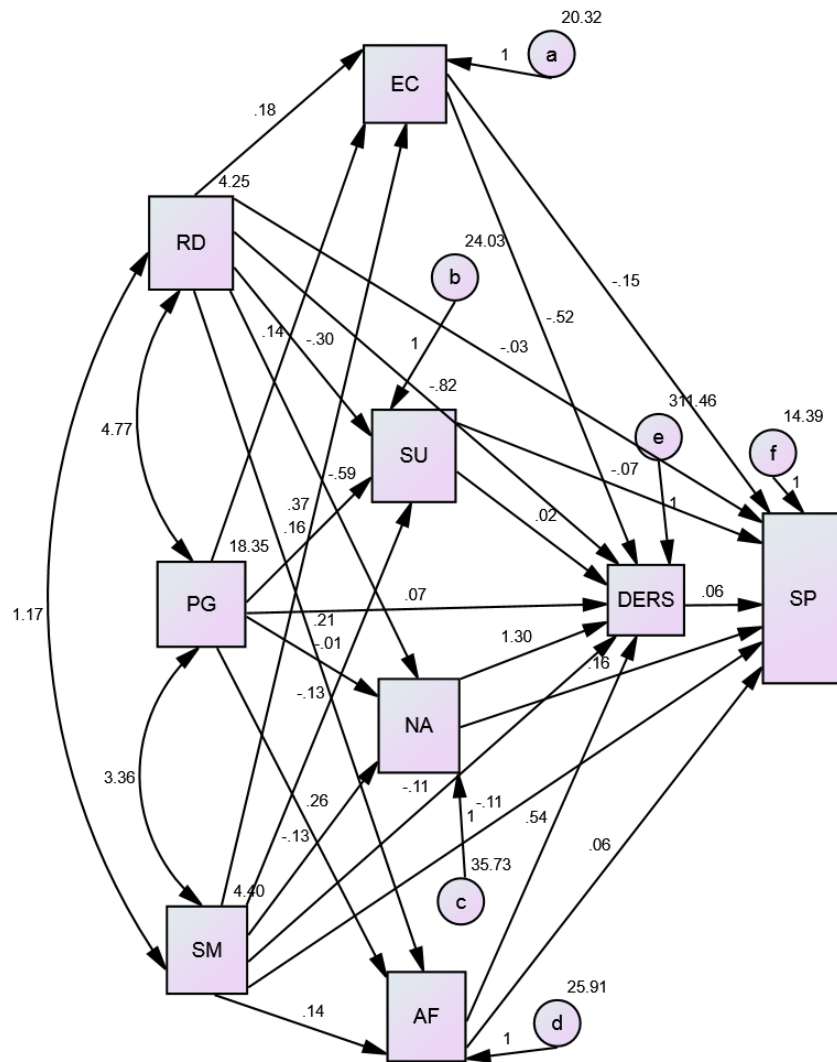


Figure 13 Model 8 DERS fully mediates paths between PG, and SM to Social Phobia but partially mediates paths between RD, , EC, SU, NA ,AF. and Social Phobia (SP)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SP=Social Phobia

Table 17

*Model Fit Indices and path coefficients for Social Phobia (n= 2041).*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.953	0.899	0.898	0.900	525.331	0.088	0.086	0.000
Model2: RD Partial	0.956	0.901	0.902	0.910	491.560	0.079	-0.261	0.000
Model 3: PG Partial	0.956	0.901	0.902	0.910	493.384	0.079	-0.010	0.675
Model 4: SM Partial	0.956	0.901	0.902	0.900	494.215	0.080	0.049	0.280
Model 5: EC Partial	0.962	0.922	0.921	0.914	456.430	0.072	-0.119	0.000
Model 6: SU Partial	0.963	0.932	0.925	0.918	451.525	0.065	-0.047	0.009
Model 7: NA Partial	0.975	0.945	0.934	0.920	338.595	.055	0.177	0.000
Model 8: AF Partial	0.975	0.956	0.945	0.924	333.489	.050	0.045	.006

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

Research on undergraduate students by Miller(2008) group comparisons of traditional survey data revealed evidence of less positive affect, greater negative affect, and broad emotion regulation deficits in both the SP and GAD groups when compared with non-anxious controls.

Studies also show that the three variables emotion regulation difficulties, temperament and family environment has got definite role in the emergence of Social Phobia. which was supported by recent researches. The absence of effective emotion regulation skills may be a specific risk factor in the development and maintenance of childhood anxiety, as anxious children typically exhibit marked difficulties regulating their emotions efficiently (Eisenberg and Spinrad 2004)

"Individuals with Social anxiety reported greater use of avoidance and expressive suppression than healthy controls, as well as lesser self-efficacy in implementing cognitive reappraisal and expressive suppression. Findings highlight specific emotion regulation deficits in Social anxiety" (Werner, Goldin, Ball, Heimberg and Gross, 2011)

Findings of the study conducted by Carthy, Horesh, Apter, and Gross (2010) shows that heightened experienced negative effect in a laboratory context with mild-to-moderate level of threatening stimuli suggests that in real-life, anxious children may suffer even more intense experiences of negative emotion. Frequent failures to regulate emotions may lead to overwhelming negative experience, early termination or impaired performance in the emotional situation.

The study findings supported earlier models. "Family Emotional Environment, including expression of certain emotions, contributes to the formation of adolescents' formation of early schema about appropriate emotional expression. Families where expressiveness is low will have maladaptive influence on its developing members. Also high temperamental reactivity was found to result in Dysregulated emotions" (Suveg, Morelen, Brewer and Thomassin, 2010).

Thus it can be summarized based on the hypotheses that Relationship Dimension, Personal Growth Dimension and System Maintenance dimensions of Family Environment have negative impact on Social Phobic Symptoms. But only for Relationship dimension the impact was statistically significant.

Temperamental factors such as Effortful Control and Surgency have got significant negative impact on Social Phobic Symptoms. Effortful Control (EC) and

Surgency(SU) has got positive effect on Social phobic symptoms which can be interpreted as low EC and SU contribute directly and in the presence of and in the presence Difficulties in Emotion Regulation to internalizing symptoms. Negative Affect and Affiliativeness in the current study showed significant positive impact on Social Phobic symptoms, indicating more risk if these variables overwhelm an individual. Also High positive effect for variables such as Negative Affect and Affiliativeness on Social Phobic symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in anxiety /social phobic symptoms.

As was hypothesized Difficulties in Emotion regulation fully mediated the relation Personal growth and System maintenance dimensions of family environment which indicate a defective family environment influence Social Phobic symptoms through Emotion regulation Difficulties. Relationship dimension of family environment has got both direct and indirect effect on Social Phobic symptoms. All the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS.

### **PATH MODEL FOR PANIC DISORDER**

Panic disorder among adolescents tends to resemble panic among adults with regard to physiological symptoms. Accompanying cognitions and panic attacks are fairly frequent at this age (Hannesdottir & Ollendick, 2007).Panic disorder is diagnosed if the child suffers at least two unexpected panic or anxiety attacks—which means they come on suddenly and for no reason—followed by at least one month of concern over having another attack, losing control, or “going crazy.” A panic attack includes at least four of the following symptoms: Feeling of imminent danger or doom, The need to escape, Rapid heartbeat, Sweating, Trembling, Shortness of breath or a smothering feeling, Feeling of choking, Chest pain or discomfort, Nausea or abdominal discomfort, Dizziness or lightheadedness, sense of things being unreal, depersonalization, Fear of losing control or “going crazy”, Fear of dying, Tingling sensations, Chills or hot flushes. More than panic disorder, panic

symptoms during anxiety and stress in general population was found to be very common especially in adolescent population.

The current study proposes a model for panic disorder, in which an attempt has been made based on previous research work, to explore the mediating role of emotion regulation difficulties in the relation between family environments, temperament to Symptoms of Panic anxiety. By taking adolescent girl's emotion regulation factors into account, the current study explored the possibilities of the relation between these variables. The study was one of the first steps to explore the influence of emotion regulation based on the Kerala population. Effective emotion regulation strategies may help adolescents from feeling capable and effective and in turn may help to escape from problem behaviour.

The current study integrated emotion regulation difficulties into the model as a mediator between family environment and temperament. This allowed us to test whether any association between the familial aspects and inherent temperament operated through children's emotion regulation accounted for additional unique variance on anxiety symptoms, especially panic symptoms. The following models explain the above concepts.

### **MODEL 1 FOR PANIC DISORDER**

In Model 1, Difficulties in Emotion Regulation (DERS) was found to be fully mediates the paths from family environment factors (RD, PG, SM) and Temperamental Factors (EC, SU, NA and AF) to Panic Symptoms (Internalizing Behaviour).As can be seen from the figure 14, this model fit the data which was indicated by the path model fit indices such as GFI=0.956, AGFI=0.90, NFI=0.95, CFI=0.90, AIC =525.331, RMSEA = 0.08. The direct path from Difficulties in Emotion Regulation (DERS) to PD was significant with  $\beta= 0.086$ ,  $p = 0.000$ . The direct positive effect of D Difficulties in Emotion Regulation (DERS) indicates that a unit change in DERS cause 0.08 unit changes in Panic symptoms. So the full mediation model was significant. As shown in earlier studies the there is significant relation between emotion regulation difficulties and Panic Symptoms such that

individuals who have more difficulty in handling emotion regulation difficulties tend to have more chance for Panic symptoms.

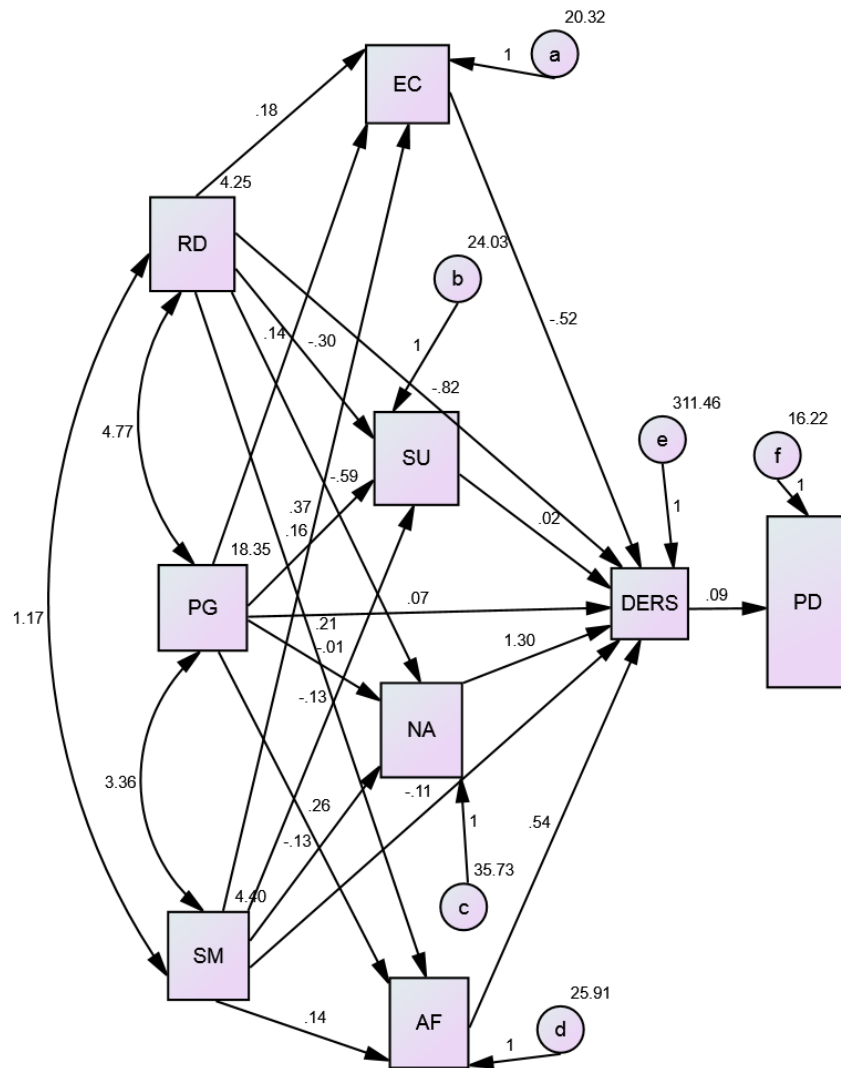


Figure 14 Model 1. DERS fully mediates the paths from family environment factors (RD, PG, and SM), Temperamental Factors (EC, SU, NA and AF) and Panic Symptoms (PD).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

The six dimensions of Difficulties in Emotion Regulation (DERS) include lack of awareness of emotional responses, lack of clarity of emotional responses, nonacceptance of emotional responses, limited access to emotion regulation strategies perceived as effective, difficulties controlling impulses when experiencing negative emotions, and difficulties engaging in goal-directed behaviors when experiencing negative emotions. "Anxiety and depressive symptoms are associated with these factors of emotion regulation difficulties". (Gratz & Roemer, 2004)

Along with earlier findings of worse emotional clarity for PD patients Baker, Holloway, Thomas, Thomas & Owens in 2004 found that PD patients reported greater emotional awareness. It may be that the hypervigilance for internal sensations commonly associated with panic disorder results in increased attention allotted toward emotional states accompanied by heightened physiological arousal, thus leading to the reporting of greater awareness.

"The nonacceptance of emotions and use of experientially avoidant emotion regulation strategies may also have a paradoxical, negative effect, as attempts to avoid emotions may actually result in increased distress and dysregulation. Extent with which internal sensations are perceived as ambiguous, and thus, threatening" (Tull & Romer, 2007).

Emotion regulation difficulties such as nonacceptance, experiential avoidance, and/or a lack of emotional clarity may result in emotions being perceived as uncontrollable and unpredictable—two factors which, according to Bouton, Mineka, and Barlow, 2001 c.f. Cisler, et al (2010) are associated with heightened fear and anxiety among individuals who experience panic attacks, increasing the extent to which fear conditioning may occur. The nonacceptance of emotions and use of experientially avoidant emotion regulation strategies may also have a paradoxical, negative effect, as attempts to avoid emotions may actually result in increased distress and dysregulation.

Baker et al., 2004 c.f. Cisler, et al, 2010 found that "PD patients, compared to healthy controls, reported a greater tendency to suppress and constrict the experience and expression of negative emotions. Individuals who experience panic attacks



exhibit a tendency to fear and avoid the experience of panic-related internal sensations. Study also found that individuals with panic disorder may catastrophically misinterpret bodily sensations associated with emotions that produce physiological sensations similar to anxiety".

Evidence suggests that nonclinical and clinical samples of individuals who experience panic attacks are more likely to rely on avoidant coping strategies in response to emotionally salient events.

Using this model as Base line Model, additional models were assessed to understand whether DERS fully or only partially mediated the relations between Family Environment Variables such as RD, PG, SM and also Temperamental Variables such as EC,SU,NA and AF. Several paths were added to understand more about the mediation role of Emotion Regulation Difficulties in Panic Symptoms.

## **MODEL 2 FOR PANIC DISORDER**

Figure 15 shows the Model 2, where the direct effect of Relationship Dimension (RD) on Panic Symptoms (PD) was tested by specifying an additional path in Baseline Model from Relationship Dimension (RD). As can be seen in table, this model fit the data well, and resulted in an improved fit from Baseline Model. The model fit indices indicated were GFI=0.96, AGFI=0.85, NFI=0.85, CFI=0.89, AIC = 491.560, RMSEA=0.079. The path from RD to Panic Symptoms (PD) was found to be significant ( $\beta = -0.261$ ,  $p = 0.000$ ), suggesting direct and indirect effects of Relationship Dimension (RD) on Panic Symptoms (PD). Due to the improved fit, this model was used in further model testing of direct pathways from other variables to PD.

Relationship Dimension (RD) has direct negative effect on Panic Symptoms (PD), ( $\beta = -0.261$ ,  $p < 0.001$ ). This is interpreted as a unit change in Relationship Dimension (RD) produces -0.261 unit changes in Panic Symptoms (PD). Family cohesion, expressiveness and openly expressed conflict contribute to Relationship Dimension. Family relations mould the child's emotional and behavioural development in many ways. The emotional climate of the family, family's positive

emotional expressivity and modeling etc (Morris, Silk, Steinberg, Myers & Robinson, 2007) are stressed as important factors in many studies. As family cohesion and expressiveness etc. become weaker, there is high chance of emergence of anxiety especially panic symptoms in children.

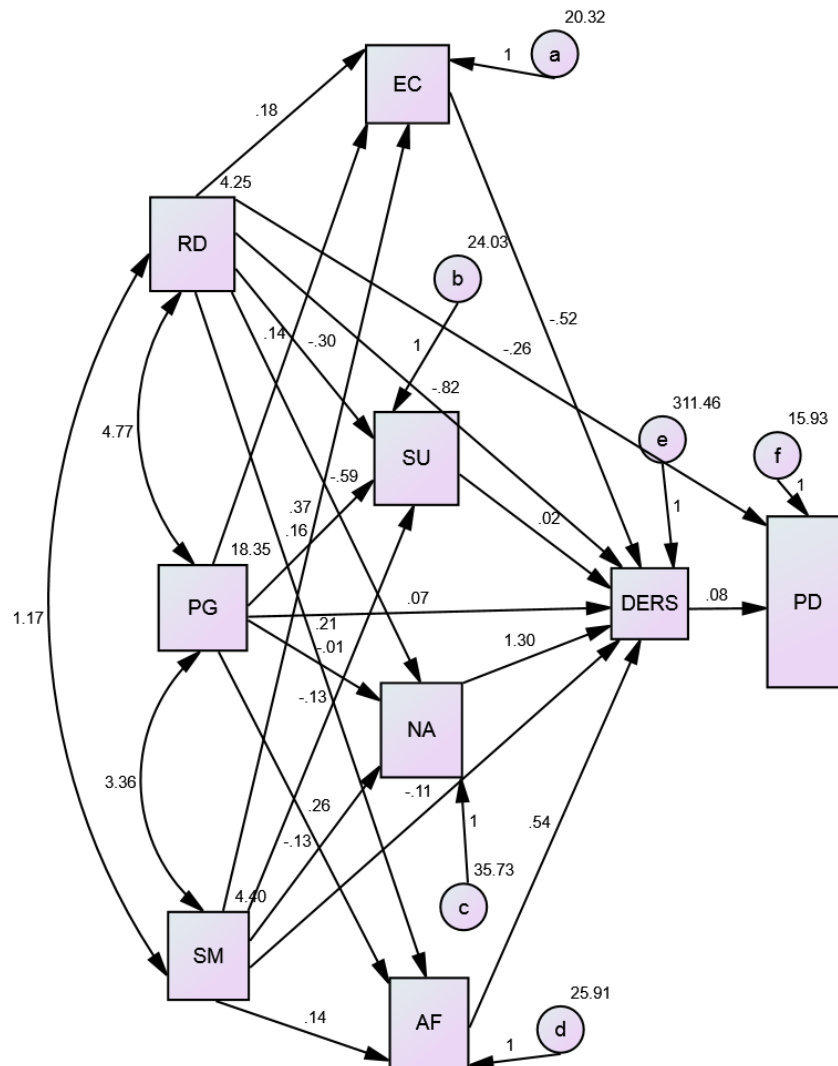


Figure 15 Model 2 DERS mediates paths from Family Environment Variables ( PG,SM), Temperament Variables ( EC,SU,NA and AF) and Panic Symptoms and partially mediates the paths between RD and Panic Symptoms(PD)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

. "Children growing up in an environment failing to provide consistent and appropriate opportunities for development are more likely to internalize negative self-perceptions or self-schemas also in combination with temperamental factor such as negative affect results in emotion regulation difficulties which in turn, increase the risk of psychopathology" (Josefsson, Jokela, Hintsanen, Cloninger.,Pulkki-Råback, Merjonen, Hutri-Kähönen , & Keltikangas, 2013). Thus for further model evaluation the direct path from Relation ship Dimension was carried over to next stage.

### **MODEL 3 FOR PANIC DISORDER**

In Model 3, as shown in Figure 16, the direct effect of the next family environment variable Personal Growth Dimension(PG) on Panic Symptoms (PD) was tested by specifying an additional path in Model.2 .The fit indices were GFI=0.96, AGFI=0.82, NFI=0.85, CFI=0.88, AIC = 493.384, RMSEA=0.079. The path from Personal Growth Dimension(PG) to Panic Symptoms (PD) was found to be not significant with path co-efficient  $\beta = -0.010$ ,  $p = 0.675$ . This model failed to significantly improve the fit over Model 2. The path was therefore removed from the model. This result indicates that DERS fully mediated the relation between Personal Growth Dimension (PG) and Panic Symptoms (PD) and interpreted that Personal Growth Dimension if defective with poor independence for children and low cultural, moral and religious orientation may become a risk factor in the presence of Emotion Regulation Difficulties.

Personal Growth Dimension is characterized by independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious emphasis. "When a child's emotional climate is negative, coercive or unpredictable, children are at risk in becoming highly emotionally reactive, due to frequent, unexpected emotional displays or because of emotional manipulations and experience negative emotion which causes emotion dysregulation that shapes behavioural problems" (Adrian, Zeman, Erdley ,Lisa, Homan & Sim, 2009).

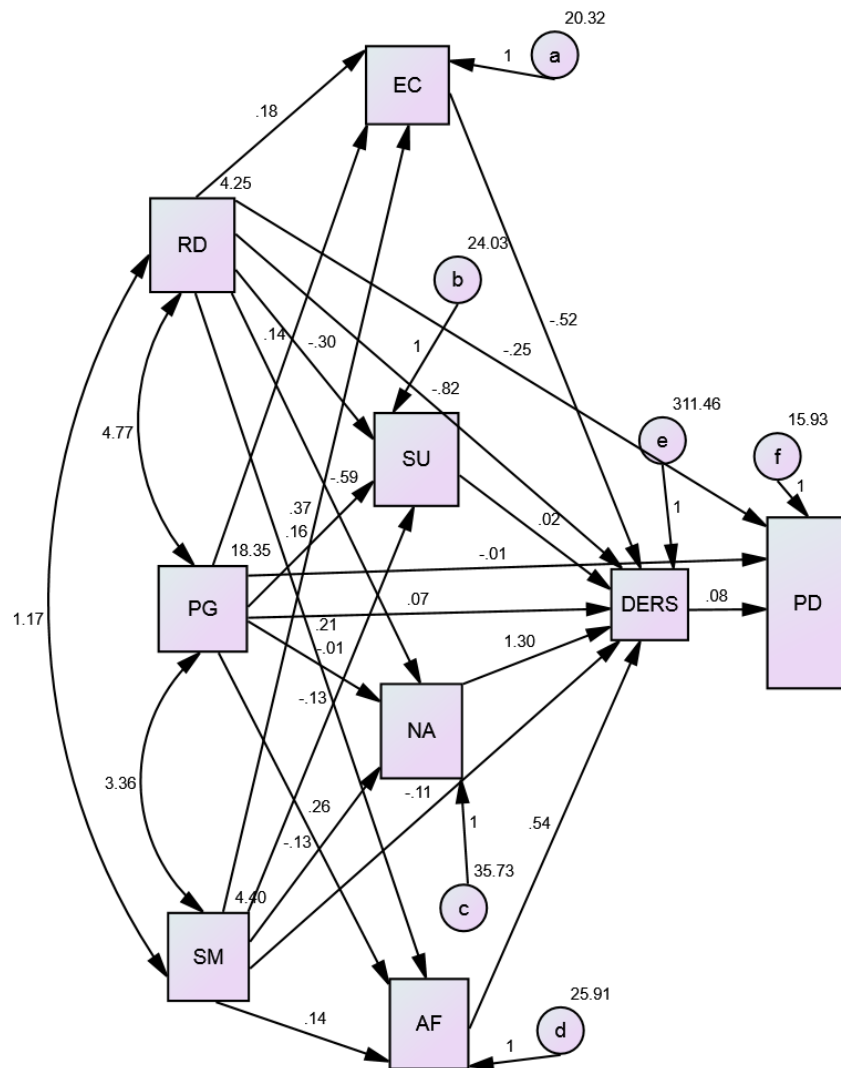


Figure 16 Model 3 DERS mediates paths from Family Environment Variables ( SM), Temperament Variables ( EC,SU,NA and AF) and Panic Symptoms and partially mediates the paths between RD , PG and Panic Symptoms.(PD)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

#### **MODEL 4 FOR PANIC DISORDER**

Figure 17 shows that in order to check whether Difficulties in Emotion Regulation fully mediates the relation between System Maintenance Dimension(SM) and Panic Symptoms, an additional direct path from System Maintenance Dimension (SM) to Panic Symptoms was drawn. The statistical analysis for the model fit shows indicators such as GFI=0.96, AGFI=0.81, NFI=0.85, CFI=0.88, AIC = 494.384, RMSEA=0.078. The path co-efficient from SM to PD was found to be  $\beta = 0.049$ ,  $p = 0.280$ . Just like the earlier model , the current model failed to significantly improve the model fit over the Model 2 which was evident from the model fit indicators. The path was therefore removed from the model and the result indicated that Difficulties in Emotion Regulation (DERS) fully mediated the relation between System maintenance dimension and Panic Symptoms. Several studies support the association between family environment and anxiety.

The variables organization and control together defines system maintenance dimension.

One family practice that has gained attention for its potential protective role in fostering positive outcomes for children, adolescents, and emerging adults and that may contribute to the development of self-regulation is the practice of family routines and rituals. There is evidence that family routines and rituals enhance outcomes of adolescents. Therefore, these positive family experiences during adolescence may facilitate emotional development and self-regulation in emerging adulthood as well (Yoon, 2012).

Adolescence is a period when the element behavioural and psychological control is a developmental task associated with family characteristics. "Associations between behavioral control and affect dysregulation may be u-shaped, with optimal levels providing a safe environment in which one can deal with ones affect. Problems related with these factors in turn affect the development of internalizing problems in girls" (Neumann, 2010).

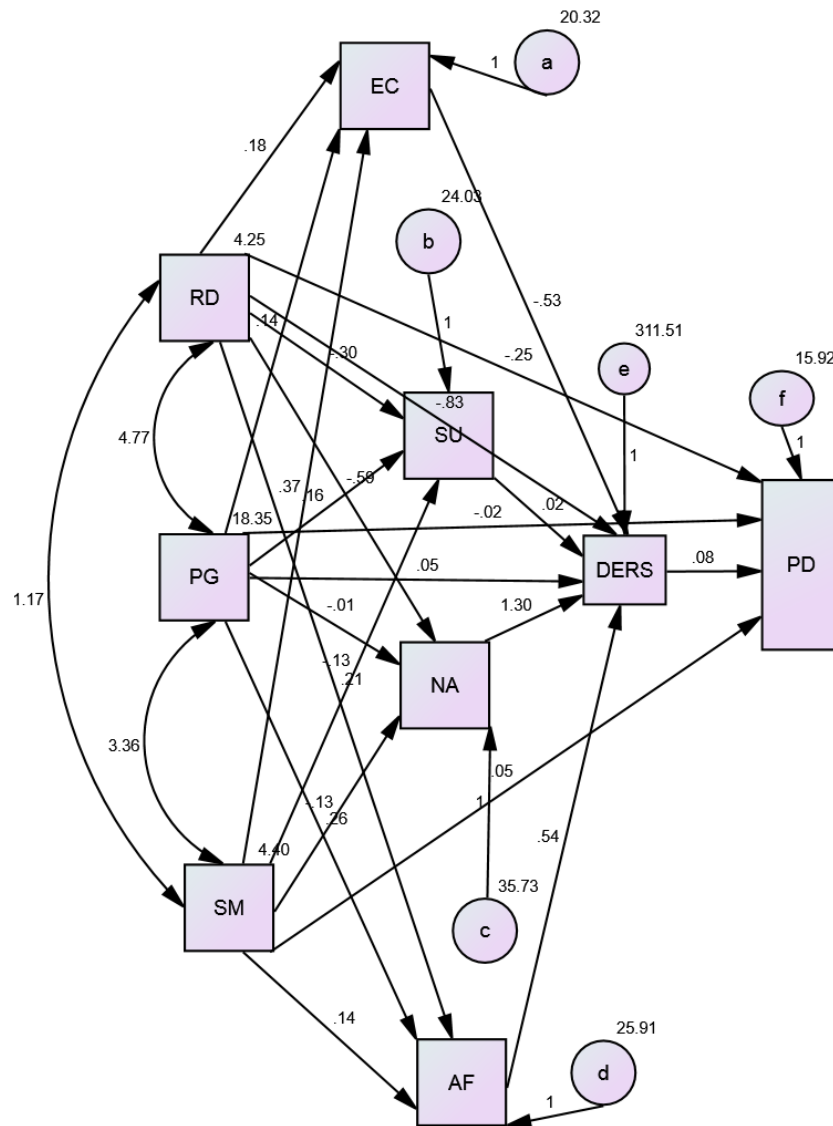


Figure 17 Model 4 DERS mediates paths from Family Environment Variable (PG), Temperament Variables (EC, SU, NA and AF) and Panic Symptoms and partially mediates the paths between RD, SM and Panic Symptoms(PD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

When adolescents perceived greater cohesion, adaptability, and support from their parents, which enhances the emotional climate, positively influences their emotion regulation (Yoon, 2012). Children, who exhibit greater emotional insecurity

in response to familial conflict, will have elevated levels of internalizing problems (Fosco and Grych, 2007). Suveg (2010) proposes that emotion dysregulation would fully mediate the relation between the family emotional environment and symptoms of anxiety, which was found to be significant for the System Maintenance Dimension of the Family Environment Scale in the present study.

### **MODEL 5 FOR PANIC DISORDER**

Model 4 with direct path from SM to Panic Symptoms (PD) was rejected. Thus as shown in Figure 18, in Model 5, a direct path from Effortful Control(EC) to Panic symptoms was attempted to understand the modification of the model. The fit indices were the following GFI=0.96, AGFI=0.85, NFI=0.89, CFI=0.89, AIC = 456.430, RMSEA=0.065. This data fit the model in a better way. Also the path coefficient  $\beta = -0.119$ ,  $p = 0.000$  from EC to PD has found to be significant. Effortful Control(EC) has got an independent negative effect on Panic Symptoms (PD) with an effect size of 0.119. which indicates that a unit change in Effortful Control(EC) exerts -0.119 unit changes in Panic Symptoms (PD). In the current model Difficulties in Emotion Regulation (DERS) partially mediates the relation between Effortful Control and Panic Symptoms. There was found to be direct and indirect effects from Effortful Control to Panic Symptoms. This model was used for further model analysis.

During adolescence young students gain higher level cognitive ability with brain maturation so as to improve their ability to regulate emotions, including more flexible reappraisal strategy, which has important implications for their social competence and adjustment. For example, adolescents of low EC suffered the disruption of normal developmental process and were placed particularly higher risk for psychological disorder (Muris & Ollendick, 2005).

"Negative affect, positive affect, and effortful control are shown to be distinct factors with significant stability over time. There are unique relationships between negative affect and effortful control with anxiety. The strength of the relationship between negative affect and anxiety is at least partially dependant on the individual's level of effortful control". (Pe´rez-Edgar and Fox, 2005).

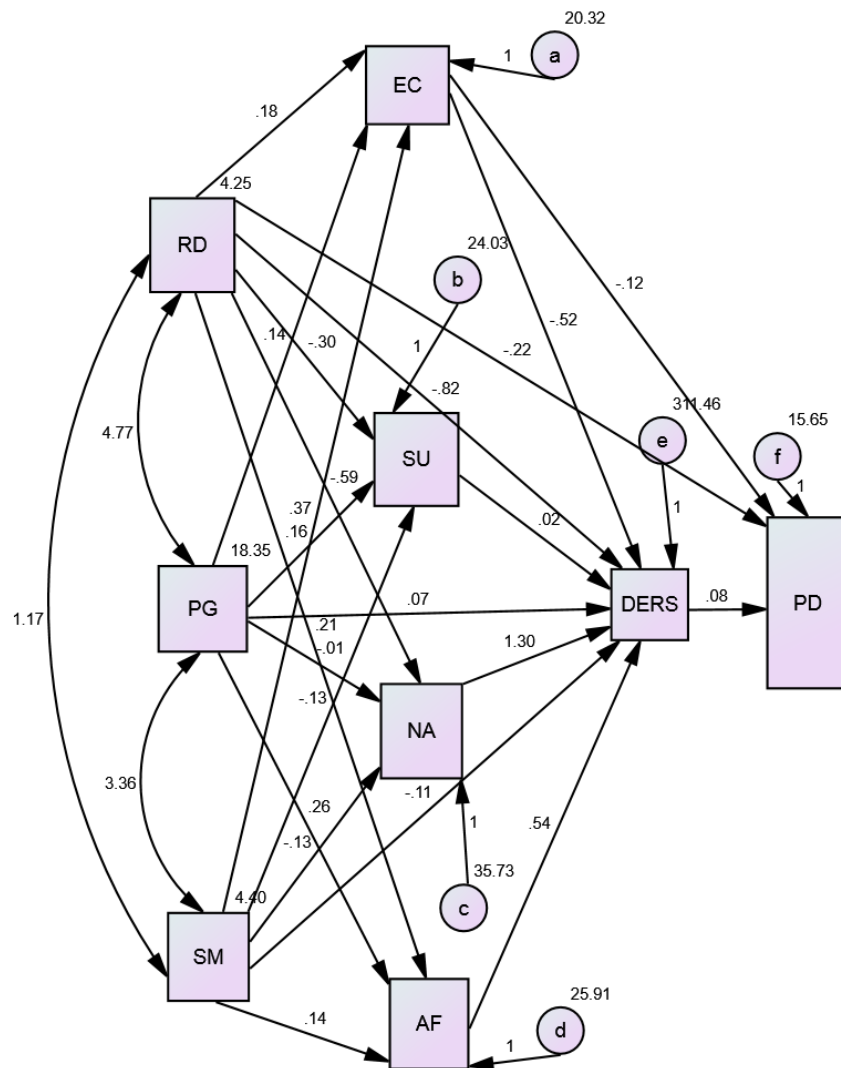


Figure 18 Model 5 .DERS mediates paths from Family Environment Variable (PG,SM),Temperament Variables ( SU,NA and AF) and Panic Symptoms and partially mediates the paths between RD, EC and Panic Symptoms(PD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

Effortful control represents abilities to regulate behavior and control attention .Effortful control has been linked to both shyness and fear as separate



temperament dimensions. Main components of effortful control are inhibitory control, which involves the ability to recognize and stop the use of inappropriate responses and attentional control, which includes the abilities to maintain focus and shift attention when necessary. This is very important in the management of the symptom control in PD, which will be defective in such individuals. "Effortful Control is thought to be a source of resilience, which protects children from developing psychological problems" (Sheikh, 2013).

#### **MODEL 6 FOR PANIC DISORDER**

As shown in Figure 19, In Model 6, another direct path was drawn from Surgency (SU) to Panic Symptoms (PD) in order to check for an improved model. The model fit indices were GFI=0.96, AGFI=0.87, NFI=0.87, CFI=0.90, AIC = 451.525, RMSEA=0.061. The fit indices were better for this model compared to the earlier model. Also the path coefficient from Surgency to Panic Symptoms was found to be  $\beta = -0.119$ ,  $p = 0.009$ , which is found to be significant. Thus this path was also accepted to the current model as the fit indices and path coefficient was found to be good. Thus Surgency exert both direct and indirect effect on Panic Symptoms. And Emotion Regulation Difficulties have got partial mediation role with Surgency on Panic Symptoms. High surgency in children independently influence the PANIC Symptoms with an element of resilience.

Temperamental factors low Surgency and high negative affect, already established as high risk factors for problematic behaviours together with difficulties in emotion regulation produces a path which makes the individual more susceptible for disorder.

"High temperamental Surgency/extraversion is related to assertiveness, positive emotions. So it is acting as a resilient factor for the management of anxiety symptoms in children" (Festen, Hartman, Hogendoorn, Haan, Prins, Moorlag, & Nauta, 2013). Thus in the model for Panic Symptoms Surgency as got independent direct relation to Panic Symptoms.

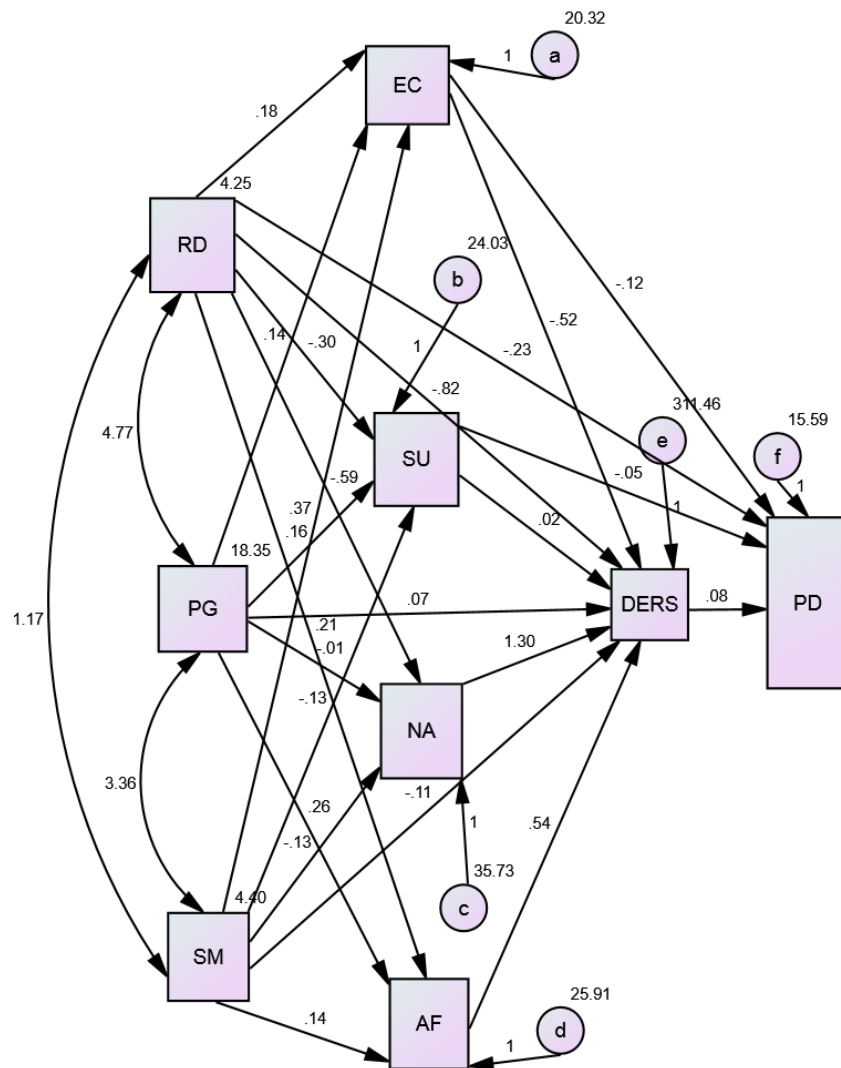


Figure 19 Model 6 .DERS mediates paths from Family Environment Variable (PG,SM),Temperament Variables ( NA and AF) and Panic Symptoms partially mediates the paths between RD , EC ,SU and Panic Symptoms(PD)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder.

## **MODEL 7 FOR PANIC DISORDER**

In Model 7, a direct path was added to the current model from Negative Affect (NA) TO Panic Symptoms (PD) along with an indirect effect through Difficulties in Emotion Regulation (DERS). Figure 20 shows the current model. The model fit was checked with the following indices GFI=0.98, AGFI=0.90, NFI=0.91, CFI=0.93, AIC = 338.595, RMSEA=0.059. Also the path coefficient was found to be  $\beta = 0.177$ ,  $p = 0.000$ . The path coefficient indicates that there is a significant positive impact exerted by Negative Affect independently on Panic Symptoms (PD). A unit change in Negative Affect causes 0.117 unit changes in Panic Symptoms. The path coefficient along with model fit indices shows that this path when added to the model improves the fit and Negative Affect (NA) directly and indirectly exerts effect on PD. Thus Difficulties in Emotion Regulation (DERS) partially mediates the relation between Negative Affect (NA) to Panic Symptoms (PD). The path was taken for the next step of model evaluation.

Negative Affect (NA) is susceptible to negative emotions, which is consistent with the dimension of Neuroticism and associated with internalizing problems according to the findings of Shen & Zhang, 2012.

Negative Affectivity (includes negative affectivity, shyness and avoidance; linked to Neuroticism and to Gray's Behavioral Inhibition System). Baker, Holloway, Thomas, Thomas & Owens (2004) found that PD patients, compared to healthy controls, reported a greater tendency to suppress and constrict the experience and expression of negative emotions.

"Highly negative parents may not be teaching children appropriate means of regulating their emotions, whereas children in more balanced and positive emotional households may be more adept at managing the negative affect that arises during parental conflict episodes" (Fosco and Grych, 2007).

Thus negative affect has been found to be an important independent variable in the current model.

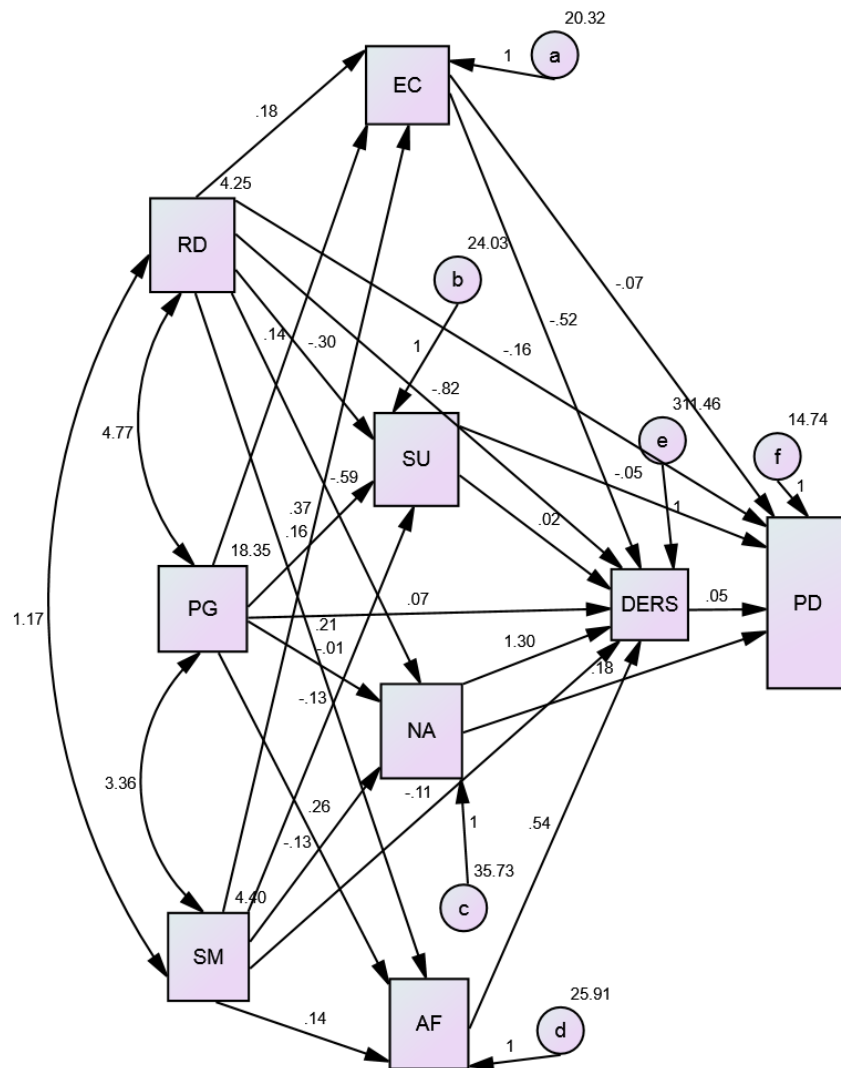


Figure 20 Model 7 DERS mediates paths from Family Environment Variable (PG,SM), Temperament Variable ( AF) and Panic Symptoms and partially mediates the paths between RD , EC ,SU, NA and Panic Symptoms. (PD)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

## **MODEL 8 FOR PANIC DISORDER**

In model 8 a direct path from temperamental factor Affiliativeness(AF) to Panic Symptoms (PD). The Model fit indices for the current model was GFI=0.98, AGFI=0.90, NFI=0.91, CFI=0.94, AIC = 451.525, RMSEA=0.061. The path coefficient  $\beta = 0.045$ ,  $p = 0.006$ . The path coefficient along with model fit indices shows that this path when added to the model improves the fit and Affiliativeness (AF) directly and indirectly exerts effect on PD. Thus Difficulties in Emotion Regulation (DERS) partially mediates Affiliativeness (AF) to Panic Symptoms (PD). The path was taken for the final model. Thus Model 8 was found to be the most adequate model for the current study where the model fit indices were found to be better compared to the Baseline model. Fit indices such as smallest AIC and lower RMSEA value for the current model. Thus for Panic Symptoms, the Model 8 (figure 21) was found to be adequate.

Children with temperamental characteristic such as proneness to negative affect, and higher reactivity, are more likely to have problems with regulating emotions later on and end up with psychopathology (Gross and Munoz, 1995).

"When a child's emotional climate is negative, coercive or unpredictable, children are at risk in becoming highly emotionally reactive, due to frequent, unexpected emotional displays or because of emotional manipulations and experience negative emotion which causes emotion dyregulation that shapes behavioural problems" (Adrian, Zeman, Erdley, Lisa, Homan & Sim, 2009).

All children have a temperament that will influence their emotions and how they adapt to change in their environments. Children with difficult temperaments face a higher risk for adjustment problems under unfavorable family conditions or poor parenting. "A child's temperament characteristics can intensify with a clashing parenting style. Children with difficult temperaments are more vulnerable or prone to the effects of family stress, discord, and negative child-parent relationships than children with easy temperaments, who are more resilient to such effects". (Richters, 2010)

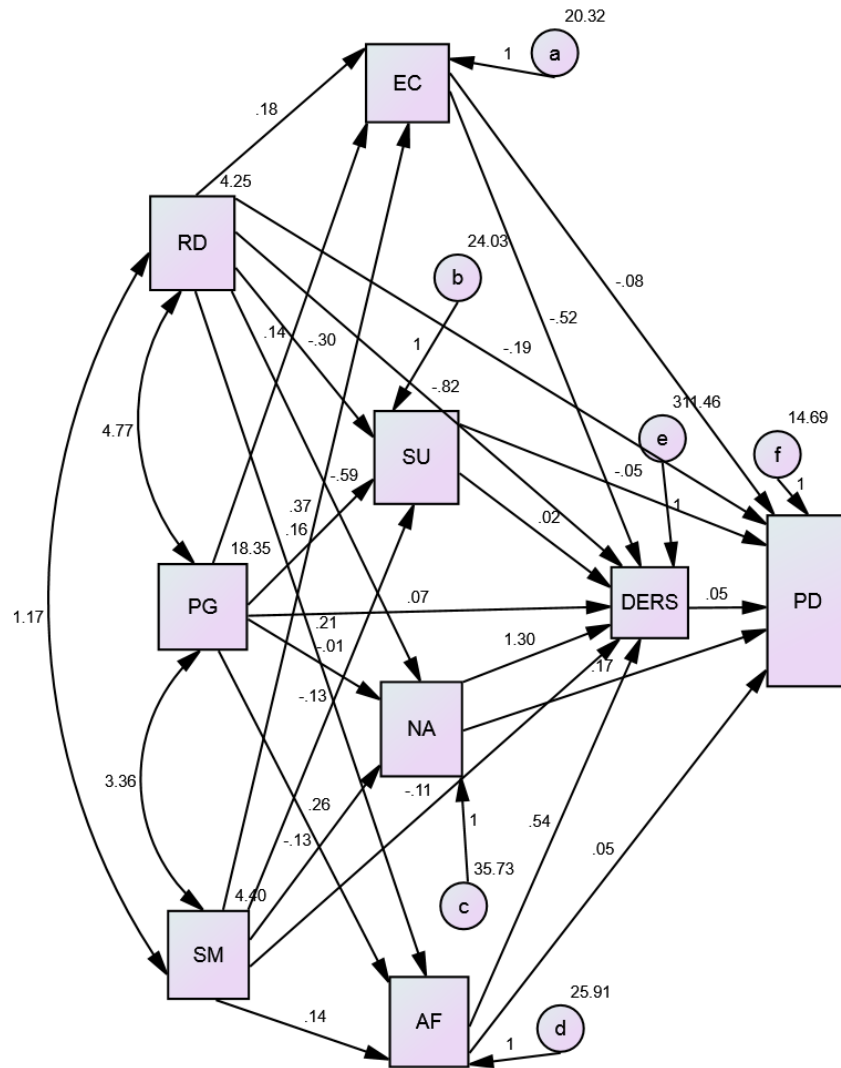


Figure 21 Model 8 DERS fully mediates paths between PG, SM and Panic Symptoms but partially mediates paths between RD, , EC, SU, NA ,AF and Panic Symptoms (PD)..

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, PD=Panic Disorder

Table 18

*Model Fit Indices for Panic Symptoms (n= 2041)*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.96	0.90	0.95	0.90	525.331	0.08	0.086	0.000
Model2: RD Partial	0.96	0.85	0.85	0.89	491.560	0.079	-0.261	0.000
Model 3: PG Partial	0.96	0.82	0.85	0.88	493.384	0.079	-0.010	0.675
Model 4: SM Partial	0.96	0.81	0.85	0.88	494.215	0.078	0.049	0.280
Model 5: EC Partial	0.96	0.85	0.87	0.89	456.430	0.065	-0.119	0.000
Model 6: SU Partial	0.96	0.87	0.87	0.90	451.525	0.061	-0.119	0.009
Model 7: NA Partial	0.98	0.90	0.91	0.93	338.595	0.059	0.177	0.000
Model 8: AF Partial	0.98	0.90	0.91	0.94	333.489	0.051	0.045	0.006

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

The study findings for the current model was summarized as follows: Based on the hypotheses, it was found from the models that the Relationship Dimension, and Personal Growth Dimension of Family Environment have negative impact on Panic Symptoms and System Maintenance dimensions shows positive impact. But only for Relationship dimension the impact was statistically significant.

Temperamental factors such as Effortful Control and Surgency have got significant negative impact on Social Phobic Symptoms. Effortful Control (EC) and Surgency (SU) have got positive effect on Panic symptoms which can be interpreted as low EC and SU contribute directly and in the presence of and in the presence Difficulties in Emotion Regulation to internalizing symptoms such as panic symptoms. Negative Affect and Affiliativeness showed significant positive impact on Social Phobic symptoms, indicating more negative impact when these factors are more in an individual. Also High positive effect for variables such as Negative Affect and Affiliativeness on Panic Symptoms indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of Emotion regulation difficulties( DERS) results in anxiety especially, Panic symptoms.

As was hypothesized Difficulties in Emotion regulation fully mediated the relation between Personal growth dimension, System maintenance dimensions of family environment and Panic Symptoms which indicate a defective family environment influence panic symptoms through Emotion regulation Difficulties. Relationship dimension of family environment has got both direct and indirect effect on Social Phobic symptoms. And in the current model Relationship Dimension has got highest independent impact on Panic Symptoms, compared to other variables. All the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through Difficulties in Emotion Regulation to anxiety such as panic symptoms.

### **PATH MODEL FOR SEPARATION ANXIETY**

Separation anxiety is the only anxiety disorder mostly restricted to infancy, childhood, or adolescence. Developmentally inappropriate, excessive, persistent, and unrealistic worry about separation from attachment figures, most commonly parents or other family members are the most important characteristics of this anxiety disorder. This type of anxiety would appear to be associated with anxious attachment. Overprotective, over controlling and overly critical parenting styles that limit the development of autonomy and mastery may also contribute to the



development of anxiety disorders in children with temperamental vulnerability. Rejection and control by parents may be positively related to later anxiety and depression (Rapee, Kennedy, Ingram, Edwards, Sweeney, 2005). In adolescents, somatic complaints and school refusal are most common. Many studies reported a declining prevalence of Separation Anxiety as children grow beyond adolescence.

Studies in youths with Separation Anxiety shows that they display distress before separation or during attempts at separation. "Children with separation anxiety disorder exhibit varying degrees of avoidant behaviour that correlate with the severity of their symptoms. This kind of anxiety in adolescents and school children significantly interferes with daily activities and developmental tasks". (Dabkowska, Araszkievicz, Dabkowska & Wilkosc, 2011).

From the earlier studies it was evident that environmental factors might have a stronger influence in Separation Anxiety than in other childhood anxiety disorders.

#### **MODEL 1 FOR SEPARATION ANXIETY**

In Model 1, as shown in Figure 22, taken as a Baseline Model with Difficulties in Emotion Regulation (DERS) as fully mediating the paths from family environment factors (RD, PG, SM), Temperamental Factors (EC, SU, NA and AF) and Separation Anxiety (Internalizing Behaviour). As can be seen from the figure this model fit the data adequately, which was indicated by the path model fit indices such as

GFI = 0.95, AGFI = 0.890, NFI = 0.900, CFI = 0.910, AIC = 623.690, RMSEA = 0.081). The direct path from DERS (Emotion Regulation Difficulties) to SA was significant with  $\beta = 0.045$ ,  $p = 0.000$ . A unit change in Difficulties in Emotion Regulation (DERS) causes 0.045 unit changes in Separation Anxiety. The direct positive effect of Difficulties in Emotion Regulation (DERS) to Separation Anxiety indicates that Emotion regulation is an essential element which when defective causes chances for internalizing symptoms in adolescent girls. From the results the effect size was found to be comparatively low. This can be further interpreted

keeping this model as baseline model. Other hypothesized paths were tested for improved fit of the model.

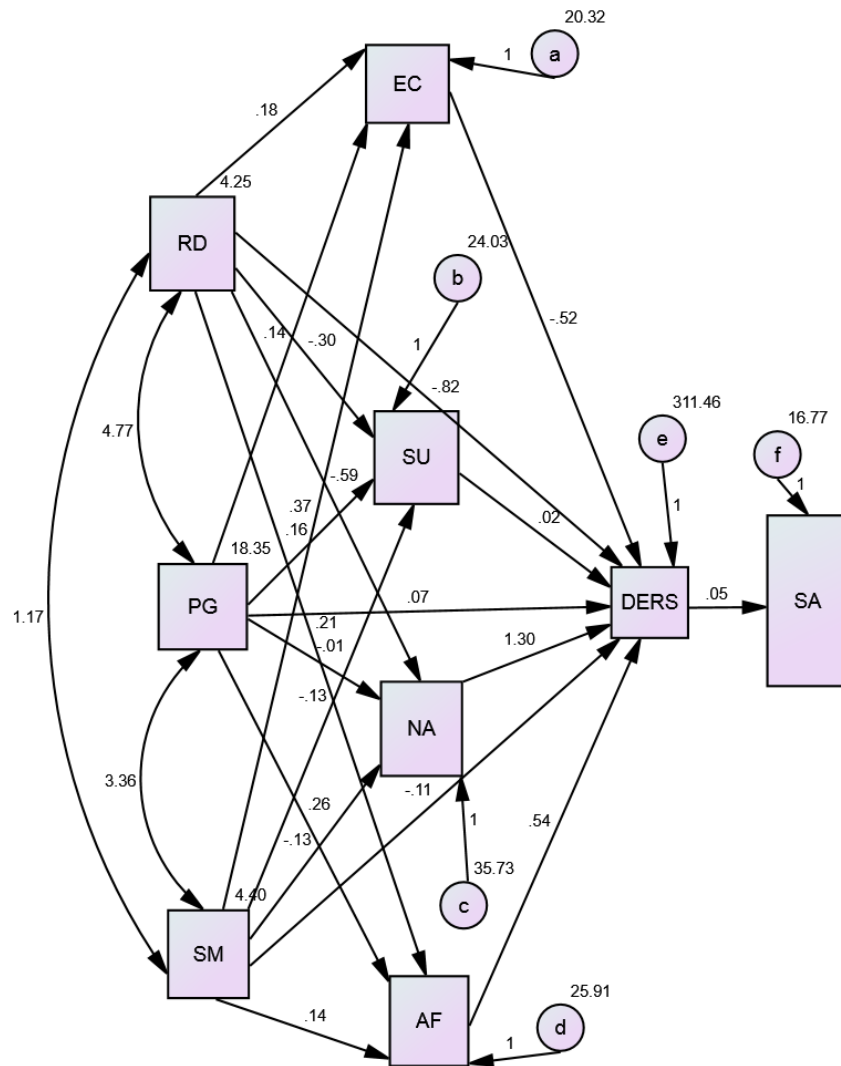


Figure 22 Model 1 DERS fully mediates the paths from family environment factors (RD, PG, and SM), Temperamental Factors (EC, SU, NA and AF) and Separation Anxiety (SA).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety

According to Eisenberg and Spinrad (2004), emotion regulation can be viewed as a voluntary and goal-directed process aimed at modifying emotional states to achieve social and biological adaptation, as well as individual goals. "Emotion regulation strategies helps an individual to balance the thoughts and actions and for better adjustment. Thus Emotion regulation is an important aspect in separation anxiety, where the child suffers more from in ability to handle the novel situation and also difficulty dissipating or decreasing negative emotions" (Macklem, 2008).

Heightened intensity of emotions, poor understanding of emotions, negative reactivity to emotions, and maladaptive management of emotions demonstrated both common and specific relationships to most types of anxiety symptoms (Mennin , Holaway , Fresco, Moore and Heimberg , 2007).

In a study by Suveg and Zeman (2004), reported less use of adaptive regulation methods and more dysregulated expression of sadness, worry, and anger was common among children with anxiety symptoms. The same idea was expanded by Carthy ,Horesh ,Apter and Gross,2010 that "anxious children reported to have greater intensity and frequency of negative emotional responses relative to controls, deficits in using reappraisal in negative emotional situations and corresponding deficits in reappraisal self-efficacy, and over reliance on emotion regulation strategies that increase the risk of functional impairment, intense negative emotion, and low emotion regulation self-efficacy" . Thus other models with family and temperament variables were proposed.

## **MODEL 2 FOR SEPARATION ANXIETY**

In Model 2, specifying an additional path in Baseline Model the direct effect of Relationship Dimension (RD) on Separation Anxiety was tested. Figure 23 shows the details of the paths for this model. The model fit indices indicated were GFI=0.95, AGFI=0.890, NFI=0.880, CFI=0.899, AIC = 625.812, RMSEA=0.077. The model fit indices shows that the fit indices were adequate but not improved the fit of the model from the Baseline Model with respect to model indices .Also the path from RD to SP was found to be not significant ( $\beta= 0.020$ ,  $p = 0.653$ ). This suggests that the effect from Relationship Dimension to Separation Anxiety was

fully mediated by Difficulties in Emotion Regulation (DERS). So the direct path from Relationship Dimension to Separation Anxiety has been removed and not taken for further analysis.

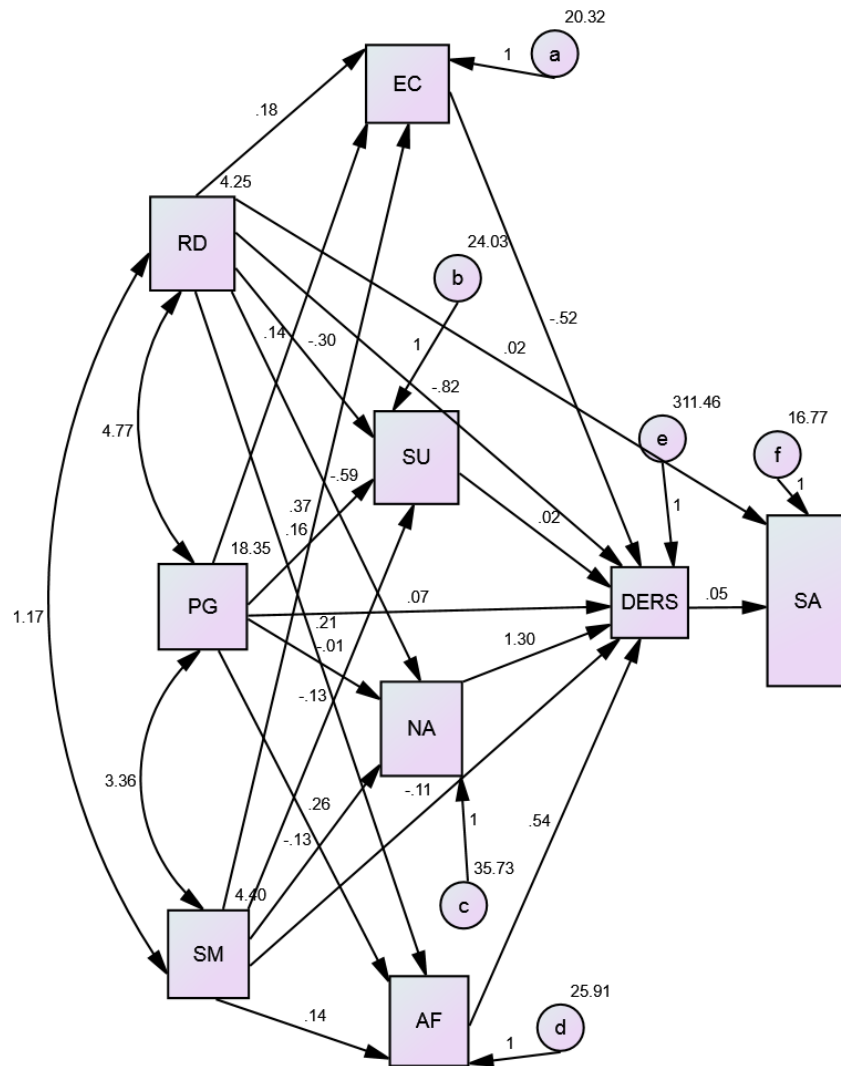


Figure 23 Model 2 DERS mediates paths from Family Environment Variables (PG,SM), Temperament Variables ( EC,SU,NA and AF) and Separation Anxiety (SA) and partially mediates the paths between RD and Separation Anxiety(SA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety.

Family factors and its relation have been studied in the context of anxiety. But the specific role of different dimensions of family environment was not much researched in the context of specific internalizing symptoms, such as separation anxiety. Compared to other anxiety symptoms this type of anxiety follows a distinct path.

"Child characteristics, such as children's vulnerability to experiencing negative emotions, moderate relations between family context variables and children's Emotion Regulation, such that children who are high in reactivity are most at risk for developing emotion regulatory difficulties when living in a negative family environment" ( Morris, Silk, , Myers, and Robinson,2007).

The current model explains that family context and the relationship factors were fully mediated by a child's emotion regulation difficulties. Thus family environment in combination with child's emotion regulation difficulties together contribute to symptoms of anxiety.

### **MODEL 3 FOR SEPARATION ANXIETY**

In the next Model a direct path was indicated from another family environment variable, Personal Growth Dimension (PG) to Internalizing Behaviour, Separation Anxiety Symptoms (SA) (Figure, 24). The model fit indices were checked and noted as (GFI=0.95, AGFI=0.890, NFI=0.880, CFI=0.889, AIC = 625.269, RMSEA=0.077). The model fit indices were in the acceptable range. But not resulted in an improved fit compared to the Baseline Model. Moreover the path coefficient ( $\beta = -0.014$ ,  $p = 0.516$ ), from PG to SA was found to be again not significant. So the path was not taken for further calculations for a better model, with the assumption that the effect of PG was also fully mediated by DERS.

Thus personal growth factors along with emotion regulation difficulties of the child results in anxiety.

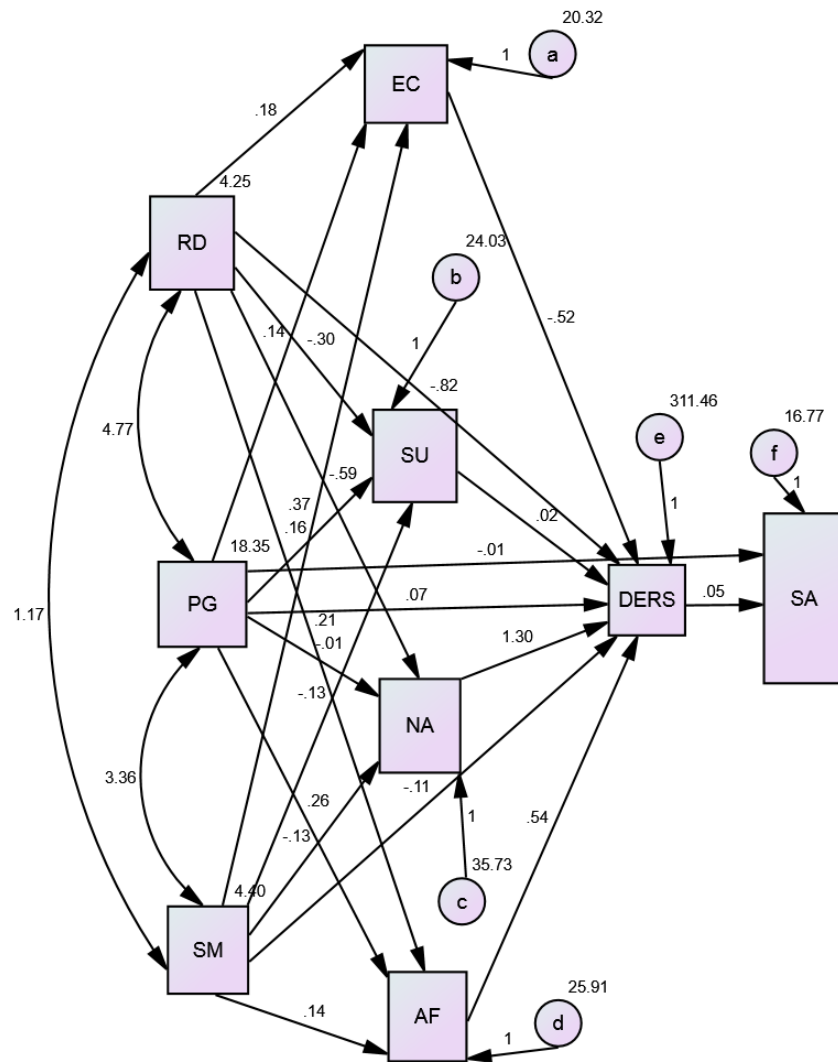


Figure 24 Model 3 DERS mediates paths from Family Environment Variables (RD, SM), Temperament Variables ( EC,SU,NA and AF) and Separation Anxiety and partially mediates the path between PG and Separation Anxiety (SA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety

#### **MODEL 4 FOR SEPARATION ANXIETY**

Model 4 (Figure 25) was prepared by drawing a direct path from another important family environment variable System maintenance dimension (SM) to Separation Anxiety (SA). The model was checked by the Path model fit indices from SPSS-AMOS and reported as GFI=0.95, AGFI=0.892, NFI=0.880, CFI=0.889, AIC = 623.247, RMSEA=0.071). The path coefficient was found to be  $\beta = 0.068$ ,  $p = 0.118$ . As path coefficient was insignificant and model fit indices not resulted in any improvement in the model fit, this path was also removed from the next step of model preparation. Difficulties in Emotion Regulation (DERS), here fully mediates the path from System Maintenance Dimension to Separation Anxiety.

So it was evident from the evaluations that family environment variables along with Difficulties in emotion regulation (DERS) have got an important role in the development and maintenance of Separation Anxiety Symptoms in children and adolescents.

The effect of all the family factors in the study were fully mediated by Difficulties in Emotion Regulation (DERS) indicating that low cohesiveness, independence, organization, control etc contributes to youth's formation of defective emotion regulation strategies which in turn have significant influence in the onset of anxiety symptoms (Suveg, Morlen, Brewer & Thomasin, 2010).

"Children whose parents are accepting and responsive to their emotions are often able to adaptively regulate their emotions. However, children whose parents punish or disregard their emotions often have more difficulty regulating their emotions" (Hilt, Hanson and Pollak, 2011).

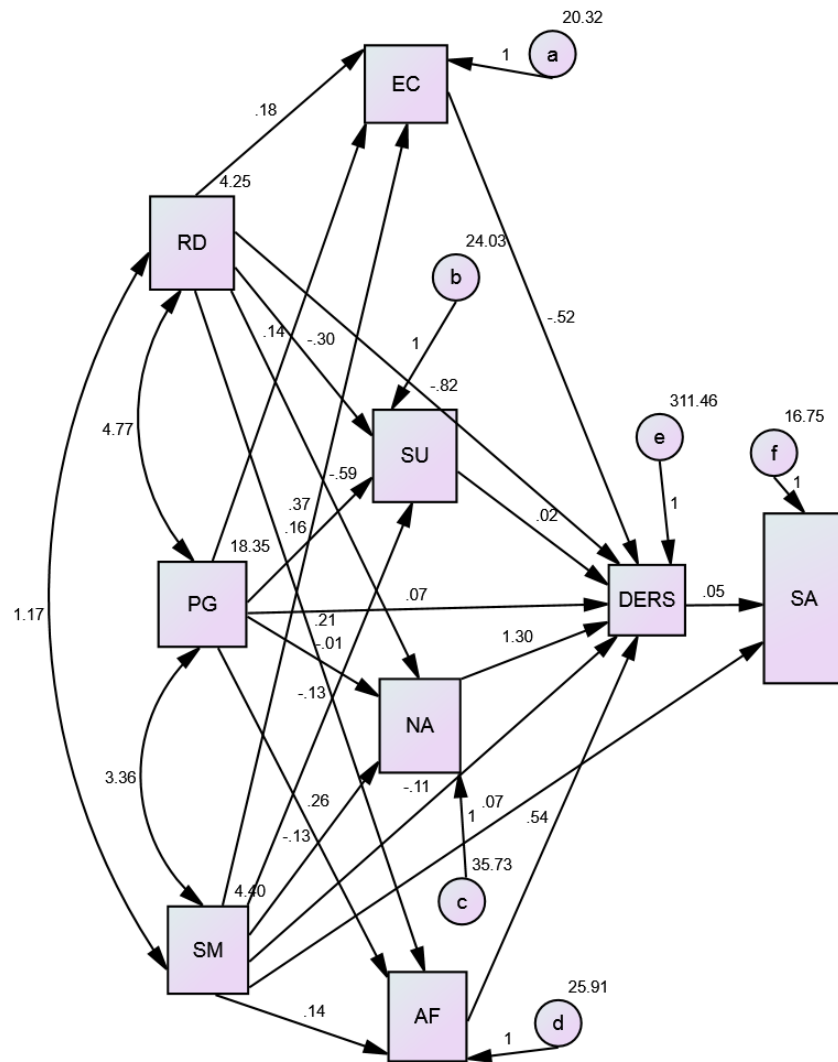


Figure 25 Model 4 DERS mediates paths from Family Environment Variable (RD and PG), Temperament Variables ( EC,SU,NA and AF) and Separation Anxiety and partially mediates the path between SM and Separation Anxiety.(SA)

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety



## **MODEL 5 FOR SEPARATION ANXIETY**

Temperament was found to be an important inherent element in the development of childhood psychopathology. One of the well studied temperamental factors was Effortful Control (EC). A direct path was drawn from EC to Separation Anxiety, as shown in Figure 26, in order to check the role of this factor in the present model 5. The path coefficient and model fit indices were reported. The path coefficient  $\beta = -0.064$ ,  $p = 0.001$  shows a significant positive effect on Separation Anxiety. The model fit indices were GFI=0.95, AGFI=0.890, NFI=0.890, CFI=0.900, AIC = 615.447, RMSEA=0.069. The model fit indices were also indicated improved model fit. The path has been taken up for the next stage of model preparation with the inference that DERS partially mediates the path from EC to SA. Effortful Control has got both direct and indirect effect on Separation Anxiety. Difficulties in Emotion Regulation partially mediate the relation. The low Effortful Control (EC) directly acts as a risk factor for separation anxiety in children.

Earlier studies show that "children and adolescents with anxiety disorders could have different temperaments and character profiles in accordance with diagnostic groups, which imply the specific pathophysiological mechanism of each anxiety disorder" (Soo-churl et al., 2009 cf. Dabkowska, Araszkievicz, Dabkowska & Wilkosc, 2011).

Effortful control has been directly correlated in children with pro-social behavior, better coping skills, and low levels of distress. So "the dysregulated emotions are managed focusing Effortful control along with emotions. When the emotions are dysregulated, there is maximum probability of resulting in disorder". (Eisenberg, Valiente, Spinrad, Cumberland, Liew, Reiser, 2009).

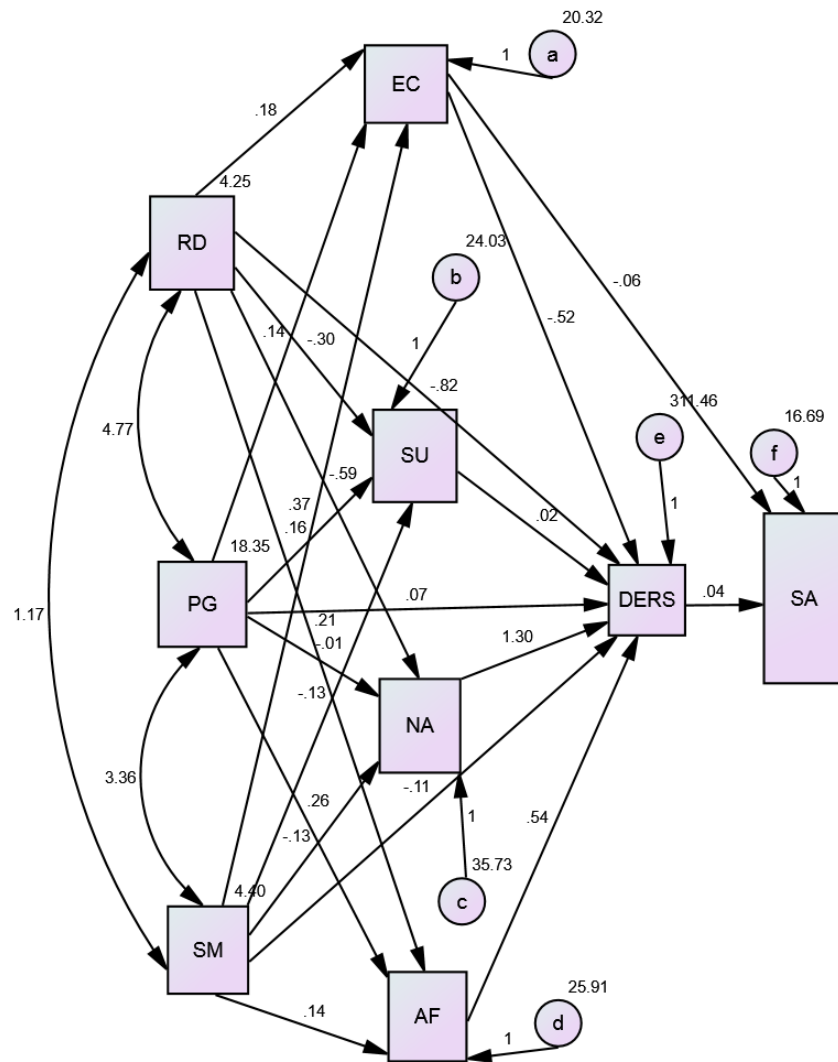


Figure 26 Model 5 DERS mediates paths from Family Environment Variable (RD, PG, and SM), Temperament Variables (SU, NA and AF) and Separation Anxiety and partially mediates the path between EC and Separation Anxiety (SA).

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Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety

## **MODEL 6 FOR SEPARATION ANXIETY**

Thus in the next stage as shown in Figure 27, along with indirect paths from all variables and direct path from Effortful Control, another path was added to the model to further analyze the effect of this path. A direct path from the temperamental Surgency (SU) was checked through regression analysis. The Model fit indices obtained were GFI=0.97, AGFI=0.901, NFI=0.891, CFI=0.901, AIC = 436.608, RMSEA=0.069) indicates a better fit from the above model 5. Also the path coefficient was found to be significant indicated by  $\beta = -0.241$ ,  $p = 0.000$ . This path was carried over to the next step in model preparation. A unit change in Surgency produces -0.241 unit changes in Separation anxiety (SA). As the fit indices were found to be significant the current path was carried over to next stage.

In most of the studies the temperamental factor Surgency has been reported as a protective factor, very few studies reported its role in girls. Also it has been more discussed in the area of externalizing symptoms in boys. Here in our study Surgency (SU) independently produces a negative effect on Separation Anxiety Symptoms and thus acting as a resilient factor and important temperament in the context of separation anxiety.

The total effect indicates that Surgency even though specific component of temperament that is characterized by a disposition of activity, positive emotionality and high approach tendencies (Rothbart,2011) when in combination with Difficulties in Regulating Emotions ( DER) produces significant negative impact. Extraversion/surgency is related to greater externalizing problems (acting out) and to fewer internalizing problems (fear, sadness, low self-esteem)( Rothbart,2007).

In Separation anxiety behavioral inhibition reflects a consistent tendency to display fear and withdrawal in unfamiliar situations which the child tries to avoid. "Behaviorally inhibited children are introverted, easily embarrassed or socially avoidant. It is usually evident by age two. These children are more likely than non-inhibited ones to exhibit significant levels of anxiety, especially Separation anxiety" (Dallaire,& Weinraub,2005)

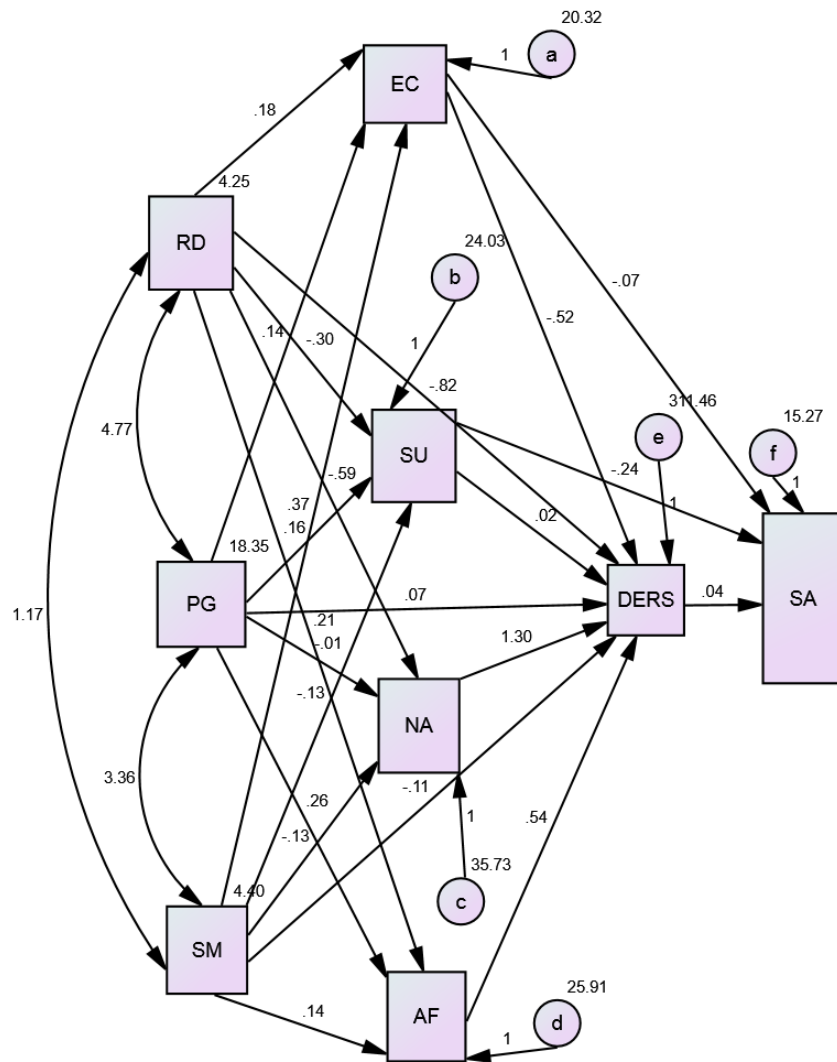


Figure 27 Model 6 DERS mediates paths from Family Environment Variable (RD, PG, and SM), Temperament Variables (NA and AF) and Separation Anxiety and partially mediates the paths between RD, EC, SU and Separation Anxiety (SA).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety

## **MODEL 7 FOR SEPARATION ANXIETY**

Model 7 was prepared by adding a direct path from Negative Affect (NA) to Separation Anxiety (SA), along with other paths from Model 6. Figure 28 shows the details of the paths to Separation Anxiety. The path coefficient was found to be  $\beta = 0.163$ ,  $p = 0.000$ , statistically significant indicating a direct positive effect of Negative Affect on Separation Anxiety. The model fit indices were also significant and noted as GFI=0.98, AGFI=0.911, NFI=0.902, CFI=0.905, AIC = 337.157, RMSEA=0.065. The new path was found to be significantly improved the fit of the model compared to Model 6. Thus Negative Affect (NA) has got both direct and indirect effect on Separation Anxiety (SA). Difficulties in Emotion Regulation (DERS) only partially mediate the path from Negative Affect (NA) to Separation Anxiety (SA). Thus it has been assumed that Negative Affect as an important risk factor in Psychopathology of emerging anxiety symptoms. The path was preserved for the final model. Negative affect as a predisposition paves a way to emergence of anxiety. But when it is associated with Difficulties in Emotion Regulation the risk is enhanced in girls.

Extreme temperaments can create risk factors for children, as specific temperament characteristics can be seen noted as early warning signs for maladaptive behavior. "Negative emotionality is the child's reaction to stressors with high degrees of emotions including anger, irritability, fear or sadness (Richters, 2010). Anxious children may be more vulnerable to frequent experiences of negative emotions than non-anxious individuals" (Carthy, Horesh, Apter and Gross, 2010).

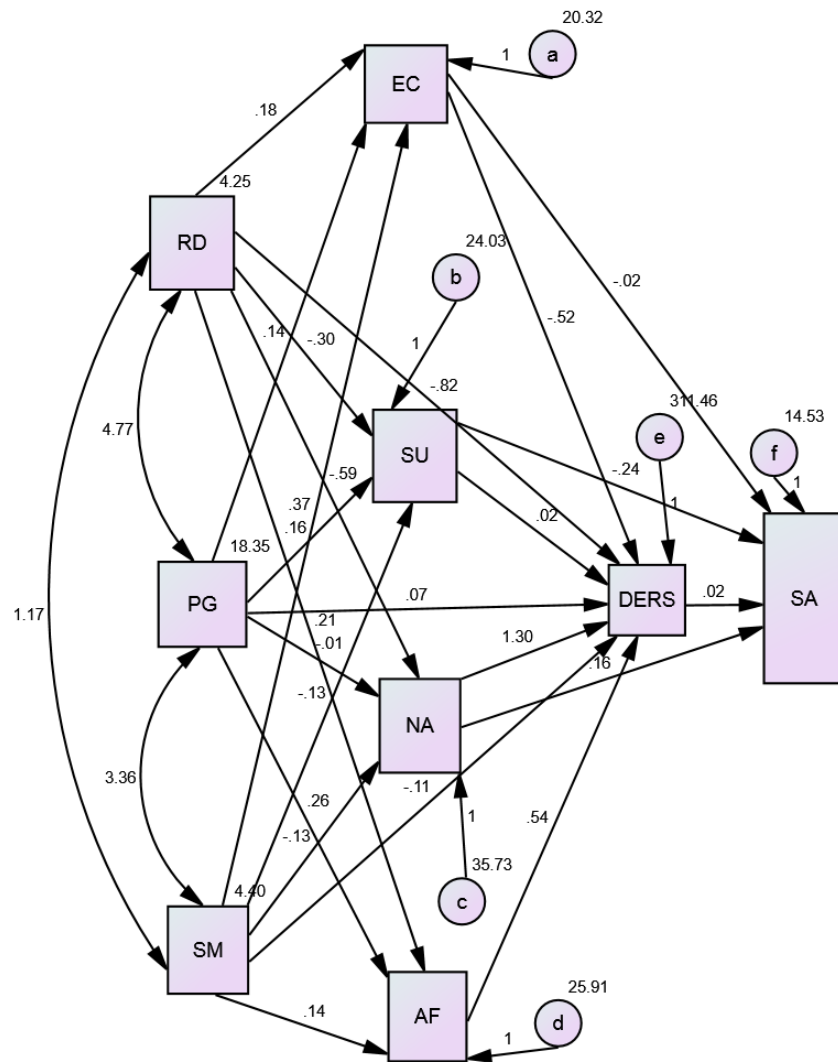


Figure 28 Model 7 DERS mediates paths from Family Environment Variable (RD,PG, and SM), Temperament Variable ( AF) and Separation Anxiety and partially mediates the paths between RD , EC ,SU ,NA and Separation Anxiety.

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety

## **MODEL 8 FOR SEPARATION ANXIETY**

Figure 29 indicates a Model with temperamental factor Affiliativeness (AF). In Model 8, a direct path was drawn from Affiliativeness to Separation Anxiety. The path coefficient  $\beta = 0.043$ ,  $p = 0.008$  was found to be statistically significant with a positive effect of Affiliativeness (AF) on Separation Anxiety (SA). No much study has been reported based on this variable on Adolescents. But our study result clearly indicated that higher predisposed Affiliativeness (AF) along with other variables resulted in enhancing the chances for developing Separation Anxiety symptoms in adolescent girls. The model fit indices were GFI= 0.98, AGFI=0.920, NFI=0.905, CFI=0.907, AIC = 332.361, RMSEA=0.051. The data was found to fit the model adequately and resulted in an improved fit. Thus the inference in the current stage was that Affiliativeness has got both direct and indirect effect on Separation Anxiety, and Emotion Regulation Difficulties DERS only partially mediates this path.

Human affiliative behaviors are essential for the physical and psychological wellbeing and normal development of individuals, and impairments in these behaviors are clearly associated with maladaptive interpersonal patterns and psychiatric disorders. "As affiliativeness is a temperamental factor which is a prosocial tendency to wanting to be close to others, form and sustain close contacts with others. Individuals who have difficulty adjusting with strange or novel situations will have definite difficulties" (Shen & Wang, 2012).

A Korean study (Soo-churl et al., 2009 c.f Dabkowska, Araszkievicz, Dabkowska & Wilkosc, 2011) evaluated temperament and character of children and adolescents with anxiety disorders, in part subjects with separation anxiety, using the Junior Temperament and Character Inventory (JTCI). Separation anxiety disorder was not associated with any temperament and character on the JTCI, opposite to others anxiety diagnosis. But our finding was found to be contradicting the above result showing more influence of temperamental factors on Separation Anxiety.

Children with difficult temperament in families of high conflict have the most susceptibility to both internalizing and externalizing behaviors, whereas

children of easy temperaments displayed less internalizing and externalizing behaviors, regardless of family conflict (Ramos, Guerin, Gottfried, Bathurst, & Oliver, 2005).

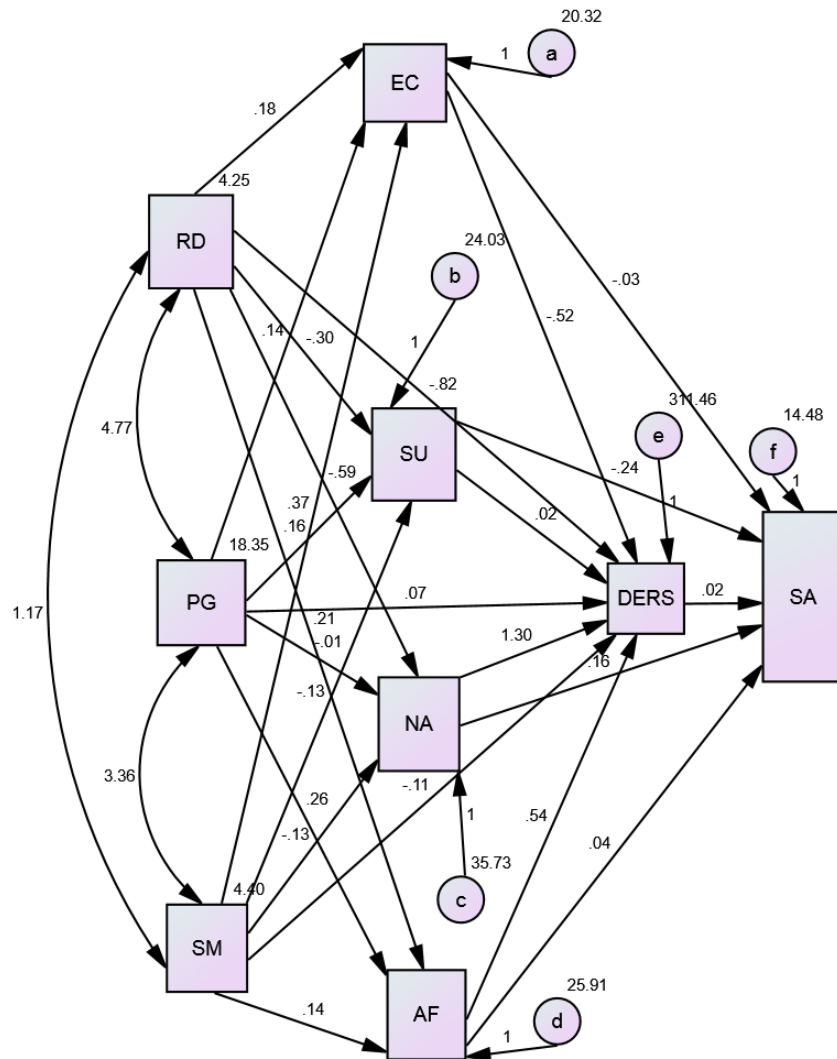


Figure 29. Model 8. DERS fully mediates paths between RD, PG, SM and Separation Anxiety, but partially mediates paths between EC, SU, NA, AF and Separation Anxiety (SA).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, SA=Separation Anxiety



Thus the final model of Separation Anxiety in Adolescent girls shows that the paths from all the family environmental variables were mediated by DERS. But all the temperamental variables were only partially mediated by DERS and all these paths have direct effect on Separation Anxiety (SA).The final accepted model is as shown in Figure 29.

Table 19

*Model Fit Indices and Path Coefficient for Separation Anxiety as Dependent Variable (n=2041).*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.95	0.890	0.900	0.910	623.690	0.081	0.045	0.000
Model2: RD Partial	0.95	0.890	0.880	0.899	625.812	0.077	0.020	0.653
Model 3: PG Partial	0.95	0.890	0.880	0.889	625.269	0.077	-0.014	0.516
Model 4: SM Partial	0.95	0.891	0.880	0.900	623.247	0.076	0.068	0.118
Model 5: EC Partial	0.95	0.890	0.890	0.900	615.447	0.069	-0.064	0.001
Model 6: SU Partial	0.97	0.901	0.891	0.901	436.608	0.069	-0.241	0.000
Model 7: NA Partial	0.98	0.911	0.902	0.905	337.157	0.065	0.163	0.000
Model 8: AF Partial	0.98	0.920	0.905	0.907	332.361	0.051	0.043	0.008

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

Parenting stress, parental psychopathology, and family functioning are associated with child anxiety (Victor, Bernat, Bernstein & Layne, 2007). Separation anxiety would appear to be a core form of anxiety that is associated with anxious attachment. Overprotective, overcontrolling, and overly critical parenting styles that limit the development of autonomy and mastery may also contribute to the development of anxiety disorders in children with temperamental vulnerability. Rejection and control by parents may be positively related to later anxiety and depression.

From the model for Separation Anxiety it has been concluded that all the family variables (RD, PG, & SM) with temperamental vulnerability become more active in the presence of Difficulties in Emotion Regulation (DERS). Thus management of anxiety in adolescents and children should give much importance to emotion regulation skills. This should be implemented with the help of parents and teachers in order to get more lasting effect to children.

The model findings can be summarized as follows. In the current model Difficulties in emotion regulation (DERS) fully mediates the path between family environment variables such as , Relationship Dimension, Personal growth and System maintenance dimensions which indicates a defective family environment influence Separation Anxiety through Emotion regulation Difficulties.

All the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS to Separation Anxiety, where emotion regulation difficulties exerts influence partially. Effortful Control and Surgency has got positive effect on Separation Anxiety which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation. High positive effect for variables such as Negative Affect and Affiliativeness on separation Anxiety symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS Separation anxiety. Among all the variables Surgency has got greatest effect on

Separation Anxiety. The findings can be utilized effectively for training for normal children and also for management of anxiety.

### **PATH MODEL FOR GENERALIZED ANXIETY**

Generalized Anxiety (GA) is a chronic anxiety disorder, defined on the basis of pervasive, excessive worry. Individuals with Generalized Anxiety (GA) mainly focus their attention on potential future catastrophes, leading to decreased awareness in the present moment. "Most of the theories of Generalized Anxiety (GA), highlight the role that avoidant, negative responses to internal experiences seem to play in Generalized Anxiety (GA)" (Roemer, Salters-Pedneault, Erisman, Orsillo, Mennin, 2009).

The role of family factors , temperament and emotion regulation were independently investigated in lot of studies, but in the current research these variables were studied together to propose a theoretical model which can be further used in management of these symptoms from the school level itself by parents and teachers and also by clinicians.

The above purpose was served by preparing a baseline model, in which Difficulties in Emotion Regulation (DERS) was considered as fully mediating the paths from family environment variables (RD, PG and SM) and temperament variables (EC, SU, NA and AF).

### **MODEL 1 FOR GENERALIZED ANXIETY**

In the current baseline model ,as shown in Figure 30,the path from Difficulties in Emotion Regulation (DERS) to Generalized Anxiety was found to be statistically significant with  $\beta= 0.065$ ,  $p =0.000$ . A unit change in DERS can produce 0.065 unit changes in Generalized Anxiety. The model fit indices were calculated and it was found to be GFI=0.954, AGFI=0.881, NFI=0.900, CFI=0.901, AIC = 512.151, RMSEA=0.071.This was found to be adequate with acceptable fit indices. Keeping this full mediation model as Baseline Model several other models were attempted to find out the best fitting model for the current data with family

environment and temperament variables along with emotion regulation difficulties (DERS).

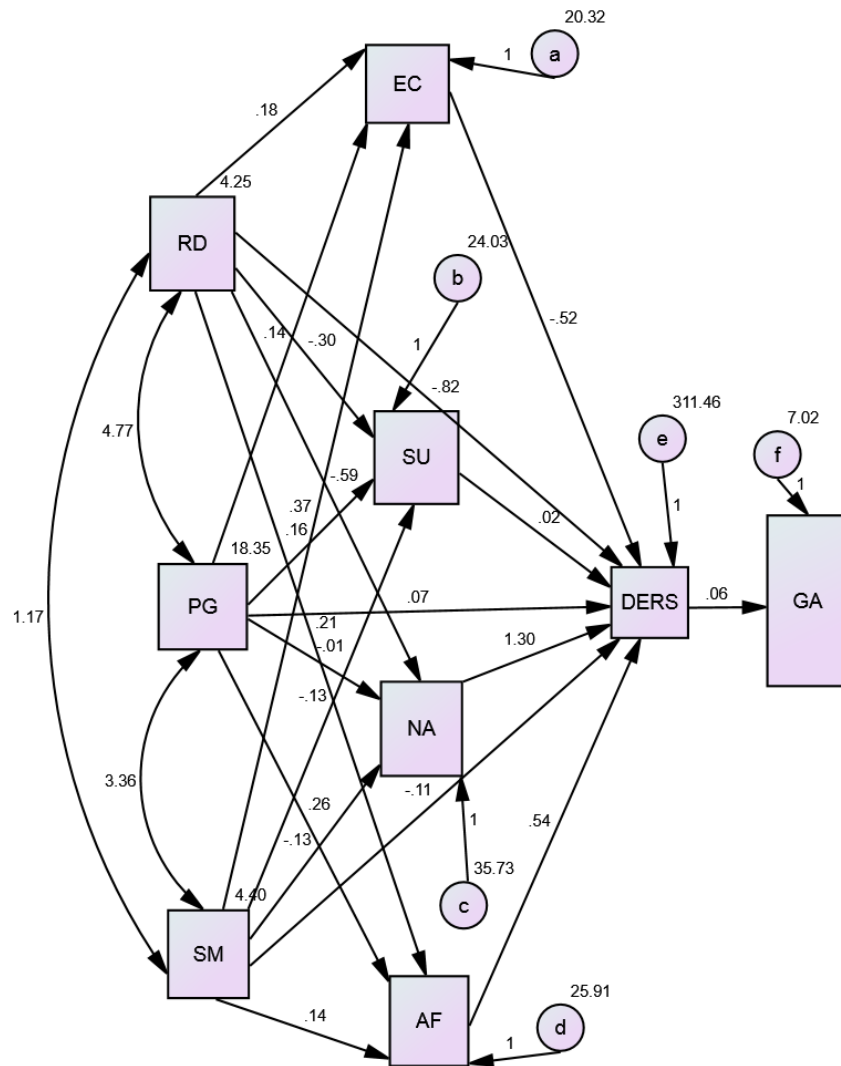


Figure 30 Model 1 .DERS fully mediates the paths from Family Environment (RD,PG and SM),Temperament variables (EC,SU,NA and AF) and Generalized Anxiety (GA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

In this stage our findings go along with earlier researches on difficulties in emotion regulation in people who develop anxiety symptoms. Research has confirmed that individuals who endorse symptoms of Generalized Anxiety (GA) report greater negative emotional impulse strength, negative expressivity, and reactivity to their emotions, less clarity about and more difficulty understanding their emotional responses (Mennin, Heimberg., Turk,& Fresco, 2005), more difficulty engaging in goals when distressed, and less ability to repair negative mood than controls which indicate emotion regulation difficulties (Salers-Pedneault,Roemer,Tull,Rucker,&Mennin,2006).

"Youngsters with generalized anxiety have difficulty understanding emotional experiences and have little skill or ability to modulate their intense emotions. Not only do they experience more intense emotions than their peers, they are more negative, are less able to calm themselves, and have more physiological symptoms after an anxiety producing experience" (Mennin, Heimberg,Turk &Fresco,2002).

Emotional intensity and impaired regulation strategies provided the greatest discrimination between anxious and nonanxious group of individuals and best predicted a diagnosis of Generalized Anxiety (Mennin, McLaughlin, & Flanagan, 2009).

Thus emotion regulation difficulties in the form of low emotional clarity and awareness may contribute to generalized anxiety disorder (Mennin, Heimberg, Turk, & Fresco, 2005). Later in 2007 the same points were stressed in another study by Mennin, Holaway, Fresco, Moore and Heimberg as "heightened intensity of emotions, poor understanding of emotions, negative reactivity to emotions, and maladaptive management of emotions demonstrated both common and specific relationships to self-reported symptoms of generalized anxiety disorder, major depression, and social anxiety disorder" .

An emotion regulation treatment for GAD was proposed by Mennin, Turk, Heimberg, and Carmin, 2002 which chiefly aimed at amelioration of the suffering associated with pathological worry and anxiety. However, recovery from debilitating

worry is best achieved when effective emotion regulation skills are attained. Hence, the goal of treatment extends beyond symptom Reduction.

**MODEL 2 FOR GENERALIZED ANXIETY**

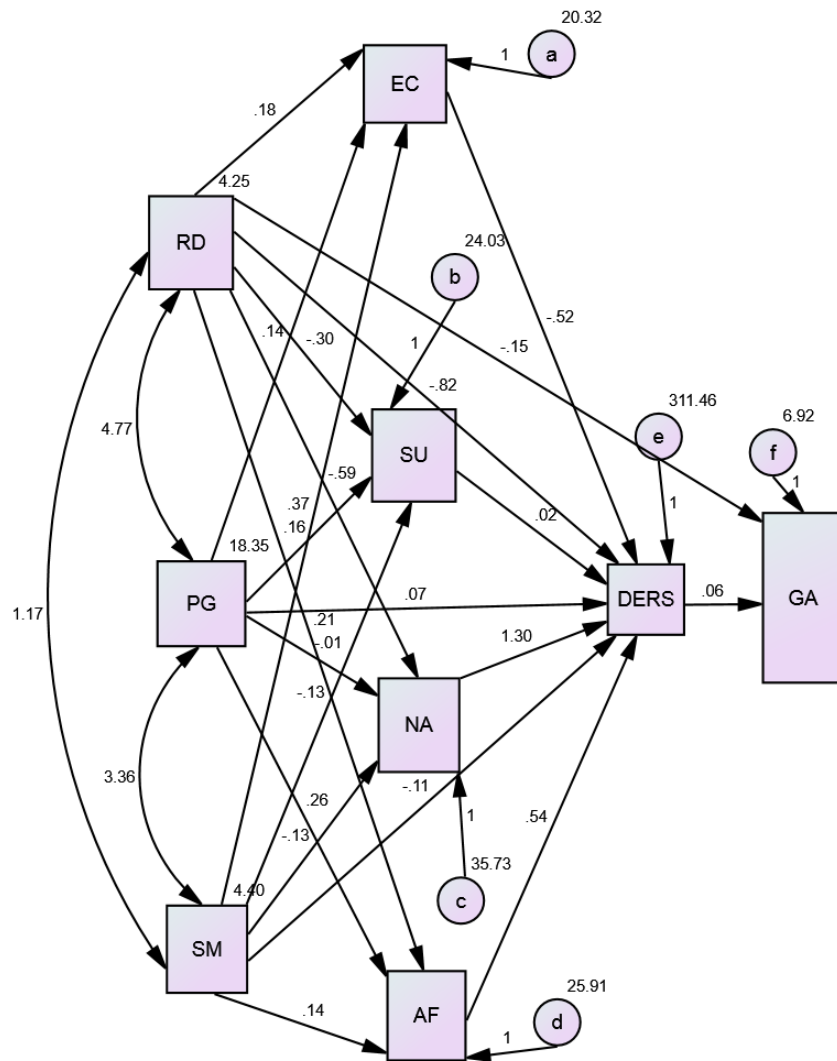


Figure 31 Model 2. DERS mediates paths from Family Environment Variables (PG and SM), Temperament Variables (EC, SU, NA and AF) and Generalized Anxiety and partially mediates the paths between RD and Generalized Anxiety (GA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

Compared to the Baseline Model in this stage an additional path was indicated directly from Relationship Dimension (RD) of Family environment was drawn (Figure 31) to check the efficacy of the model. The path coefficient and model fit indices were taken in to account to describe the effect of the path .The path coefficient  $\beta = -0.152$ ,  $p = 0.000$  was found to be statistically significant. Also Relationship Dimension (RD) exerts a direct negative impact on Generalized Anxiety. Model fit indices shows better fit with  $GFI=0.956$ ,  $AGFI=0.901$ ,  $NFI=0.910$ ,  $CFI=0.905$ ,  $AIC = 485.975$ ,  $RMSEA=0.071$ . Thus the results are interpreted as Difficulties in Emotion Regulation (DERS) has got partial mediation with the path from Relationship Dimension to Generalized Anxiety. Relationship Dimension has got both direct and indirect effect on Generalized Anxiety. Thus this path was found to be valid in the further assessment of model fit.

Family relationships have been a major focus of research, especially to identify risk and protective factors during adolescence. The environment that children experience affects their overall growth and development of the character as well as self regulation.

"Research suggests that individuals with Generalized Anxiety have been influenced by their relationships with family, friends, and romantic partners Turk, Mennin, Fresco, & Heimberg, 2000)".

### **MODEL 3 FOR GENERALIZED ANXIETY**

In the next stage of evaluation a direct path was added from Personal Growth Dimension to Generalized Anxiety (GA). Figure 32 shows the details of the model. Compared to model 2 the data not produced significant improvement in fit indices and the path coefficient was also not significant. The model fit indices were  $GFI=0.956$ ,  $AGFI=0.901$ ,  $NFI=0.901$ ,  $CFI=0.903$ ,  $AIC = 487.921$ ,  $RMSEA=0.070$ . Also path coefficient was  $\beta = 0.004$ ,  $p = 0.817$ . So this path was removed from the model. The inference is that the effect from Personal Growth Dimension to Generalized Anxiety was fully mediated by Emotion Regulation Difficulties (DERS).

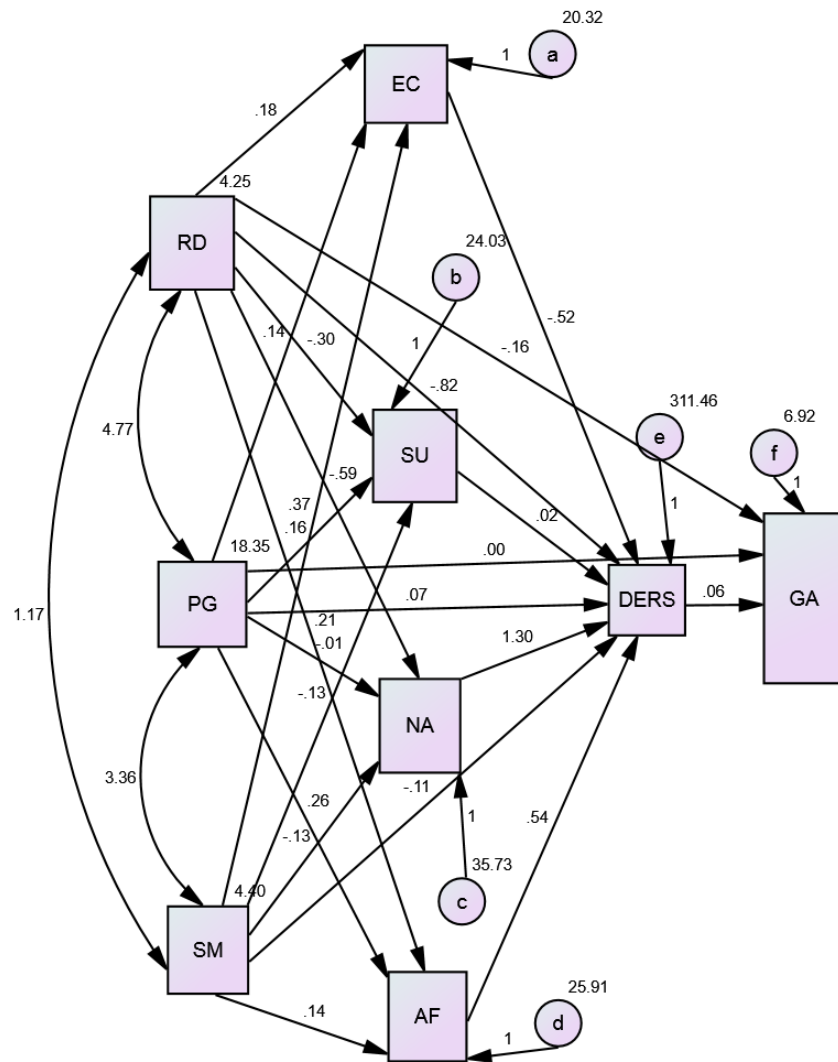


Figure 32 Model 3 DERS mediates paths from Family Environment Variables (SM), Temperament Variables (EC, SU, NA and AF) and Generalized Anxiety and partially mediates the paths between RD, PG and Generalized Anxiety (GA)

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety.



Personal growth dimension comprises subvariables such as independence, achievement orientation, moral, religious and cultural aspects. All these factors when defective, adversely affect an individual in the presence of Emotion Regulation difficulties.

#### **MODEL 4 FOR GENERALIZED ANXIETY**

Figure 33 shows a revised model for Generalized Anxiety. An additional direct path was drawn from System Maintenance Dimension (SM) to Generalized Anxiety. The path coefficient was statistically significant with  $\beta = -0.080$ ,  $p = 0.005$ . The path exerts a direct negative effect on Generalized Anxiety (GA) with a unit change in System Maintenance Dimension (SM) resulting in  $-0.080$  unit changes in Generalized Anxiety. Also the model fit indices show improved fit compared to Model 2 indicated by GFI=0.957, AGFI=0.912, NFI=0.903, CFI=0.906, AIC = 480.212, RMSEA=0.068. Due to the improved fit of the data, this model was taken for further model analysis. The results show that SM has got both direct and indirect effect on Generalized Anxiety and Difficulties in Emotion Regulation (DERS) only partially mediates the effect from System Maintenance Dimension to Generalized Anxiety. Thus Organization and Control in a family have got direct impact on Generalized anxiety.

"More than 3000 young people were followed over 10yrs in a study concluded that poor family environment was significantly associated with generalized anxiety disorders but not with other anxiety disorders (Beesdo, Pine, Lieb and Wittchen, 2010)".

"Former research has linked parenting dimensions such as overprotection and rejection to both internalizing and externalizing problems, these same family factors may yield domain-specific risk effects when the temperament of the child is taken into account. The dispositional risk to develop psychopathology may not only be enhanced but also buffered by factors within the family. Studies explained family context as the most proximal factor for interference with the pursuit of autonomy is parental overprotection. Overprotection is characterized by fearfulness and anxiety for the child's safety and intrusive behavior by parents. This parental behavior

hinders adolescents from achieving a sense of autonomy. Reactions to parental overprotection can be both withdrawal (internalizing) and rebelliousness or aggressiveness (externalizing)".

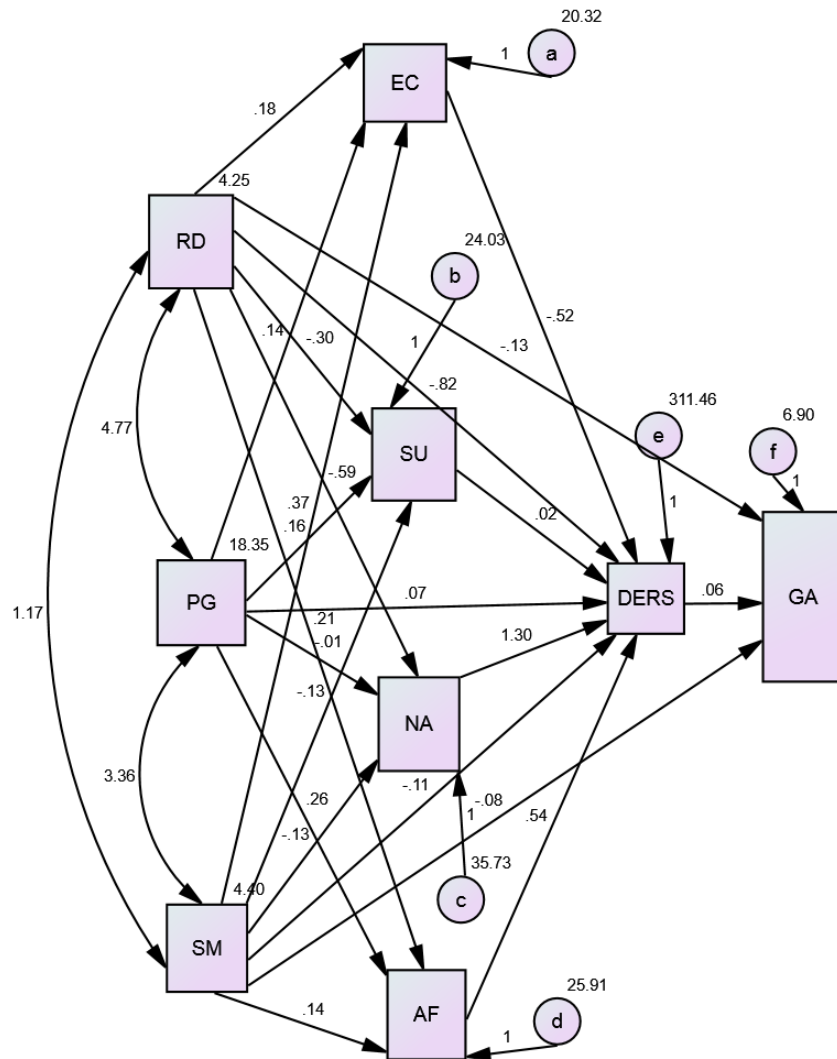


Figure 33 Model 4 DERS mediates paths from Family Environment Variable (PG), Temperament Variables ( EC,SU,NA and AF) and Generalized Anxiety and partially mediates the paths between RD,SM and Generalized Anxiety (GA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

The family context can also have protective effects on developing psychopathology in terms of facilitating achievement of autonomy and belongingness: Giving children special attention, praising for approved behavior, showing unconditional love, and being supportive foster the pursuit of belongingness (Sentse, Veenstra, Lindenberg, Verhulst, And Ormel, 2009)

"Children's characteristics, such as vulnerability to experiencing negative emotions, moderate relations between family context variables and children's ER, such that children who are high in reactivity are most at risk for developing emotion regulatory difficulties when living in a negative family environment (Eisenberg & Morris, 2002)".

#### **MODEL5 FOR GENERALIZED ANXIETY**

A new model was proposed as shown in Model5 (Figure 34). A direct path from Effortful Control (EC) which is a temperamental variable was drawn to Generalized Anxiety (GA). The model fit indices are given below. GFI=0.965, AGFI=, NFI=0.908, CFI=0.912, AIC = 433.482, RMSEA=0.066. The path coefficient  $\beta = -0.093$ ,  $p = 0.000$ . The model fit indices shows much improvement compared to Model 4. Also the path coefficient was found to be statistically significant. Thus the assumption was that DERS only partially mediated the path from Effortful Control to Generalized Anxiety. Thus this direct path was added to the model. Thus Effortful Control (EC) has got both direct and indirect effect on Generalized Anxiety (GA).

Temperament has been studied in many researches as an important factor in anxiety disorders. In our study the combined effect of temperament and Difficulties in Emotion Regulation (DER) has been emphasized as emotion and its factors have been found to have great relevance in the maintenance of anxious symptoms in to adulthood.

Studies of temperament from early childhood to adulthood have demonstrated inverse relationships between negative affectivity and effortful control. Effortful control is also positively related to the development of conscience

and appears as a protective factor in the development of behavior disorders (Rothbart, Ellis, Rueda, & Posner, 2003).

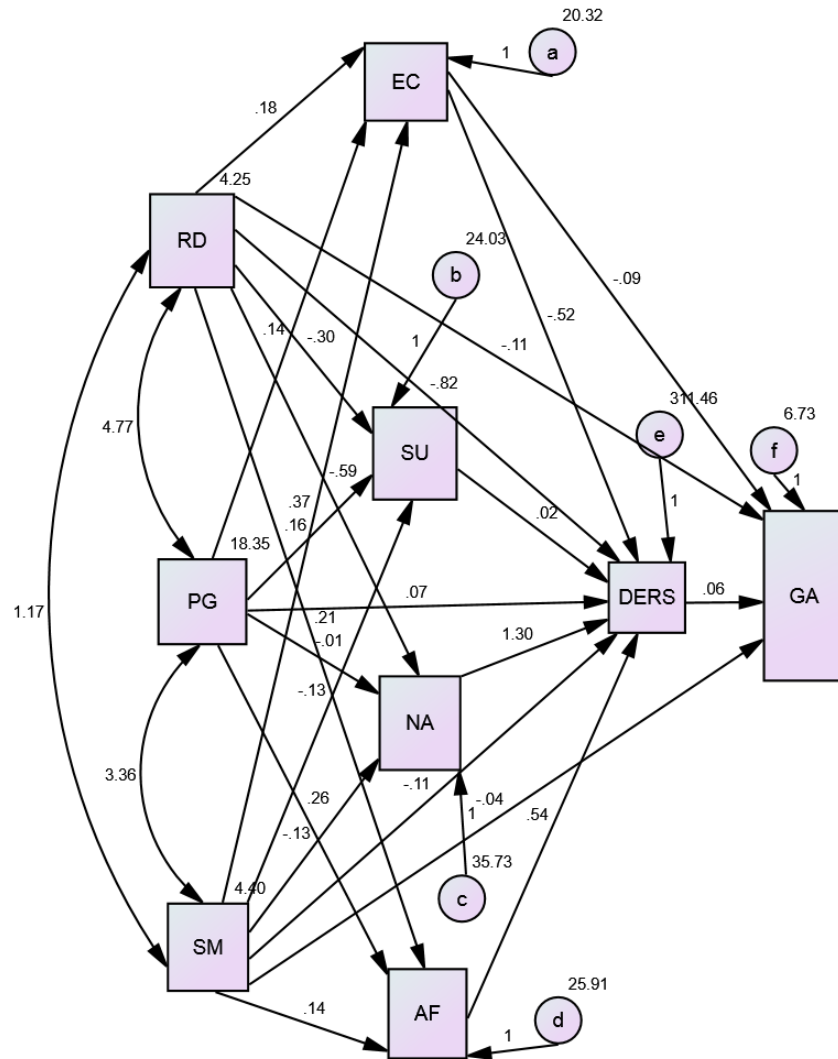


Figure 34 Model 5 DERS mediates paths from Family Environment Variable (PG), Temperament Variables (SU, NA and AF) and Generalized Anxiety and partially mediates the paths between RD, SM, EC and Generalized Anxiety (GA).

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Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

Effortful Control (EC) also moderates the effects of negative affectivity on behavioural problems of children. Highly negative children will be less likely to show problems when they have higher Effortful Control (EC) (Rothbart, 2007).

#### **MODEL 6 FOR GENERALIZED ANXIETY**

The next model tested includes a direct path from temperamental Surgency to Generalized Anxiety as shown in Figure 35. The model fit indices identified were GFI=0.965, AGFI=0.918, NFI=0.908, CFI=0.912, AIC = 433.482, RMSEA = 0.066. The fit indices were not enhanced for the acceptance of the model. Moreover the path coefficient was found to be statistically not significant with  $\beta = -0.008$ ,  $p = 0.486$ . The direct path was removed from the model as Surgency has got insignificant path coefficient and fit indices not indicated improved fit. Thus it was assumed from the model that Difficulties in Emotion Regulation (DERS) fully mediate the effect from Surgency to Generalized Anxiety (GA).

Surgency is characterized by positive emotionality, high approach tendencies, activity and sensitivity to rewards. Surgency dimensions such as activity level and high intensity pleasure could be considered “typical” boy behaviours (Luthra, 2013).

"Surgency which is composed of shyness and fear is an important factor in externalizing and internalizing symptoms. Low levels of Surgency (low activation and/or high inhibition) results in internalizing problems" (Rothbart, 2011).

Thus in the current sample more than the direct effect, the indirect effect of Surgency with Difficulties in Emotion Regulation (DERS) as mediator is a significant finding. The role of cultural factors should be taken account in future studies.

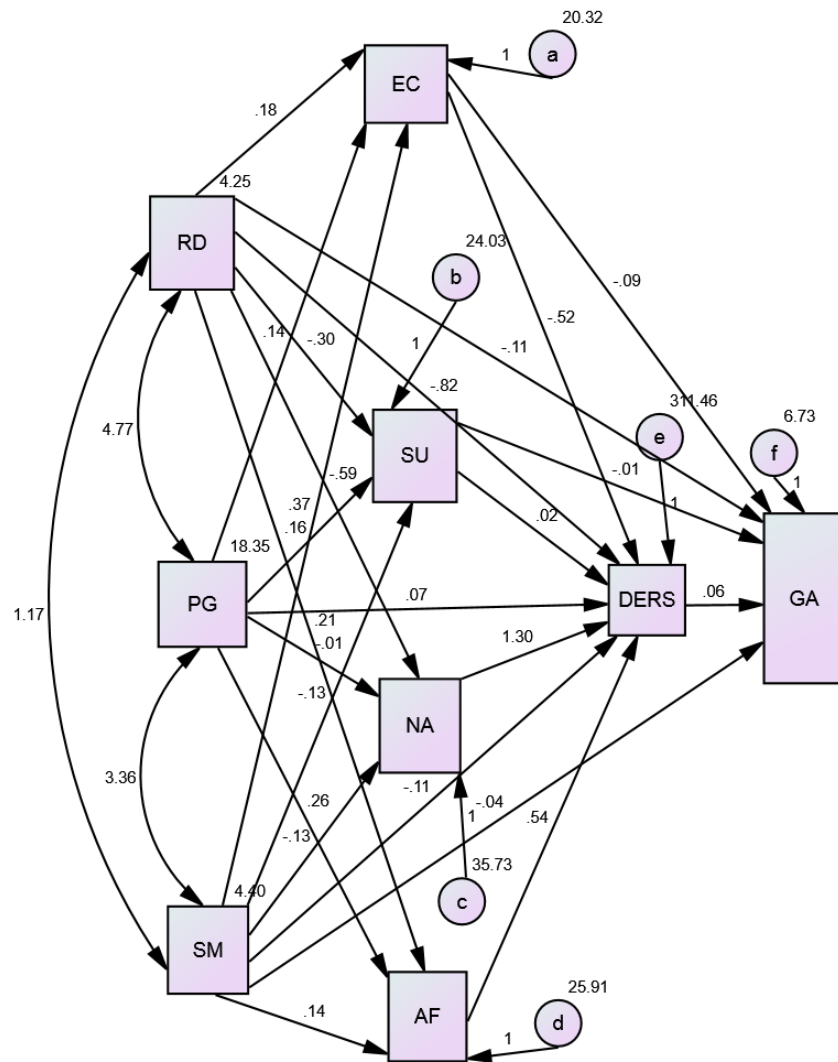


Figure 35 Model 6 DERS mediates paths from Family Environment Variable (PG), Temperament Variables ( NA and AF) and Generalized Anxiety and partially mediates the paths between RD, SM, EC,SU to Generalized Anxiety(GA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

## **MODEL 7 FOR GENERALIZED ANXIETY**

Model 7 was prepared by adding a direct path from Negative Affect (NA) to Generalized Anxiety (GA), along with other paths from Model 6. Figure 36 shows the current model under discussion. The path coefficient was found to be  $\beta = 0.107$ ,  $p = 0.000$ , statistically significant indicating a direct positive effect of Negative Affect (NA) on Generalized Anxiety (GA). A unit change in Negative Affect (NA) produces 0.170 unit changes in Generalized Anxiety (GA). The model fit indices were also significant and noted as GFI=0.975, AGFI=0.933, NFI=0.911, CFI=0.913, AIC = 336.725, RMSEA=0.063. The new path was found to be significantly improved the fit of the model compared to Model 6. Thus Negative Affect (NA) has got both direct and indirect effect on Generalized Anxiety (GA). Thus it was found that Difficulties in Emotion Regulation (DERS) only partially mediates the path from Negative Affect (NA) to Generalized Anxiety (GA). Thus it has been assumed that Negative Affect as important risk factor in Psychopathology. Also shows that along with Emotion Regulation Difficulties the effect of such predisposition was very much pronounced. The path was preserved for the final model.

Children and adolescents with anxiety disorders have difficulty handling worries, sadness, and anger. This may be due to the intense degree to which they experience negative emotions. They generally have little confidence in their ability to deal with intensely aroused negative emotions (Suveg and Zeman, 2004).

"Dysfunctional patterns of interaction and adverse environmental factors results in negative affectivity which in turn causes internalizing problems in girls" (Putnam et al., 2001).

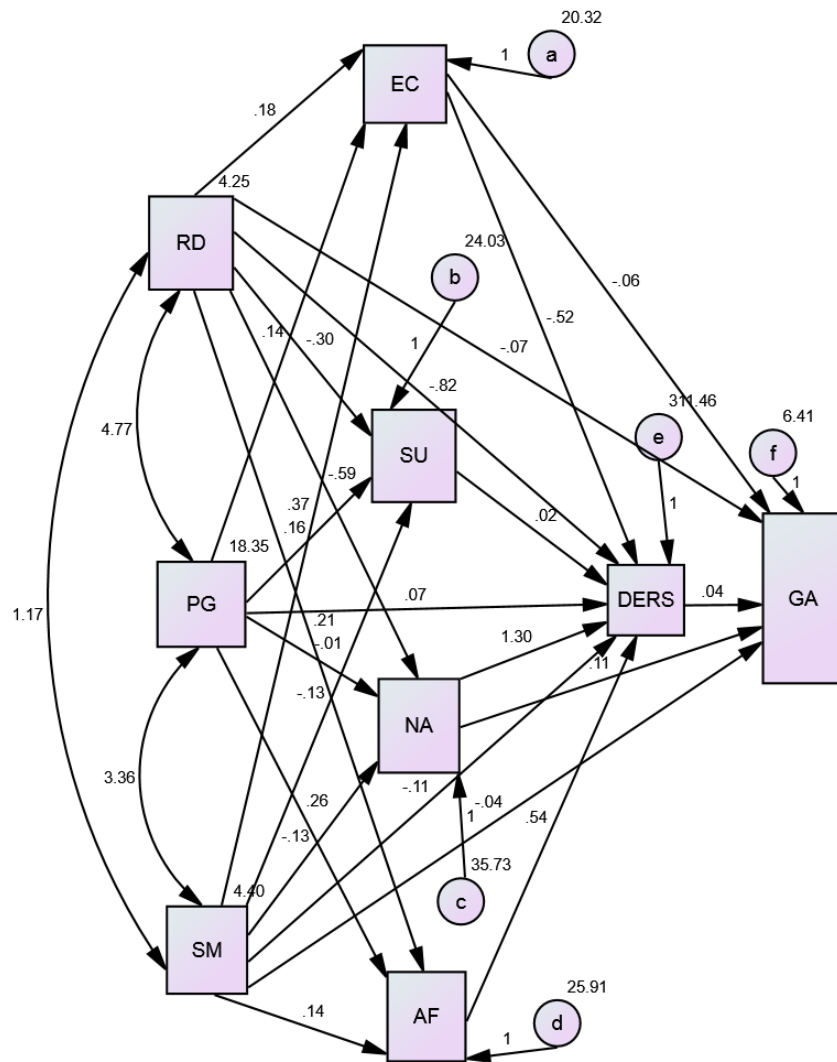


Figure 36 Model 7 DERS mediates paths from Family Environment Variable (PG), Temperament Variables (SU and AF) and Generalized Anxiety and partially mediates the paths between RD, SM, EC, NA and Generalized Anxiety(GA).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety



## **MODEL 8 FOR GENERALIZED ANXIETY**

As shown in Figure 37, Model 8 incorporated a direct path from Affiliativeness (AF) to Generalized Anxiety (GA). The model has been checked with its data for improved fit. The path coefficient for the direct path from Affiliativeness (AF) to Generalized Anxiety (GA) was found to be  $\beta = 0.026$ ,  $p = 0.016$ . It was found to be statistically significant. The fit indices such as GFI=0.975, AGFI=0.945, NFI=0.913, CFI=0.914, AIC = 333.145, RMSEA=0.055 indicates that the current path can be added to the present model. Thus Affiliativeness (AF) has got both direct and indirect effect to Generalized Anxiety (GA). Emotion Regulation Difficulties (DERS) only partially mediates the current path. Thus in the final accepted model DERS fully mediates paths from Personal Growth Dimension and Surgency. All other paths are only partially mediated by Emotion Regulation Difficulties (DERS).

Thus figure 37 was taken as the final model for Generalized Anxiety (GA) extracted from the current research indicated from the results as shown in table 20. The model with better fit indices was accepted.

Mennin, McLaughlin and Flanagan (2009) found that emotion regulation difficulties are associated with generalized anxiety disorder (GAD) and social phobia.

Emotions are dysregulated among individuals with GAD. That is, "individuals with GAD experience marked difficulty understanding their emotional experience and possess few skills to modulate their emotions. These deficits cause persons with GAD to experience emotions as subjectively aversive and to engage in strategies to control, avoid, or blunt emotional experience" (Mennin, Turk, Heimberg, & Carmin, 2002).

GAD participants had more difficulty managing their emotional reactions. (Mennin, Heimberg, Turk and Fresco, 2004). It has been influenced by family environment which was also supported by Suveg et al (2005) in their study demonstrated a significant difference between children with anxiety disorders and

controls on one sub scale of family environment scale (expressiveness) but not on other (control).

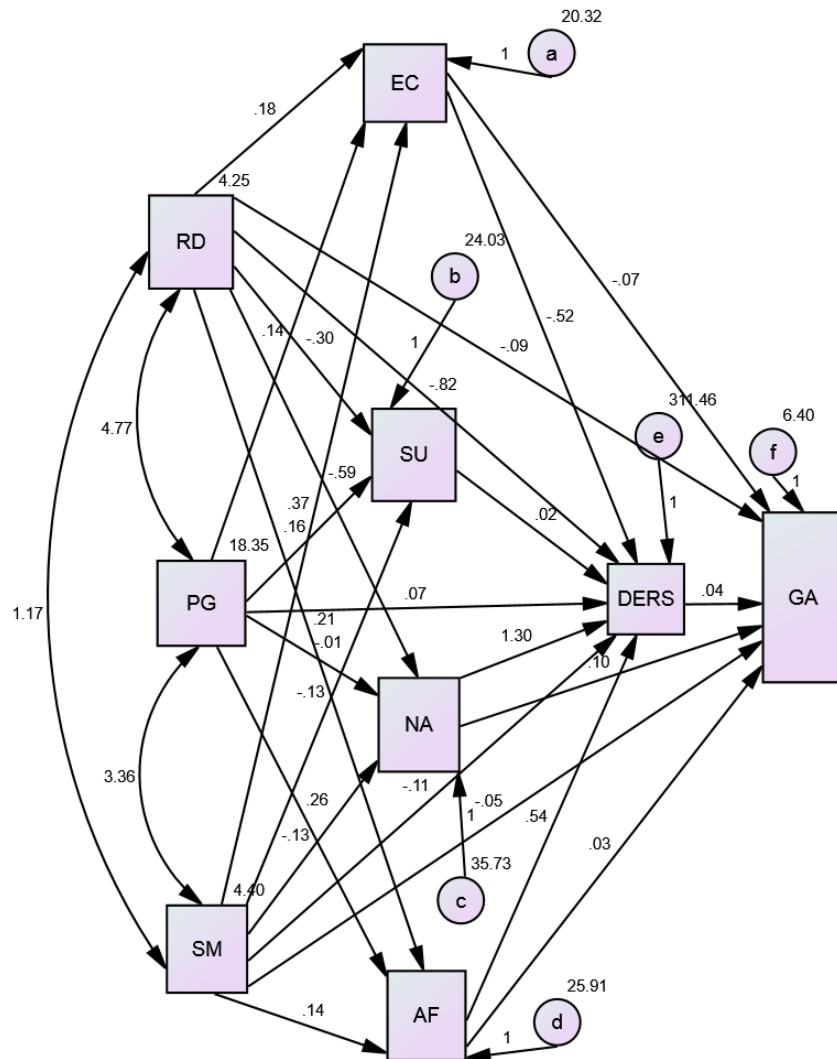


Figure 37 Model 8 DERS mediates paths from Family Environment Variable (PG), Temperament Variable (SU) and Generalized Anxiety and partially mediates the paths between RD, SM, EC, NA, AF and Generalized Anxiety.

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, GA= Generalized Anxiety

Table 20

*Model Fit Indices and path coefficient for Generalized Anxiety ( n=2041).*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.954	0.881	0.900	0.901	512.151	0.071	0.065	0.000
Model2: RD Partial	0.956	0.901	0.910	0.905	485.975	0.071	-0.152	0.000
Model 3: PG Partial	0.956	0.901	0.901	0.903	487.921	0.070	0.004	0.817
Model 4: SM Partial	0.957	0.912	0.903	0.906	480.212	0.068	- 0.080	0.005
Model 5: EC Partial	0.965	0.918	0.905	0.912	431.968	0.064	-0.093	0.000
Model 6: SU Partial	0.965	0.918	0.908	0.912	433.482	0.066	-0.008	0.486
Model 7: NA Partial	0.975	0.933	0.911	0.913	336.725	0.063	0.107	0.000
Model 8: AF Partial	0.975	0.945	0.913	0.914	333.145	0.055	0.026	0.016

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

A family environment that encourages maladaptive strategies in negative emotional situation encourages the emergence of anxiety disorders. Thompson emphasizes the important role of parents and family environment and suggests that it is largely within the parent-child relationship that children learn about emotion regulation in the service of attaining their goals .

Individuals with GAD have emotional reactions that occur more easily, quickly, and intensely than is the case for most other people (i.e., heightened emotional intensity). They may frequently experience strong negative affect, which may be elicited by situations that are not as evocative for other people. (Turk, Heimberg, Luterek, Mennin, and Fresco, 2005).

"Studies shows that individuals with GAD have emotional reactions that occur more easily, quickly, and intensely than is the case for most other people (i.e., heightened emotional intensity). They may frequently experience strong negative affect, which may be elicited by situations that are not as evocative for other people". (Turk, Heimberg, Luterek, Mennin and Fresco, 2005).

Mennin and colleagues (2005) found that analogue and clinical GAD samples exhibited difficulties understanding emotions, negative reactivity to emotions, and an inability to self-soothe following the experience of a negative emotion in comparison to healthy control participants. Furthermore, such emotion regulation difficulties were predictive of GAD status even when controlling for worry, anxiety, and depressive symptom severity. "A more recent study also found that emotion regulation difficulties reliably predicted GAD above and beyond the experience of non-clinical panic attacks and panic disorder". (Cisler, Bunmi O. Olatunji,<sup>2</sup> Matthew T. Feldner, and Jphn P. Forsyth, 2010)

Mennin, Heimberg, Turk, and Fresco (2002) have posited an emotion regulation model of GAD in which they proposed that individuals with GAD not only have emotion generative processes more intense than most, but also have deficiencies in altering their emotional experience. They posited that intense regulatory efforts are instigated, typically worry or suppression, leading to opposite of intended results.

Research has confirmed that individuals who endorse symptoms of GAD report greater negative emotional impulse strength, negative expressivity, and reactivity to their emotions, less clarity about and more difficulty understanding their emotional responses , more difficulty engaging in goals when distressed and

less ability to repair negative mood than controls (Roemer, Lee, Salters-Pedneault, Erisman, Orsillo, & Mennin, 2009)

Compared with nonanxious participants, individuals with GAD also report less clarity regarding emotions, more difficulty identifying emotions, and more difficulty describing emotions, as well as more fear of anxiety, anger, and positive emotions (Turk, Heimberg, Luterek, Mennin, & Fresco, 2005).

From the model for Generalized anxiety the following conclusions can be derived. In the current model emotion regulation difficulties (DERS) fully mediates the path between Personal growth dimension of family environment which indicates independence, achievement orientation etc provided by the family when become defective there is possibility that the child develop Emotion regulation Difficulties which in turn may act as a causal factor for Generalized anxiety. Relationship dimension and system maintenance dimensions of family environment have got both direct and indirect effect on Generalized anxiety symptoms. Temperamental Factors such as Effortful Control, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS. The effect of Surgency on Generalized anxiety in the current model is fully mediated by DERS. Effortful Control and Surgency has got positive effect on Generalized anxiety symptoms which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation. Positive effect for variables such as Negative Affect and Affiliativeness on Generalized anxiety symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in generalized anxiety. Among all the variables Relationship Dimension has got high negative effect on generalized anxiety

### **PATH MODEL FOR OBSESSIVE COMPULSIVE SYMPTOMS**

Obsessive-Compulsive Disorder (OCD) is a chronic and debilitating disease which is characterized by intrusive thoughts and compulsive behavior. The lifetime prevalence rate of OCD in the general population is estimated at 2 to 3 percent. The

incidence of the disease in women is higher than men and women are more susceptible to OCD than men.

In the present study the role of emotion regulation and its relation with environmental factors such as familial factors and temperamental factors have been studied. The important family related factors are Relationship Dimension (RD), Personal Growth Dimension (PG) and System Maintenance Dimension (SM). Temperamental Factors include Effortful control (EC), Surgency (SU), Negative Affect (NA) and Affiliativeness (AF). It was found that very few studies evaluated the effect of such variables in different types of anxiety disorders. For understanding the mediating role of Difficulties in Emotion Regulation (DERS) and the effects produced by the other variables on Obsessive Compulsive Symptoms several models were tested.

#### **MODEL 1 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

In the present research a model was prepared by Obsessive Compulsive Symptoms (OC) as dependent variable. Variables such as Difficulties in emotion regulation (DERS), Family environment Variables - Relationship Dimension (RD), Personal Growth Dimension (PG) and System Maintenance Dimension (SM), Temperamental variables - Effortful Control (EC), Surgency (SU), Negative Affect (NA) and Affiliativeness (AF) were considered as independent variables. Obsessive Compulsive Symptoms in children and adolescents were focus of interest in many studies. But more research has to be focused in this area for the better understanding and management of the symptoms. In the current research it has been hypothesized that Difficulties in emotion regulation (DERS) mediates the relation between Family Environment variables, temperament variables and Obsessive Compulsive symptoms (OC).

Model 1 was prepared in such a way that Difficulties in emotion regulation (DERS) fully mediates the relation between Family Environment variables, temperament variables and Obsessive Compulsive symptoms (OC). As shown in figure 38, this model has been considered as the Baseline Model. The present model was checked for its statistical significance through path analytical method in AMOS.

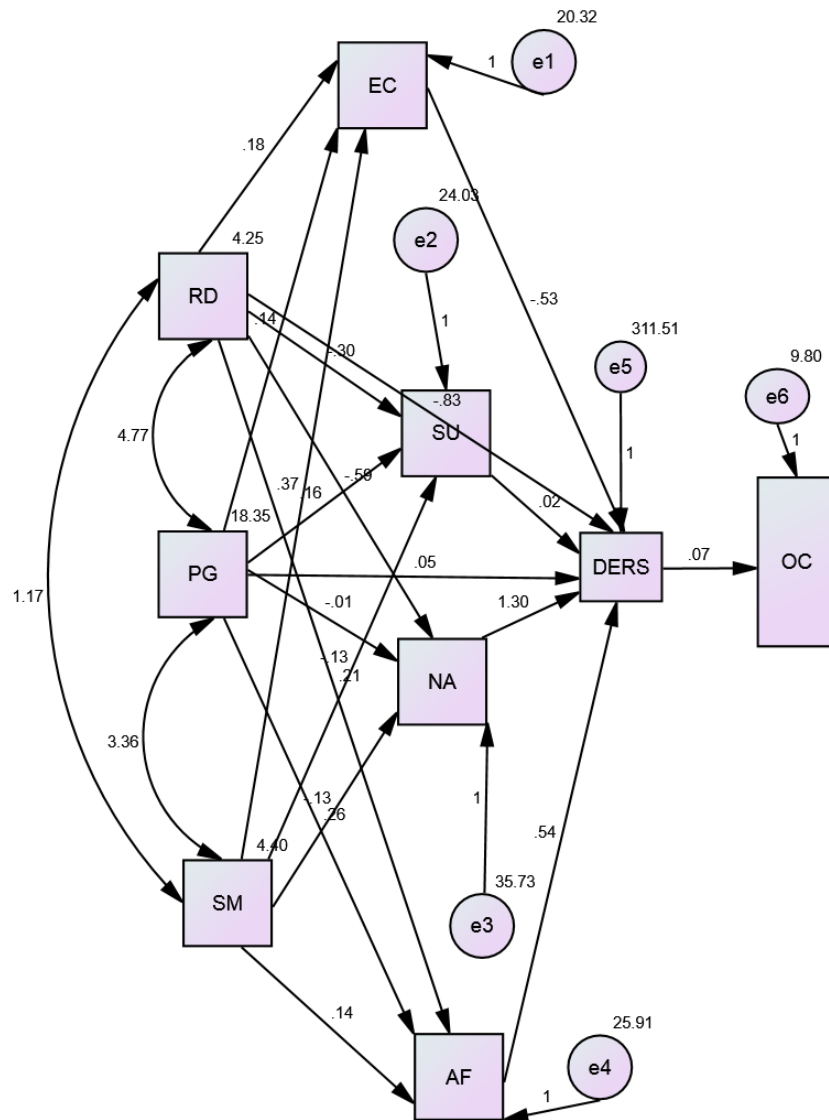


Figure 38 Model 1 DERS fully mediated the paths from Family Environment (RD, PG and SM) ,Temperament variables (EC, SU,NA and AF) and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

The results shows that the path coefficient  $\beta= 0.073$ ,  $p =0.000$ . The path model indices were GFI=0.956, AGFI=0.887, NFI=0.889, CFI=0.888, AIC =

496.783, RMSEA=0.070. the path coefficient was found to be significant indicating a unit change in Difficulties in emotion regulation (DERS) produces 0.073 unit changes in Obsessive Compulsive symptoms (OC). The finding has been supported by earlier researches in this area.

Ghasempour, Akbari, Azimi, Ilbeygi and Hassanzadeh, (2013) in their study found significant relation between OCD and emotion regulation. They concluded that the ability to understand and to regulate emotions is one of the success principles of life, and that failure in regulating emotions may bring about negative outcomes such as OCD. Since emotions are socially useful and can be constructive in transferring others' feelings, making social interactions, maintaining and finishing relations with others, regulating them can play effective role in healing anxiety disorders.

Children and adolescents with internalizing disorders seem to process emotional information differently than their peers, focusing attention on negative or threatening information. Youngsters who may develop anxiety disorders focus on threatening cues in their environment (Macklem, 2008).

Research indicates that individuals with anxiety, including OCD, engage in maladaptive strategies (e.g., suppression) to regulate the frequency and experiences of emotions. There are differences in the ease with which individuals elicit, respond to, and recover from emotions, as well as individual differences in acceptance of emotions. Individual emotion appraisal may impact the use of maladaptive emotion regulation strategies in OCD. (Smith, Wetterneck, Hart, Short and Björgvinsson, 2012).

McCubbin and Sampson (2006) cf. Smith, Wetterneck, Hart, Short and Björgvinsson, 2012) investigated the extent to which an individual feels that having a certain emotion (e.g., fear/anxiety) is dangerous (i.e., feeling threat from emotions). They posited that this trait characteristic is related to heightened awareness of danger, attempts to avoid emotions, and the use of maladaptive methods to cope with unpleasant emotions



Thus more models were tested for understanding more about the mechanism through which the proposed variables act up on Obsessive Compulsive symptoms (OC)

## **MODEL 2 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

Figure 39 indicates the new model. Model 2 was prepared by adding a direct path from Relationship Dimension (RD) of the family environment variables to Obsessive Compulsive symptoms. It has been compared with the Baseline model. The path coefficient  $\beta$  was found to be -0.179,  $p = 0.000$ . the path coefficient was found to be significant. Also the fit indices were interpreted to be adequate for the data and also improved the overall model with values such as GFI=0.958, AGFI=0.899, NFI=0.890, CFI=0.893, AIC = 470.843, RMSEA=0.069. From overall results it was found that the direct path from RD enhanced the model fit indicating that RD has got both direct and indirect effect on Obsessive Compulsive symptoms (OC) and Difficulties in Emotion regulation (DERS) only partially mediates the path. Thus this path was taken up for the next stage of model evaluation.

Previous literature shows that anxious individuals seem to share a combination of factors that may influence their typical pattern of emotion regulation, including: a) heightened emotion reactivity, which challenges emotion regulation processes, b) difficulties in generating specific regulation strategies (e.g., reappraisal) and c) a family environment that encourages maladaptive strategies in negative emotional situations (Barrett, Rapee, Dadds, & Ryan 1996) .

Suveg, Sood, Comer & Kendell (2009) "in their model views emotion regulation as the modification of an emotional reaction in response to environmental demands. This understanding according to many theorists in this area is provided by the familial factors. More family factors were thus taken up for the model construction".

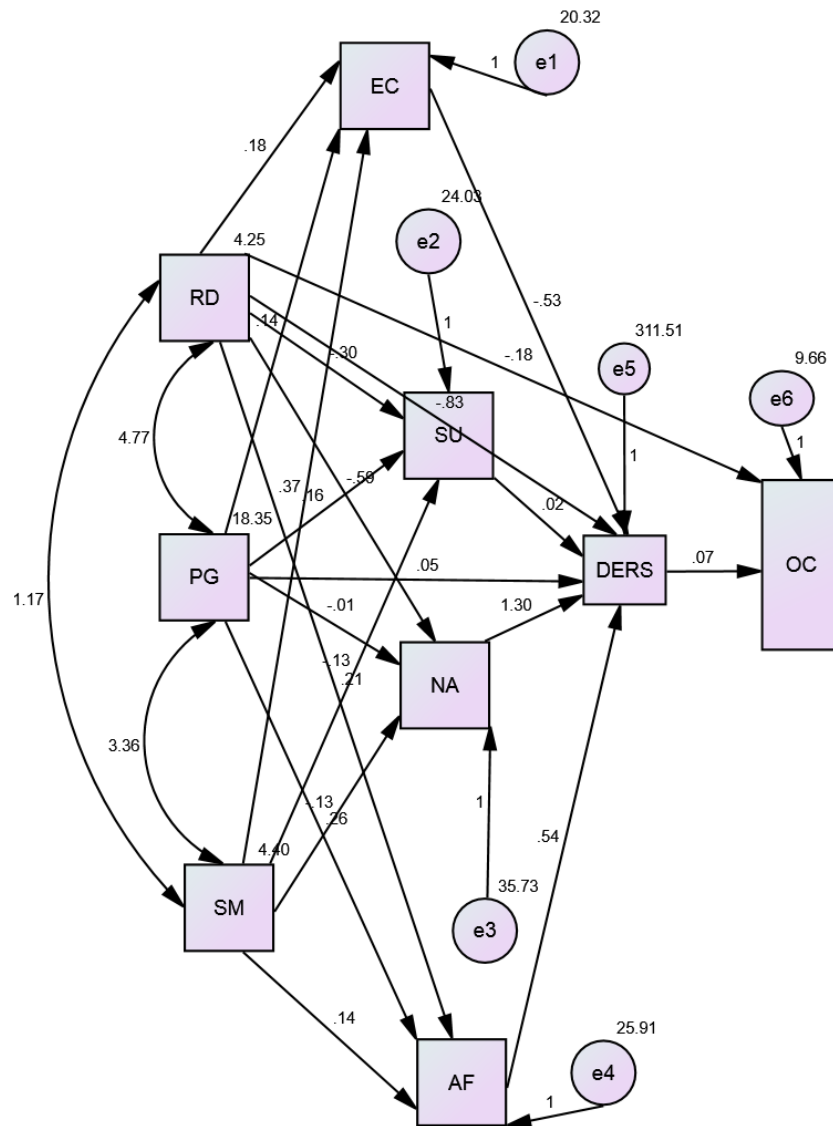


Figure 39 Model 2 DERS mediates paths from Family Environment Variables (PG,SM), Temperament Variables ( EC,SU,NA and AF) and Obsessive Compulsive Symptoms and partially mediates the paths between RD and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

### **MODEL 3 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

In this model, as shown in Figure 40, an additional path was drawn from Personal Growth Dimension (PG) of the family environment variables to internalizing Behaviour, Obsessive Compulsive (O C) symptoms. The model fit indices were checked and noted as (GFI=0.958, AGFI=0.856, NFI=0.870, CFI=0.864, AIC = 470.603, RMSEA= 0.070). The model fit indices were in the acceptable range. But not resulted in an improved fit compared to the Baseline Model. Moreover the path coefficient ( $\beta= 0.029$ ,  $p = 0.134$ ), from PG to OC was found to be not significant. So the path was not taken for further calculations for a better model, with the assumption that the effect of PG was also fully mediated by DERS.

The quality of the caregiving environment and the available overall family environment factors affect the development of emotion regulation skills in children and in turn determine the development of resilient factors against psychopathology (Laurent, 2014)

Personal Growth Dimension which is composed of independence, achievement orientation, moral religious and cultural orientation etc when in combination with emotion regulation difficulties causes the emergence of anxiety symptoms.

Thus only the indirect effect of Personal Growth Dimension (PG) was considered in the current model.

According to family systems theory by Bowen, adolescents and parents have mutual influence on each other throughout the development process. "Intrapersonally undifferentiated adolescents have trouble with separating thoughts and feelings and may be enmeshed with their parents' emotions which adversely affect their independence in all the aspects of their life" (Kivisto, 2011).

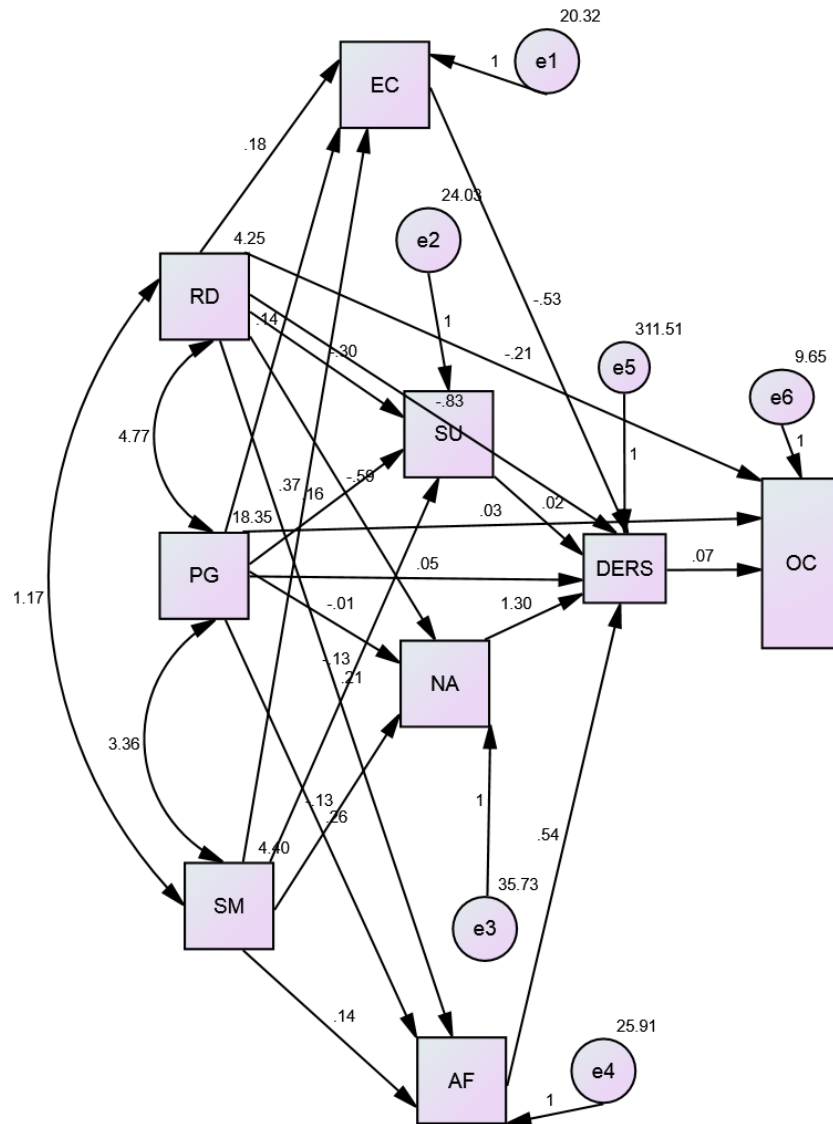


Figure 40 Model 3 DERS mediates paths from Family Environment Variable ( SM) and Temperament Variables ( EC,SU,NA and AF) and Obsessive Compulsive Symptoms and partially mediates the paths between RD,PG and Obsessive Compulsive Symptoms (OC).

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Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

#### **MODEL 4 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

Model 4, as shown in Figure 41, was prepared by drawing a direct path from another important family environment variable System maintenance dimension (SM) to internalizing symptom, Obsessive Compulsive Symptoms (OC). The model was checked and interpreted by the Path model fit indices and reported as (GFI = 0.958, AGFI = 0.856, NFI = 0.870, CFI = 0.864, AIC = 471.509, RMSEA = 0.071). The path coefficient was found to be  $\beta = 0.039$ ,  $p = 0.248$ . As path coefficient was insignificant and model fit indices not resulted in any improvement in the model fit, this path was also removed from the next step of model preparation. Difficulties in Emotion Regulation (DERS), here fully mediates the path from System maintenance Dimension to Obsessive Compulsive Symptoms (OC).

System maintenance dimension (SM) was composed of factors such as Organization and Control. The perception of the individual about the implementation of such factors in their family has got definite role in their expression of behaviour. The role of such factors in the current model was expressed in the context of emotion regulation difficulties.

"The family which enhances the self regulation of individuals with protective factors such as organisation and control positively influence the development of emotion regulation skills in adolescents" (Yoon, 2012).

A large community based study conducted by Feng (2011) concluded that girls without an adequate reserve of positive emotion from their family end up with internalizing symptoms.

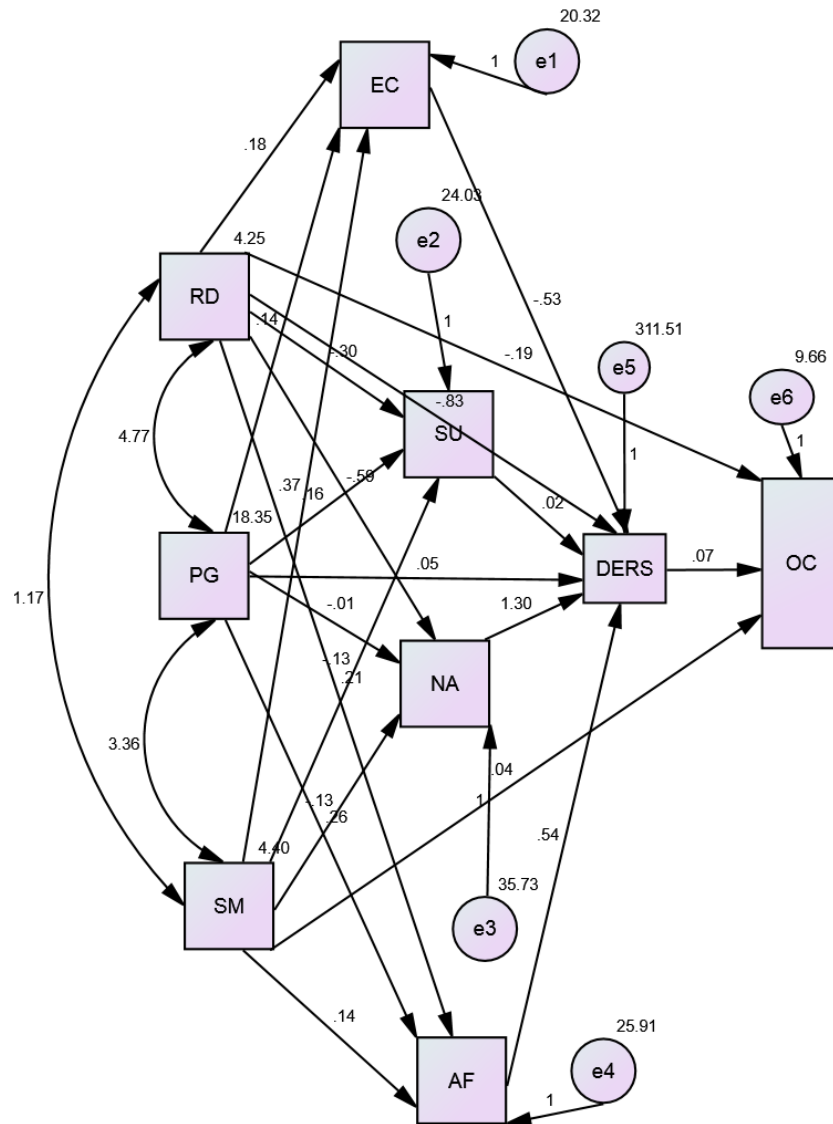


Figure 41 Model 4 DERS mediates paths from Family Environment Variable ( PG) and Temperament Variables ( EC,SU,NA and AF) to Obsessive Compulsive Symptoms and partially mediates the paths between RD,SM and Obsessive Compulsive Symptoms (OC).

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Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

## **MODEL 5 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

As shown in Figure 42, a direct path was drawn from Effortful Control (EC) to Obsessive Compulsive Symptoms (OC) in order to check the role of this factor in the present model. The path coefficient and model fit indices were reported. The path coefficient  $\beta = -0.077$ ,  $p = 0.000$  shows a significant positive effect on Obsessive Compulsive Symptoms (OC). The model fit indices were GFI=0.962, AGFI=0.899, NFI=0.900, CFI=0.890, AIC = 447.257, RMSEA=0.061. These indices were found to improve the overall model fit. Our study findings go along with earlier findings that higher Effortful Control is a good indicator as it acts as a protective factor. The path has been taken up for the next stage of model evaluation with the inference that difficulties in emotion regulation (DERS) partially mediate the path from Effortful Control (EC) to Obsessive Compulsive Symptoms (OC). Effortful Control (EC) has got both direct and indirect effect on Obsessive Compulsive Symptoms (OC).

Links between temperament and OCD in children and adolescents the available literature is weak. In childhood, OCD the importance of temperament is underscored, as it might be one expression of the genetic factors that contribute to psychopathology. But in the current study an attempt has been made to evaluate the role of temperament in OCD along with emotion regulation difficulties. The important temperamental factors for the model are EC, SU, NA and AF from Rothbart's model of temperament.

"Effortful control as an outcome of the development of executive attention, including the ability to inhibit a dominant response in order to activate a subdominant response, to plan, and to detect errors ( Jones, Rothbart, & Posner, 2002) act as a positive temperamental factor which resist the emergence of anxiety in an individual. Individuals low in effortful control may appear to have an inability to focus on contextual demands of social situations and perceive the needs of the situation and others".

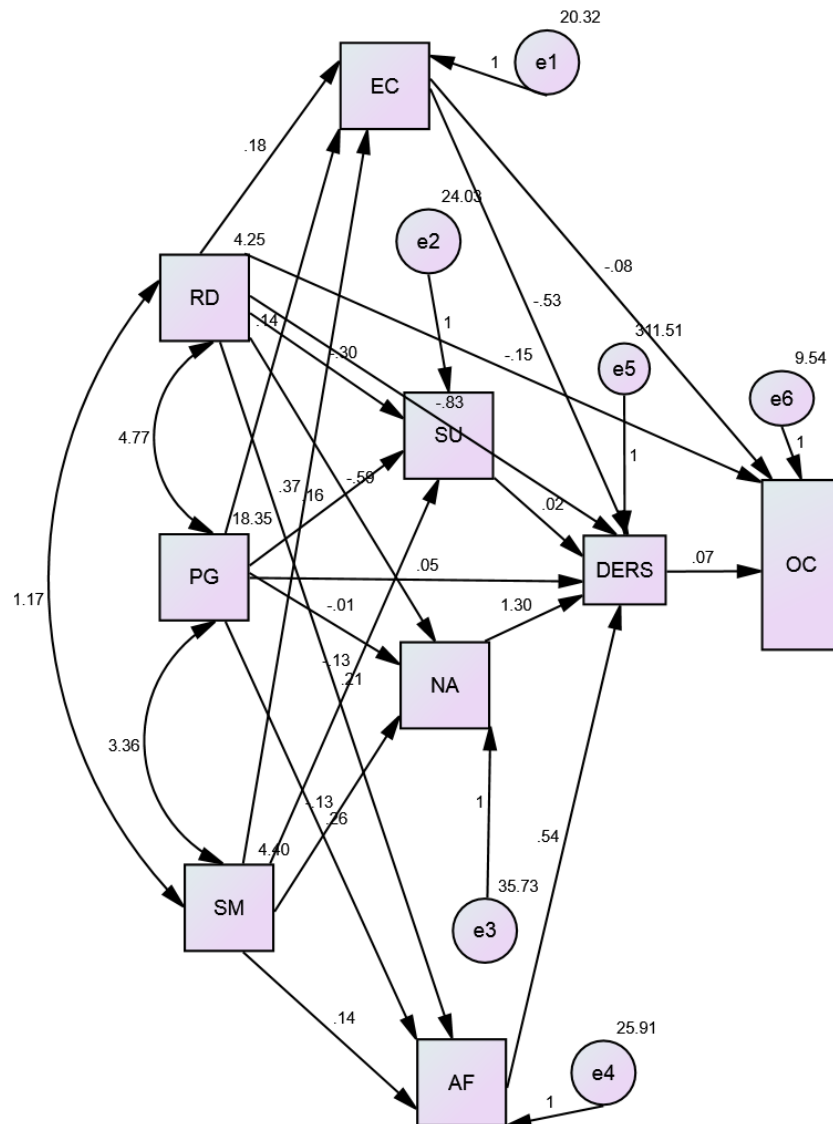


Figure 42 Model 5 DERS mediates paths from Family Environment Variables ( PG,SM ), Temperament Variables ( SU,NA and AF) and Obsessive Compulsive Symptoms and partially mediates the paths between RD,EC and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.



Highly negative children will be less likely to show problems when they have higher EC (Rothbart, 2007). "In a recent research on the relation between temperament and internalizing symptoms in girls it was shown that, for girls who demonstrate high effortful control, it was unexpected to find that as their use of constructive coping strategies increased, their internalizing behaviors also increased. Girls particularly high in effortful control may appear hyperfocused on the needs others and therefore when they engage others in trying to solve problems, they do so more frequently and with more fervor. Such girls who tend to take action or ask others for help and support could potentially be or appear to be more emotionally demanding or bossy". "Possibly, girls who are more attentive to others and the contexts of the situation are also more aware of their difficulties solving problems, and therefore experience more internalizing problems than girls low in effortful control who have difficulty with constructive coping strategies" (Blair, Denham, Kochanoff and Whipple, 2004).

#### **MODEL 6 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

The next model tested indicated a direct path from temperamental Surgency (SU) to Internalizing behavior, Obsessive Compulsive Symptoms (OC) as shown in Figure 43. The model fit indices identified were GFI=0.962, AGFI= 0.870 NFI= 0.870, CFI=0.872, AIC = 449.098, RMSEA=0.070. The fit indices were not enhanced the acceptance of the model compared to previous model 5. Moreover the path coefficient  $\beta = -0.006$ , ( $p = 0.690$ ) was found to be not significant. The direct path was removed from the model as SU has got insignificant path coefficient and fit indices not indicated improvement compared to the previous model. The assumption is that the effect from Surgency to Obsessive Compulsive Symptom was fully mediated by Difficulties in Emotion Regulation (DERS). Thus in the current model DERS act as a mediator for Surgency.

"Extraversion (surgency) is related to assertiveness, positive emotions, and sociability, with high scores indicating a tendency toward experiencing pleasure in novelty (Rothbart, 2011). Most of the studies in this area are focused towards High levels of Harm Avoidance and low levels of Novelty seeking" (Marco, 2013) .

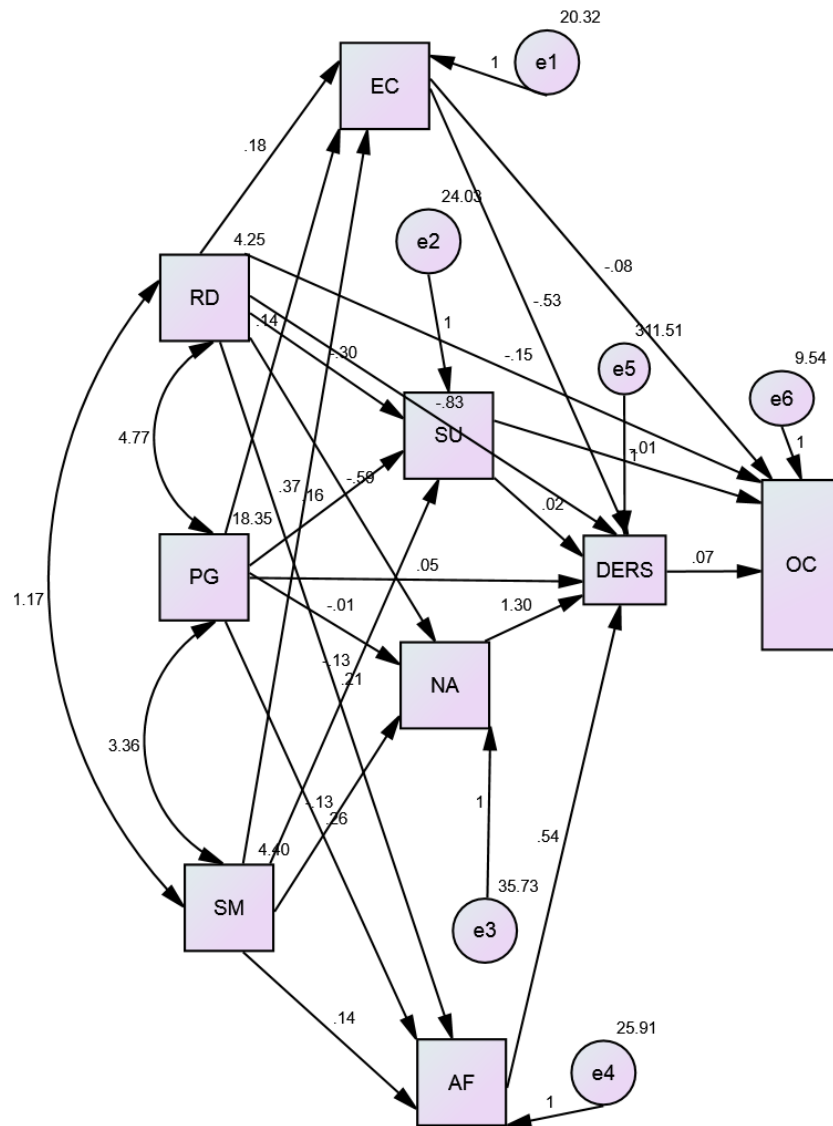


Figure 43 Model 6 DERS mediates paths from Family Environment Variables (PG,SM), Temperament Variables ( NA and AF) and Obsessive Compulsive Symptoms and partially mediates the paths between RD,EC,SU and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

In the current study the role of surgency was found to be indirect through Difficulties in Emotion Regulation (DERS). The direct effect is minimal, may be due to the influence of cultural factors. Teenage girls are not promoted with novelty seeking, or to be more assertive in our culture.

### **MODEL 7 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

Model 7 was prepared as shown in Figure 44, by adding a direct path from Negative Affect (NA) to Obsessive Compulsive Symptoms (OC), along with other paths from Model 6. The path coefficient was found to be  $\beta = 0.127$ ,  $p = 0.000$ , statistically significant indicating a direct positive effect of NA on Obsessive Compulsive Symptoms (OC). The model fit indices were also significant and noted as GFI=0.973, AGFI=0.904, NFI=0.904, CFI=0.905, AIC = 352.993, RMSEA=0.059. The new path was found to be significantly improving the fit of the model compared to Model 6. Thus Negative Affect (NA) has got both direct and indirect effect on Obsessive Compulsive Symptoms (OC). Emotion Regulation Difficulties (DERS) only partially mediates the path from Negative Affect (NA) to Obsessive Compulsive Symptoms (OC). Thus it was concluded that Negative Affect independently and along with Difficulties in Emotion Regulation acts as important risk factor in Psychopathology. The path was preserved for the final model.

Crawford, Schrock and Woodruff-Borden (2011) in their study established the relationship between the child negative affect, effortful control, maternal negative affect, and internalizing symptoms using complex path model.

Negative affect is a potential temperamental factor in most of the psychopathological conditions. Negative affect enhances the development and expression of emotion regulation difficulties in adolescents. Thus both direct and indirect effect of Negative affect should be seriously taken in to account.

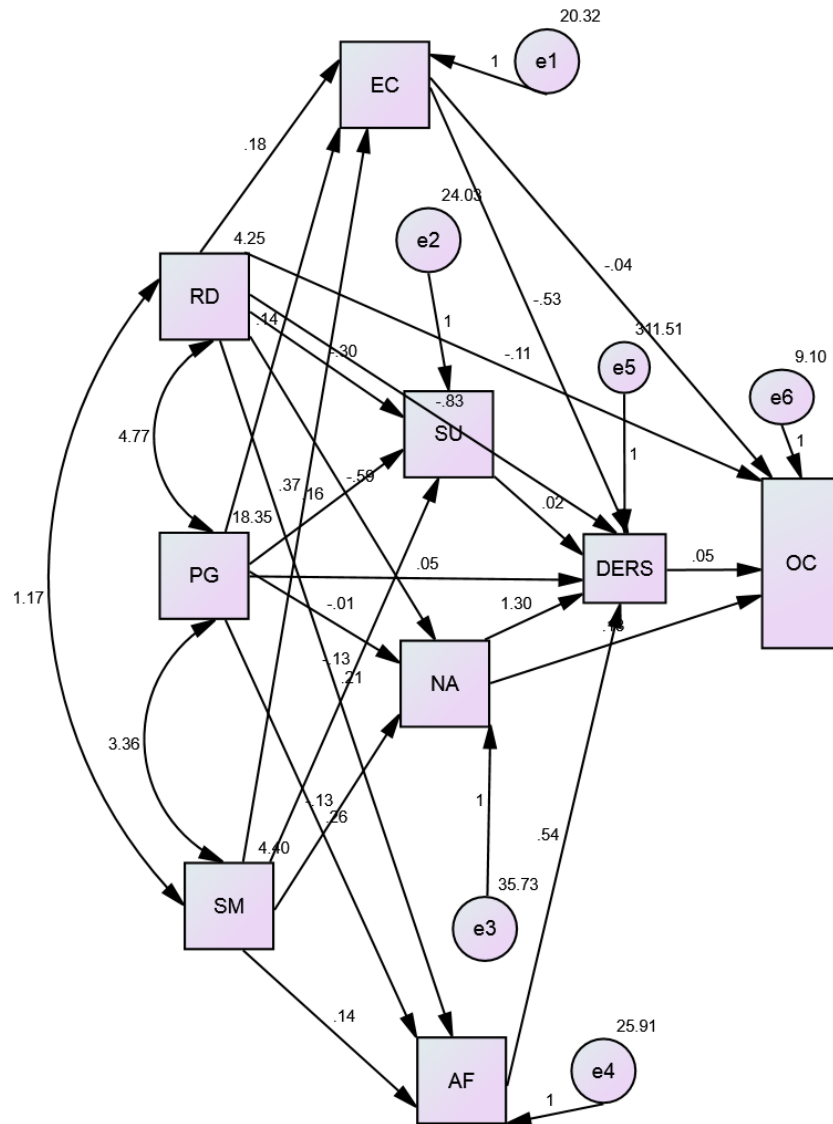


Figure 44 Model 7 DERS mediates paths from Family Environment Variables (PG and SM), Temperament Variables (SU and AF) and Obsessive Compulsive Symptoms and partially mediates the paths between RD,EC,NA and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

## **MODEL 8 FOR OBSESSIVE COMPULSIVE SYMPTOMS**

As shown in Figure 45, Model 8 incorporated a direct path from Affiliativeness (AF) to Obsessive Compulsive Symptoms (OC). The model has been checked for improved fit. The path coefficient for the direct path from Affiliativeness (AF) to Obsessive Compulsive Symptoms (OC) was found to be  $\beta = 0.120$ ,  $p = 0.000$ . It was found to be statistically significant. The fit indices GFI=0.976, AGFI= 0.950, NFI=.912, CFI=0.914, AIC = 329.888, RMSEA=0.055 indicates that the current path can be added to the present model. Thus AF has got both direct and indirect effect to Obsessive Compulsive Symptoms (OC). Difficulties in Emotion Regulation (DERS) only partially mediate the current path. Thus in the final accepted model for Internalizing Behaviour, Obsessive Compulsive Symptoms, DERS fully mediates paths from Personal Growth Dimension of family environment and temperament Surgency (SU). All other paths are partially mediated by DERS.

Lyoo et al. cf. Ivarsson & Winge-Westholm, 2004 found that "adult OCD patients differed to controls on harm avoidance, low levels of novelty seeking and self-directedness. The above study concluded the inter-relationships between OCD and temperament and found low levels of novelty seeking and self-directedness, especially in patients with avoidant and obsessive-compulsive personality disorders".

Girls were rated as more emotional than boys. Previous research has indicated gender differences for activity rather than for emotionality, although more negative emotionality for boys and fear/shyness for girls have been noted (Ivarsson & Winge-Westholm, 2004).

"Emotion regulation may be a potential factor in the developmental process which was influenced by temperamental predispositions and that predicts a more complex form of adjustment. Researchers addressing the link between temperament and emotion regulation have found temperament and regulation jointly predict numerous aspects of social functioning, including socially skilled behaviors,

prosocial behavior, adjustment, and peer acceptance" (Eisenberg et al., 2002 cf . Blair, Denham, Kochanoff and Whipple, 2004).

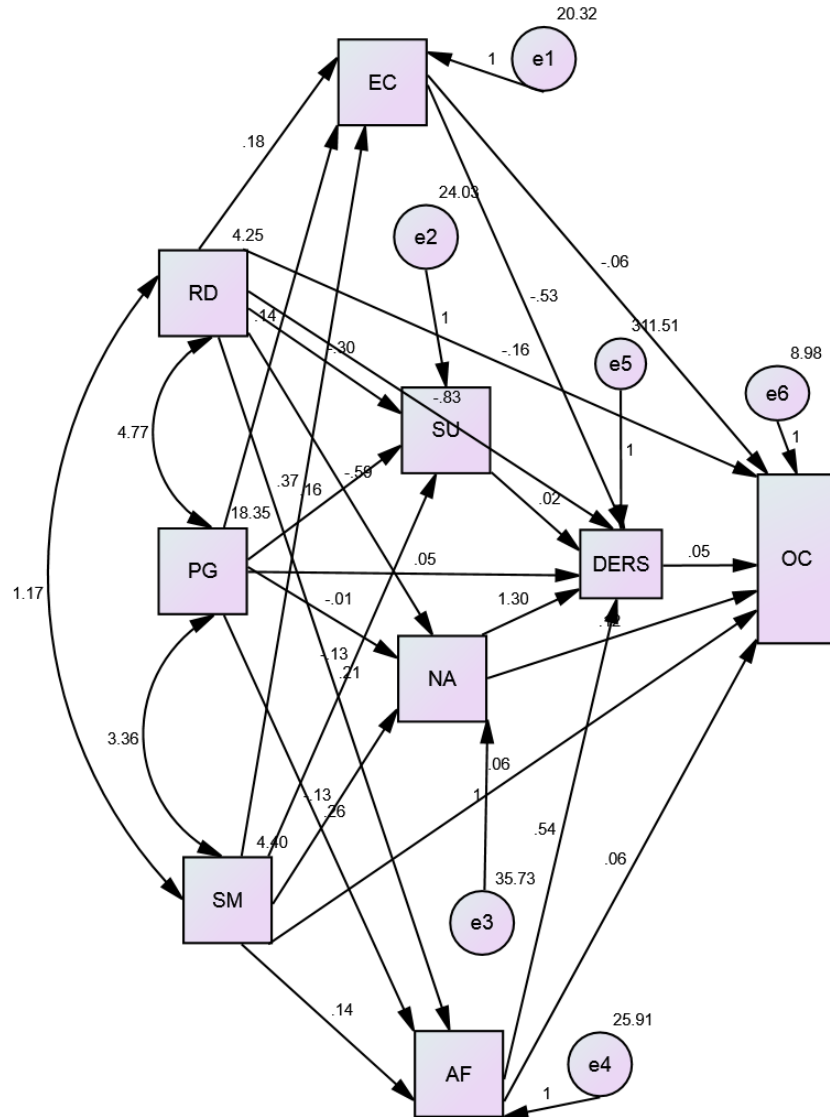


Figure 45 Model 8 DERS mediates paths from Family Environment Variables (PG, SM) and Temperament Variables ( SU) to Obsessive Compulsive Symptoms and partially mediates the paths between RD,EC,NA,AF and Obsessive Compulsive Symptoms (OC).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, OC =Obsessive Compulsive Symptoms.

Table 21

*Model Fit Indices and Path Coefficient for Obsessive Compulsive Symptoms (n=2041).*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.956	0.887	0.889	0.888	496.783	0.070	0.073	0.000
Model2: RD Partial	0.958	0.899	0.890	0.893	470.843	0.069	-0.179	0.000
Model 3: PG Partial	0.958	0.856	0.870	0.864	470.603	0.070	0.029	0.134
Model 4: SM Partial	0.958	0.856	0.870	0.864	471.509	0.071	0.039	0.248
Model 5: EC Partial	0.962	0.899	0.900	0.890	447.257	0.061	-0.077	0.000
Model 6: SU Partial	0.962	0.870	0.870	0.872	449.098	0.070	-0.006	0.690
Model 7: NA Partial	0.973	0.904	0.904	0.905	352.993	0.059	0.127	0.000
Model 8: AF Partial	0.976	0.950	0.912	0.914	329.888	0.055	0.120	0.000

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

Thus from the results as shown in Table 21, the model with comparatively better fit indices and significant path coefficients were considered as the final

accepted model. For Obsessive Compulsive Symptoms (OC) Model 8 was considered as a model with comparatively good fit indices as can be seen from Table 21. Thus this model was considered as the final model for Obsessive Compulsive Symptoms (OC). Thus from the final model it has been summarized that Difficulties in Emotion Regulation (DERS) fully mediates the path between Personal growth dimension and System maintenance dimensions of family environment which indicated that family environment which provide very few personal growth factors such as independence achievement orientation and also lack of a system with Organization and Control influence Obsessive Compulsive symptoms in girls when Emotion regulation skills are absent in them. Relationship dimension of family environment has got both direct and indirect effect on Obsessive Compulsive symptoms.

Temperamental Factors such as Effortful Control, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS on Obsessive Compulsive symptoms. Effortful Control and Surgency have got negative effect on Obsessive Compulsive anxiety symptoms which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation. Positive effect for variables such as Negative Affect and Affiliativeness on Obsessive Compulsive symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in Obsessive Compulsive anxiety symptoms. Among all the variables Negative affect has got greatest direct effect on obsessive compulsive anxiety. The effect of Surgency on Obsessive Compulsive anxiety in the current model is fully mediated by Emotion Regulation Difficulties (DERS).

Thus it can be concluded that family factors such as personal Growth factors such as independence, achievement orientation, moral-cultural –religious orientation etc are when low in a family where the adolescent girl lacks emotion regulation skills, chances for obsessive compulsive anxiety is very high. At the same time family members should provide healthy organization and effective control inside the family, in order to resist against the ill effects of emotion dysregulation. Also



temperament surgency/extraversion in combination with emotion regulation difficulties causes anxiety in children.

So according to the findings, management plans should include family members, especially parents to help children to effectively handle the symptoms of obsessive compulsive anxiety.

### **PATH MODEL FOR DEPRESSION**

Depression is a disorder of impaired emotion regulation. Sustained negative affect and a persistent reduction in positive affect are the hallmark features of a diagnosis of a major depressive episode. "Most of the theorists have suggested that depression vulnerable and nonvulnerable people do not differ primarily in their initial response to a negative event, but in their ability to recover from the ensuing negative affect. There are Individual differences in the habitual use of specific emotion regulation strategies, which may play an important role in the onset and maintenance of depression" (Joormann & Gotlib, 2010).

Lifetime prevalence rates of major depressive disorder range from 10% to 18.5%, however the risk for depression is particularly pronounced during adolescence. Females tend to report more internalizing and depressive symptoms than males across ethnicity. These disorders in childhood impact ones development into adulthood thus highlighting the need to prevent and treat internalizing problems in youth (Bostick, 2012).

Depressive disorder is very common, but depressive symptoms are even more common, with 10-19 percent of adolescents reporting symptoms at moderate to high levels. Depressed young people use different and less effective methods for dealing with negative emotions (Macklem, 2008)

Fox, Halpern & Forsyth. (2008), "the mental health checkup approach is based on the premise that anxiety, as an important early risk factor of depression, should be screened earlier in childhood when a child's functioning is more intact and before more serious problems can occur. Several authors have proposed that

prevention programs which target anxiety, in addition to depression, may also help to prevent the development of depression in youth".

In the current study an attempt was made to provide a model for depression along with models of anxiety disorders for adolescent female population. Current research emphasizes the importance of the variable, difficulties in emotion regulation (DERS) along with variables such as family environment and temperament. It has been hypothesized that variable, difficulties in emotion regulation (DERS) mediates the relation between family and temperament variables. The prediction was tested using different models as shown below. The adequate model was selected in the end.

#### **MODEL 1 FOR DEPRESSION**

In the present research a model for Depression was prepared based on the theoretical assumptions that Family environment factors and temperament influence the development of emotion regulation, which in turn act as a mediator between the above variables to Depression. Depression (MD) was considered as dependent variable and Difficulties in emotion regulation (DERS), Family environment Variables - Relationship Dimension (RD), Personal Growth Dimension (PG) and System Maintenance Dimension (SM) , Temperamental variables –Effortful Control (EC), Surgency (SU), Negative Affect (NA) and Affiliativeness (AF) as independent variables. According to the recent theoretical perspectives Family environment and temperament variables are very important in the emergence and maintenance of depressive symptoms in adolescents.

Based on this assumption a full mediation model was prepared, where Difficulties in emotion Regulation (DERS) fully mediated all the paths to Depression (MD), which is taken as Model.1 (Figure 46) and tested statistically with regression analysis and found out the indices that explain the acceptance of the model. Path coefficients were also calculated.

The path coefficient for the direct path from Difficulties in Emotion Regulation (DERS) to Depression (MD) was found to be  $\beta = 0.096$ ,  $p = 0.000$ . The

path coefficient was statistically significant indicating a unit change in Emotion Regulation Difficulties (DERS) causes 0.096 unit changes in Depression (MD).

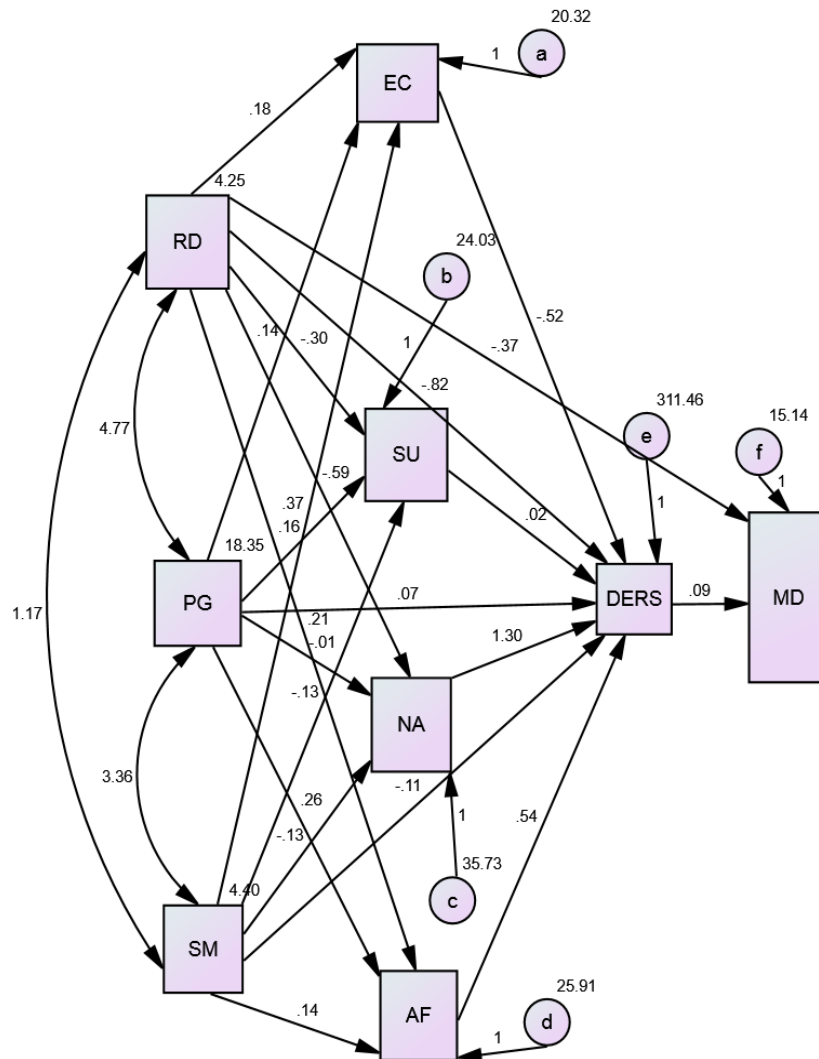


Figure 46 Model 1. DERS fully mediated the paths from family environment (RD,PG and SM) and temperamental variables (EC,SU,NA and AF)to Depression (MD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

The data fit the model as indicated by the fit indices such as GFI=0.948, AGFI=0.900, NFI=0.899, CFI=0.910, AIC = 580.001, RMSEA=0.075. All the fit indices were found to be in the minimum acceptable range. So this model was considered as Baseline Model. Models with independent and direct paths from other independent variable were also prepared and compared to find out whether Difficulties in Emotion Regulation (DERS) completely, or only partially, mediated the relation between temperament and depression.

From the previous researches, the role of Difficulties in Emotion Regulation has been discussed in the context of depression. Children with bipolar disorder appear to have poorly regulated arousal systems, and they exhibit pronounced failures of emotion regulation. Children who become depressed are biased toward negative emotional information and cannot seem to suppress negative emotion (Macklem, 2008).

In a recent study it was concluded that difficulty regulating emotions is a symptom of many psychological disorders yet little research has examined the longitudinal relations of particular facets of emotion regulation (ER) that may differentiate between internalizing symptoms. "Different patterns of varying emotion facet (dysregulation, inhibition, coping) and type (anger, sadness, worry), predicted anxiety and depression symptoms. They also proposed from the basis of their study that anxiety and depression are entities with distinct patterns of emotion-related antecedents" (Folk, Zeman, Poon & Dallaire, 2014).

A study of depressed adolescents by Silk, Steinberg, and Morris conducted in 2003 showed that these young people experienced more intense and variable emotions than their typically developing peers. They were not as competent in regulating their emotions, self-reported more depressive symptoms, and exhibited difficult behaviors.

Internalizing disorders, such as depression, likely involve deficits in the ability to down-regulate negative emotions such as sadness or difficulty up-

regulating and maintaining positive emotions (Cole, Michel, & Teti, 1994). Depressed children and adolescents may also lack facility with strategies used by other children and adolescents to ameliorate negative affect, such as problem solving or cognitive restructuring (Silk, Steinberg, and Morris, 2003).

Emotion regulation can provide an organizing rubric under which the role of many other factors, such as adolescent and parent temperament and emotion regulation, and parental socialization of child emotion, as well as the interaction amongst these factors, can be understood to account for the role of the family in adolescents' risk for depression. Adolescent emotion regulation functions as a mechanism through which temperament and family processes interact to increase vulnerability to developing depression (Yap, Allen and Sheeber, 2007).

From these earlier observations more paths were checked to understand the actual mechanism by which family and temperament influence the development of emotion regulation in adolescent girls and how these factors contribute to Depression.

## **MODEL 2 FOR DEPRESSION**

Figure 47 represents Model 2 and was prepared by adding a direct path from Relationship Dimension (RD) of the family environment variables to Depression. It has been compared with the Baseline model. The path coefficient  $\beta$  was found to be -0.371,  $p = 0.000$ . The path was found to be significant. The model fit the data adequately and significantly improved the fit over Baseline model as indicated from model fit indices such as GFI=0.954, AGFI=0.901, NFI=0.900, CFI=0.913, AIC = 506.530, RMSEA=0.072. From overall results it was found that the direct path from Relationship Dimension (RD) enhanced the model fit indicating that RD has got both direct and indirect effect on Depression and Emotion Regulation Difficulties (DERS) only partially mediates the path. Thus this path was taken up for the next stage of model evaluation.

Research has focused the role of family factors in the development of depression in children and adolescents. Negative family environments to depression

in youth have been investigated by many researches. Family support and conflict are two important factors associated with depression.

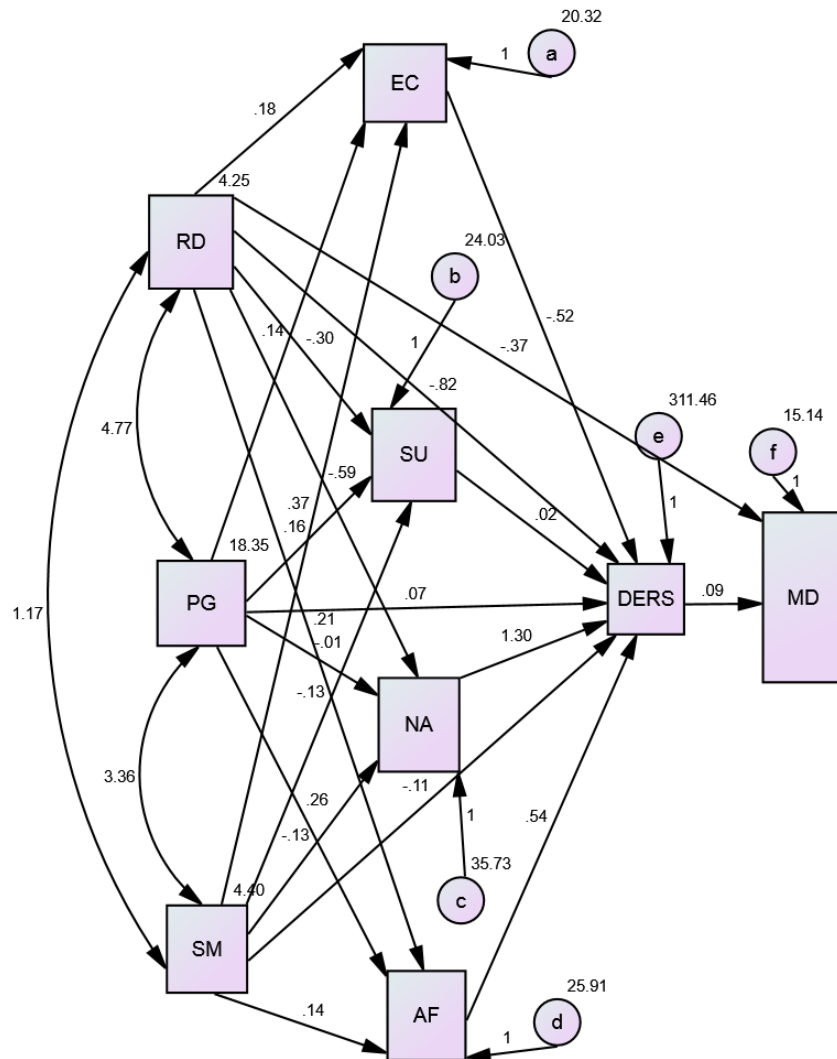


Figure 47 Model 2 DERS mediates paths from Family Environment Variables (PG, SM) and Temperament Variables (EC, SU, NA and AF) to Depression and partially mediates the paths between RD and Depression.

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

"Family environments associated with depression appear to be characterized by a lack of supportive interactions and high levels of conflict. The relationship domain of Family Environment appears to correlate more strongly than the other two domains with depression. Regression analyses of the data in a research study showed that family relationship was most predictive of various aspects of depression and self-concept". (Lau and Kwok, 2000).

Family relationship quality is also clearly linked to adolescent mental health, well-being, and depression according to Mason, Schmidt, Abraham, Walker and Tercyak, 2009.

Thus for Relationship dimension the mediating role of Emotion Regulation Difficulties (DERS) was found to be minimal, it has got direct negative effect on Depression.

### **MODEL 3 FOR DEPRESSION**

In this model an additional path was indicated from Personal Growth Dimension (PG) of the family environment variables to internalizing Disorder, Depression. The model was as shown in Figure 48. The model fit indices were checked and noted as (GFI=0.955, AGFI=0.908, NFI=0.902, CFI=0.914, AIC = 498.887, RMSEA= 0.068). The model fit indices were in the acceptable range. But not resulted in an improved fit compared to the Baseline Model. Moreover the path coefficient ( $\beta = -0.047$ ,  $p = 0.002$ ), from PG to Depression was found to be again not significant. So the path was not taken for further calculations for a better model, with the assumption that the effect of Personal Growth Dimension (PG) was also fully mediated by DERS (Difficulties in Emotion Regulation).

Personal growth dimension was found to determine the quality of family functioning. The elements that contribute to personal growth dimension are independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious emphasis.

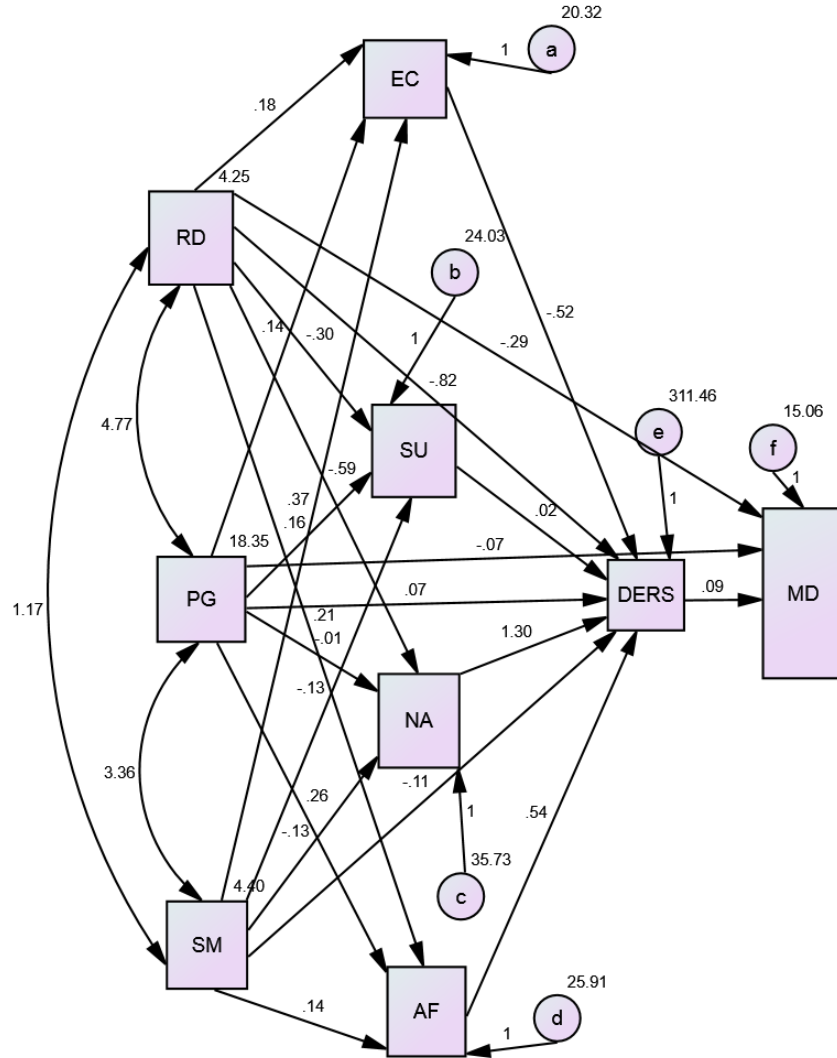


Figure 48 Model 3 DERS mediates paths from Family Environment Variables (SM) and Temperament Variables ( EC,SU,NA and AF) and Depression and partially mediates the paths between RD , PG and Depression.

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

Compared to Relationship dimension Personal growth factors has got comparatively low relation to depressive symptoms in adolescent girls of the current



sample. But when we take the impact from the path, it was seen that independence, achievement orientation, intellectual-cultural orientation, active-recreational orientation, and moral-religious emphasis provided by the family has got lasting positive impact on the emotion and behavior of children. With girls, personal growth dimension was predictive of depression, and personal growth and system maintenance together were predictive of self-concept (Lau and Kwok, 2000).

Family interactions laden with more negative affect influence youth through the direct modeling of dysregulated emotions which in turn end up with symptoms of depression and anxiety (Suveg, Morelen, Brewer and Thomassin, 2010)

Thus Personal growth factors have got major effect to Depression when the child is affected with emotion regulation difficulties (DERS).

#### **MODEL 4 FOR DEPRESSION**

Figure 49 represents Model 4 , prepared by drawing a direct path from another important family environment variable, System maintenance dimension (SM) to internalizing symptom, Depression (MD). The model was checked and interpreted by the Path model fit indices and reported as (GFI=0.955, AGFI=0.907, NFI=0.902, CFI=0.915, AIC = 500.251, RMSEA=0.067). The path coefficient was found to be  $\beta = -0.035$ ,  $p = 0.425$ . The path coefficient was insignificant. Also the model fit indices not resulted in any improvement in the model fit. Thus the current path was also removed from the next step of model preparation. Difficulties in Emotion Regulation (DERS), here fully mediates the path from System maintenance dimension (SM) to Depression (MD). Thus SM only exerts indirect effect on Depression through Emotion regulation Difficulties. Organization and control which contribute System maintenance dimension of family environment become crucial in the presence of emotion regulation difficulties in children.

In one study Analysis of variance showed that students high on family relationship, personal growth, and system maintenance were low in different depression aspects, but high in various self-concept domains. Also cohesive, orderly, and achieving family environment is conducive to more positive development in

adolescents, in terms of lower depression and higher self-concept (Lau and Kwok, 2000). The current study adds to the findings that Emotion regulation difficulties minimize the protective role of family variables.

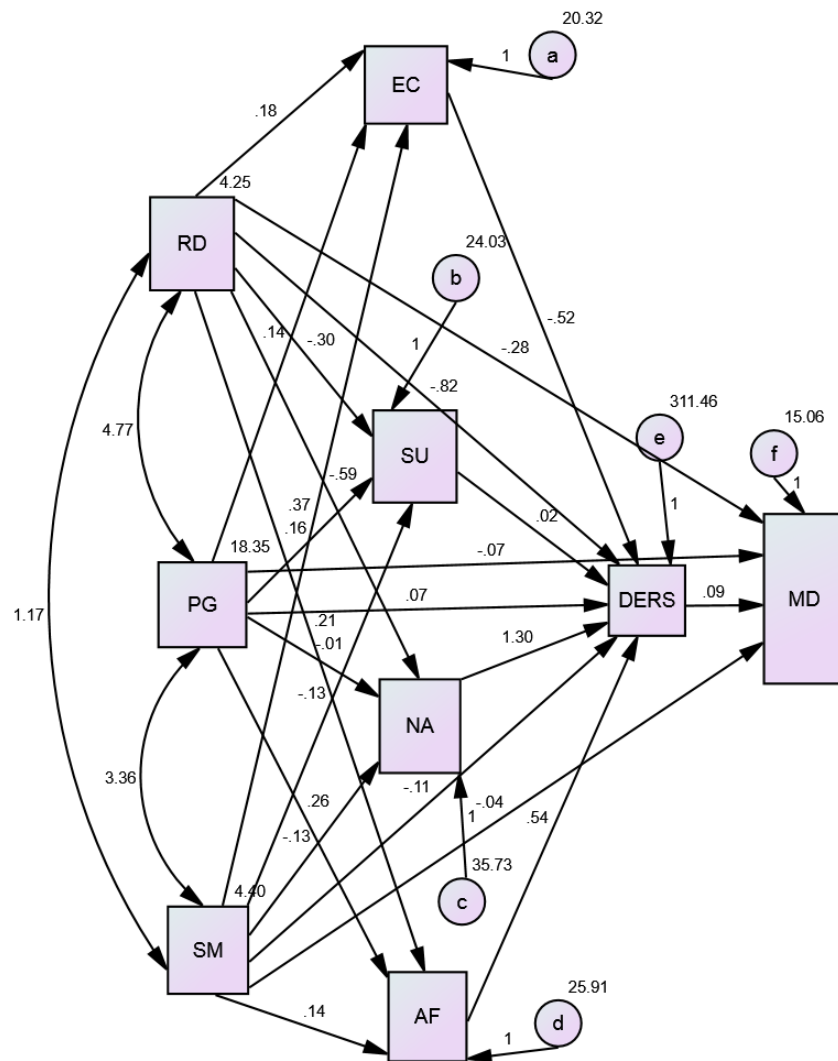


Figure 49 Model 4 DERS mediates paths from Temperament Variables ( EC,SU,NA and AF)and Depression and partially mediates the paths between RD ,PG, SM and Depression (MD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

Mother-child relations characterized by low warmth and family cohesion are found in children and adolescents with depression (Bostick, 2012).

"Along with the whole family environment how parents socialize the behaviour of their children, in response to different emotions expressed by youths may have distinct associations with depressive outcomes. Especially, parental behaviors that reinforce depressive behavior, reciprocate aggression, and fail to positively reinforce positive behavior have each been associated with youth depression" (Schwartz, Sheeber, Dudgeon, & Allen, 2012).

Thus further models were tested to evaluate the mediating role of Emotion Regulation Difficulties in teenage girls.

#### **MODEL5 FOR DEPRESSION**

The nature of temperament and its relation to childhood psychopathology has been long investigated. Effortful Control (EC) was discussed in many studies in the context of psychopathology. A direct path was drawn from EC to Depression (MD) in order to check the role of this factor in the present model (figure 50). The path coefficient and model fit indices were reported. The path coefficient  $\beta = -0.155$ ,  $p = 0.000$  shows a significant negative effect on Depressive Symptoms. The model fit the data well and significantly improved the fit from model 4. GFI=0.965, AGFI=0.912, NFI=0.910, CFI=0.916, AIC = 435.472, RMSEA=0.066. The model fit indices were also found to be improved the overall model fit. Our study findings go along with earlier findings that higher Effortful Control is a good indicator as it acts as a protective factor. The path has been taken up for the next stage of model preparation with the inference that DERS partially mediates the path from Effortful Control (EC) to Depression (MD). EC has got both direct and indirect effect on Depression (MD).

The factor of Effortful Control includes attentional focusing, inhibitory control, perceptual sensitivity, and low intensity pleasure (Rothbart, Ellis, Rueda and Posner, 2003). Highly negative children will be less likely to show problems when they have higher EC (Rothbart & Bates, 2006).

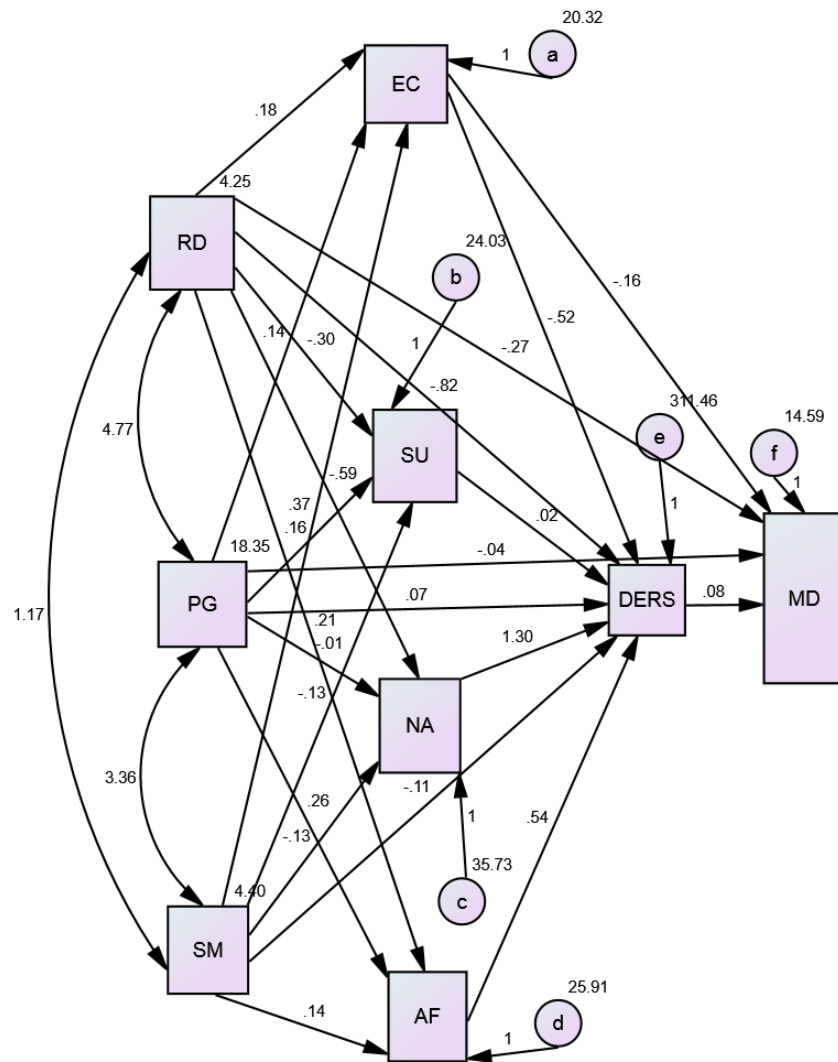


Figure 50 Model 5 DERS mediates paths from Family Environment Variable (SM), Temperament Variables (SU, NA and AF) and Depression and partially mediates the paths between RD, PG and EC and Depression (MD).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression.

Low effortful control could be detrimental for people vulnerable to depression because they might have difficulty overcoming their lack of approach motivation. (Eisenberg, Spinard & Eggum, 2010)

Hershey (1994) cf. Oldehinkel, Hartman, De Winter, Veenstra, And Ormel (2004) found that children high in Effortful Control were also high in guilt, shame, which may predispose to feelings of anxiety and depression.

In a model proposed by Zentner and Bates (2008) the concept of emotion regulation has been equated to effortful control. So in the current model Effortful Control (EC) exerts a direct effect to Depression and the influence was found to be partial through Emotion regulation Difficulties. The direct effect was found to be negative and can be interpreted as a protective factor against Depression in adolescents.

### **MODEL 6 FOR DEPRESSION**

The next stage comprises all the accepted paths from model 5 and direct path from Surgency (SU). As shown in Figure 51, direct path from the temperamental Surgency (SU) to Depression (MD) was checked through regression analysis. The Model fit indices obtained were (GFI=0.966, AGFI=0.911, NFI=0.911, CFI=0.916, AIC = 435.115, RMSEA=0.067) .No better fit was indicated from the above model 5. Also the path coefficient was found to be insignificant indicated by  $\beta = -0.026$ ,  $p = 0.124$ . So this direct path was not carried over to the next stage of analysis. Thus DERS fully mediates the path from Surgency to Depression (MD). No direct effect of Surgency was indicated in the current model. Thus Emotion Regulation Difficulties acts as a mediator in the case of surgency in the present model of Depression for adolescent girls.

Surgency reflects the degree that a person feels enthusiastic, excited, joyful, active, and alert. Anthony, Lonigan, Hooe and, Phillips (2002) in their study found that "surgency /positive affect directly predicted the chance for depression. But in this model the predictive ability of surgency was found to be very low. The adolescent girls in our study show less significant results on this variable".

Western studies proves that surgency as most strongly and consistently correlated with anhedonia, a prominent feature of major depression and social

phobia (Kotelnikova,2012).So the role of surgency should be studied independently in future studies giving importance to children and adolescents in our culture.

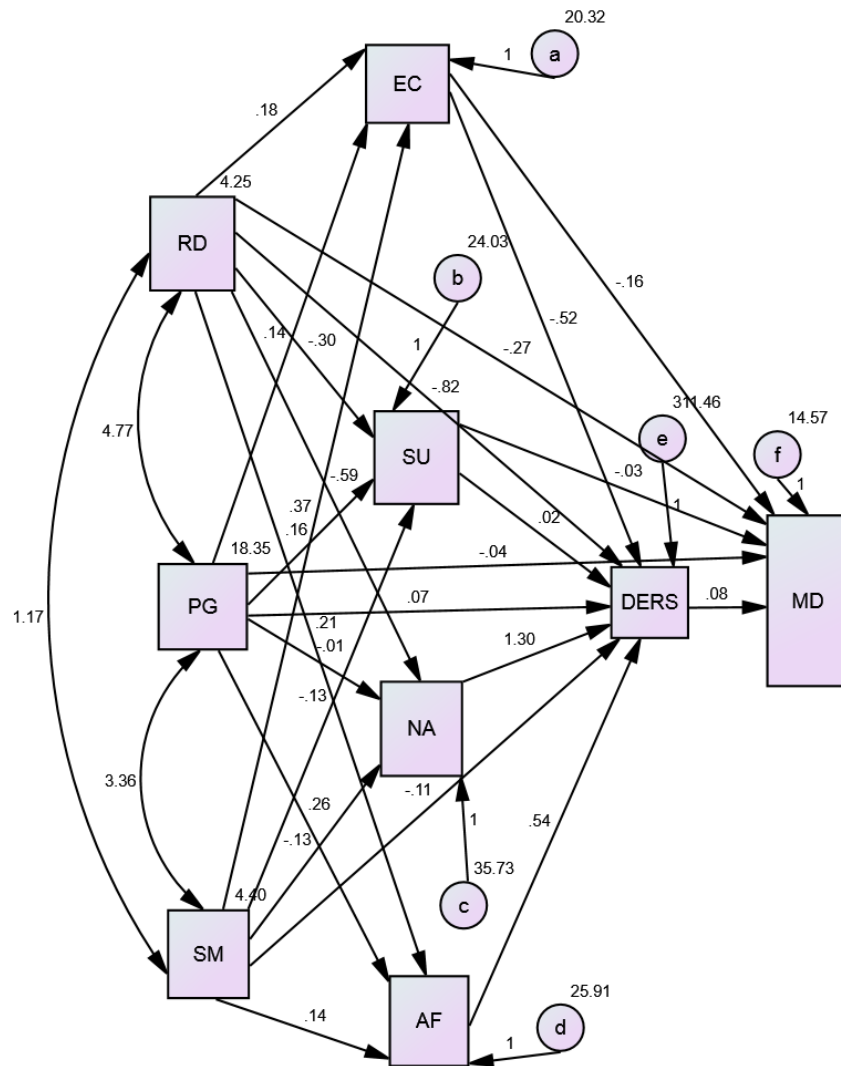


Figure 51 Model 6 DERS mediates paths from Family Environment Variable (SM), Temperament Variables (NA and AF) and Depression (MD) and partially mediates the paths between RD ,PG, EC , SU and Depression.

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

Thus in the current findings Surgency has got only indirect effect through Emotion Regulation Difficulties to depression. So the mediating role of Emotion Regulation Difficulties (DERS) has been proved in the current model for Depression.

### **MODEL 7 FOR DEPRESSION**

Figure 52 shows Model 7 for Depression, which was prepared by adding a direct path from Negative Affect (NA) to Depression, along with other paths from Model 6. The path coefficient was found to be  $\beta = 0.165$ ,  $p = 0.000$ , statistically significant indicating a direct positive effect of Negative Affect (NA) on Depression (MD). The model fit indices were also significant and noted as GFI=0.975, AGFI=0.933, NFI=0.911, CFI=0.913, AIC = 336.725, RMSEA=0.063. The new path was found to be significantly improved the fit of the model compared to Model 6. Thus Negative Affect (NA) has got both direct and indirect effect on Depression. Difficulties in Emotion Regulation (DERS) only partially mediate the path from NA to Depression. Negative Affect, as evident from other models for internalizing Disorders exerts an independent effect on Depression. At the same time when it is present in children the effect of Emotion Regulation Difficulties were also enhanced.

Negative Affect (NA) encompasses general subjective distress, anger, fear, nervousness, dissatisfaction, and unpleasurable engagement found in many aversive mood states. So independent effect of Negative Affect (NA) was found to be more relevant compared to other temperamental factors in depressive symptoms of adolescents. Anthony, Lonigan, Hooe and, Phillips (2002) in their study found that "negative affect is responsible for both anxiety and depressive symptoms in adolescent population". Current researchers in this field also supports the same concept. Lengua et al 1998, cf. Compas, Connor-Smith &. Jaser, 2004 in a Non-clinical sample of the age group 9-12years Negative emotionality was significantly related to depression.

Leve, Kim, & Pears (2005) "in a longitudinal study with non clinical sample found that girls' internalizing behavior increased over time and child fear/shyness predicted internalizing behavior across the 12-year span".

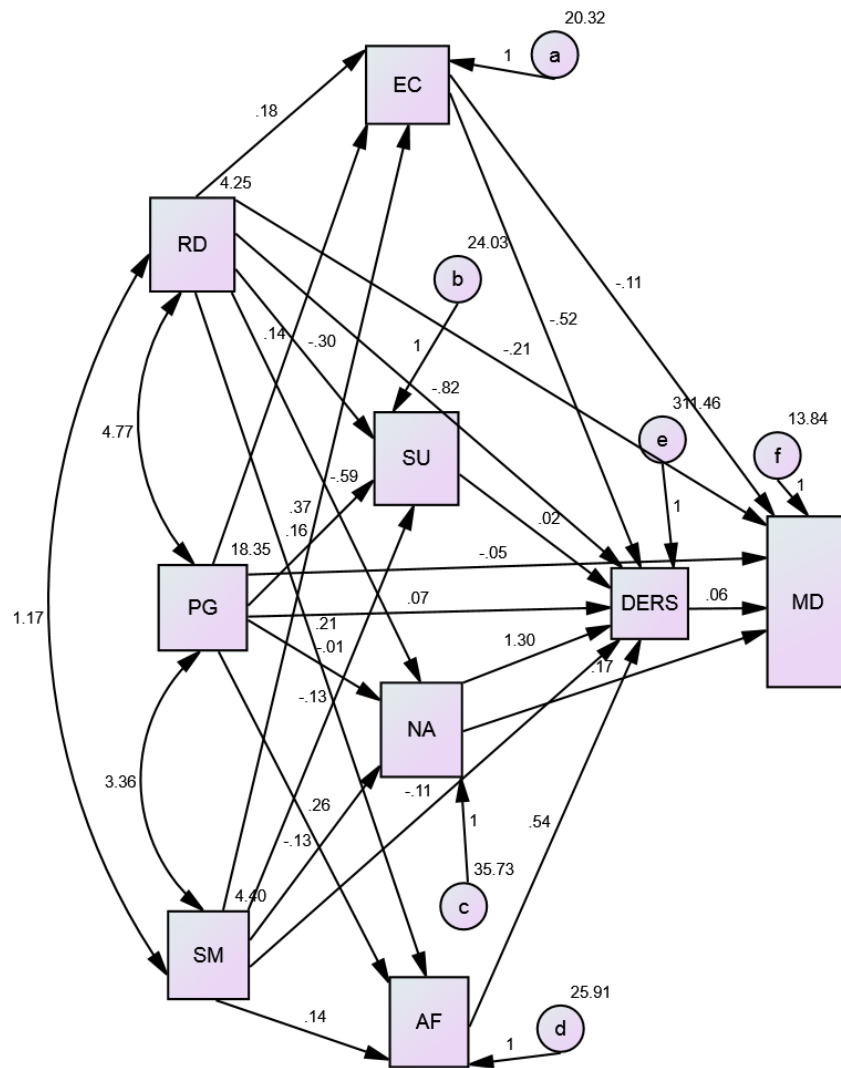


Figure 52 Model 7 DERS mediates paths from Family Environment Variable (SM) ,Temperament Variable (SU and AF) and Depression and partially mediates the paths between RD ,PG, EC , NA and Depression (MD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression.

Adolescents with high negative emotionality and low effortful control reported to have highest level of depressive symptomatology (Yap, Allen, O’Shea, Purasia, Simmons &Sheeber, 2011).



**MODEL 8 FOR DEPRESSION**

Model 8, as shown in figure 53, incorporated a direct path from Affiliativeness (AF) to Depression (MD). The model has been checked for improved fit. The path coefficient for the direct path from Affiliativeness (AF) to Depression (MD) was found to be  $\beta = 0.00$ ,  $p = 0.919$ . It was found to be statistically not significant. The fit indices were GFI=0.975, AGFI=0.945, NFI=0.913, CFI=0.914, AIC = 333.145, RMSEA=0.055. The direct path from affiliativeness (AF) to Depression (MD) was rejected as the path coefficient was not significant and model fit indices not resulted in an improved fit. Thus effect of Affiliativeness was fully mediated by Difficulties in Emotion Regulation (DERS). Thus in the final accepted model DERS fully mediates paths from SM, SU and AF. All other paths are partially mediated by DERS. Thus the final accepted model for Depression (MD) is as shown in figure 54.

Affiliativeness is a variable which is not much studied in most of the researches. But in the current model also the relation is very much insignificant. Findings from earlier studies have provided the idea that "depressive mood was associated with high levels of Affiliativeness, even when controlling for differences in gender. Low Effortful Control, high Affiliativeness, high Negative Affectivity, and gender (e.g., being female), best predicted depressive mood scores".( Ellis & Rothbart,2001).But the current study identified Affiliativeness (AF) as exerting its effect only in the presence of Difficulties in Emotion Regulation to Depression. Girls with more need for social affiliativeness were found to have chances of developing depression when the emotion regulation skills are not adequate.

Thus for the above model for Depression we can conclude that DERS has got definite role as a mediator with variables such as System maintenance dimension of Family environment and temperamental factors such as Surgency and Affiliativeness.DERS only partially mediates the other variables with the assumption that those variables(RD,PG,EC,&NA) have got independent influence on Depression.

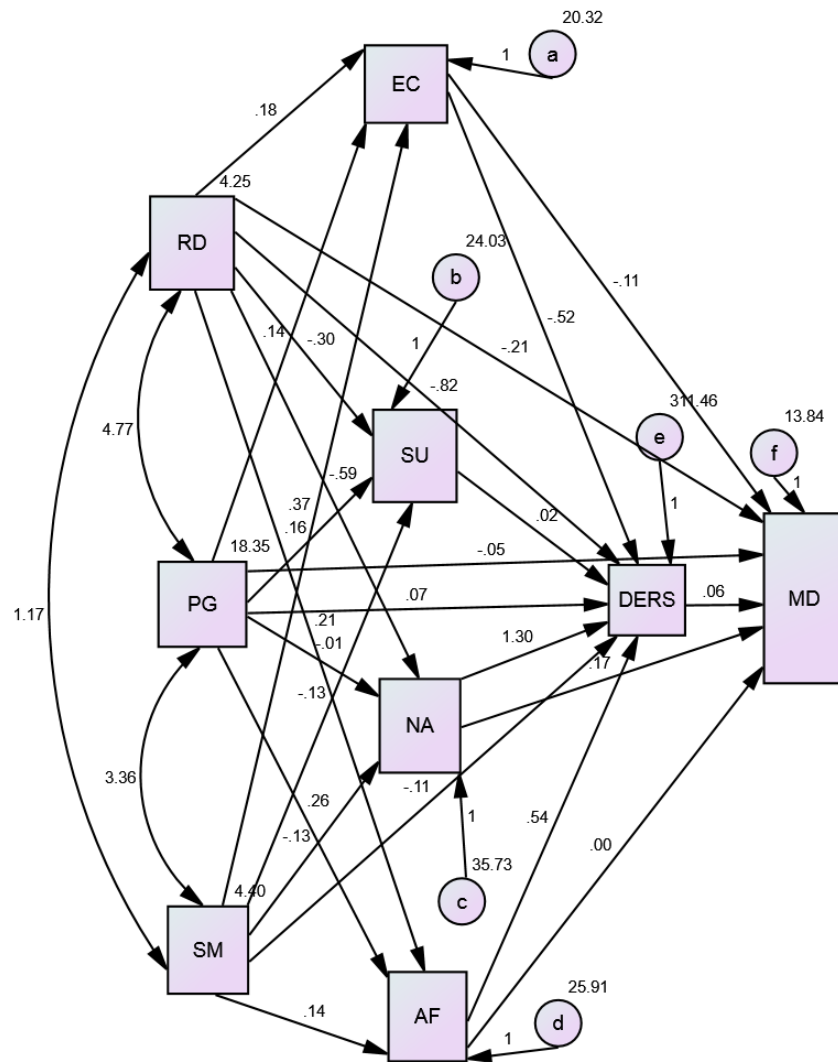


Figure 53 Model 8 DERS mediates paths from Family Environment Variable (SM), Temperament Variables (SU) and Depression and partially mediates the paths between RD, PG,EC,NA,AF and Depression (MD).

Note: DERS=Difficulties in Emotion Regulation,RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

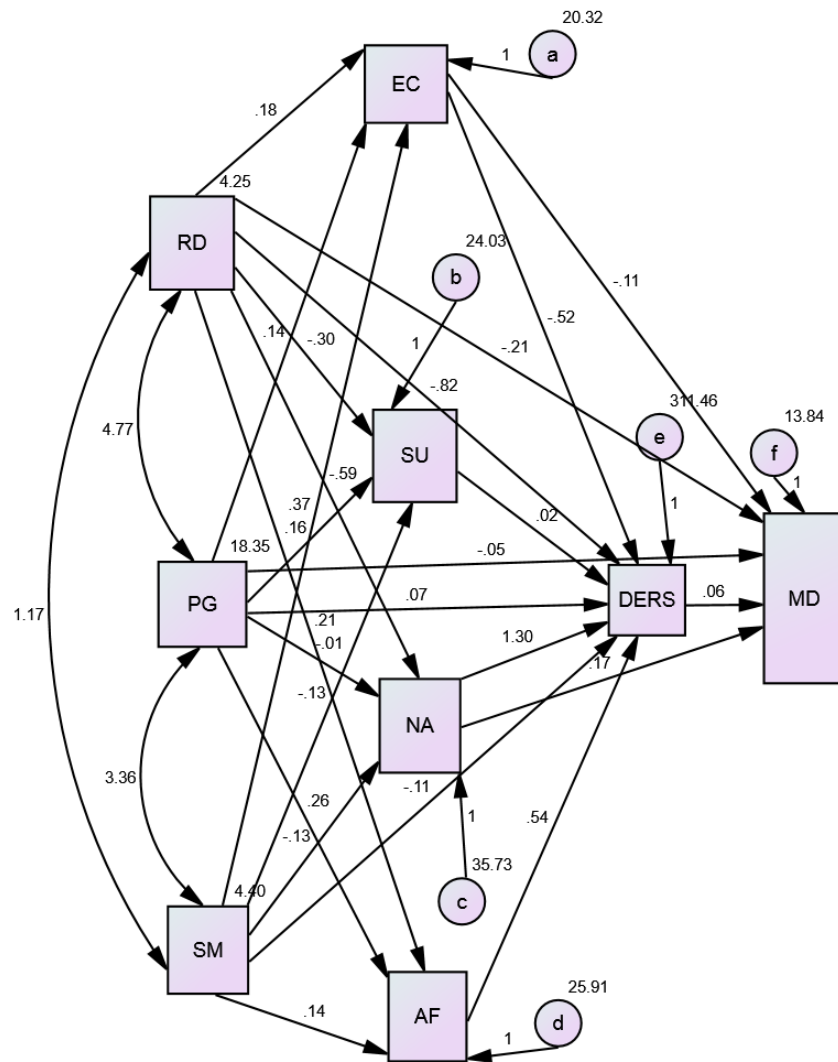


Figure 54 Model 9 DERS mediates paths from Family Environment Variable (SM), Temperament Variables (SU,AF) to Depression and partially mediates the paths between RD,PG,EC,NA and Depression (MD).

Note: DERS=Difficulties in Emotion Regulation, RD=Relationship Dimension, PG=Personal Growth Dimension, SM=System Maintenance Dimension, EC=Effortful Control, SU=Surgency, NA=Negative Affect, MD=Depression

Studies in this area show that low Effortful Control and high Negative Affect scores were predictive of both aggression and depressive mood (Ellis and Rothbart,

2001). Lower EC and higher Negative affect or emotionality would represent a broad risk factor for both anxiety and depression, while lower Positive emotionality or surgency would remain specific to depression. ((Kotelnikova, 2012).

Table 22

*Model Fit Indices And Path Coefficients For Depression, ( n =2041)*

Model	GFI	AGFI	NFI	CFI	AIC	RMSEA	$\beta$	Sig. of Beta
Model1: Full mediation	0.948	0.900	0.899	0.910	580.001	0.075	0.096	0.000
Model2: RD Partial	0.954	0.901	0.900	0.913	506.530	0.072	-0.371	0.000
Model 3: PG Partial	0.955	0.908	0.902	0.914	498.887	0.068	-0.047	0.002
Model 4: SM Partial	0.955	0.907	0.902	0.915	500.251	0.067	-0.035	0.425
Model 5: EC Partial	0.965	0.912	0.910	0.916	435.472	0.066	-0.155	0.000
Model 6: SU Partial	0.966	0.911	0.911	0.916	435..115	0.067	-0.026	0.124
Model 7: NA Partial	.975	0.920	0.920	0.921	330.468	0.058	0.165	0.000
Model 8: AF Partial	0.975	0.928	0.921	0.922	332.468	0.060	0.000	0.998

Note : GFI (goodness of fit index, should exceed 0.9 for a good model ), AGFI (adjusted GFI Values near to 0.9 or above good fit ),NFI (The Normed Fit Index Values of .9 or higher indicate good fit ), CFI (The Comparative Fit Index, CFI value of 0.90 or greater. indicates good fit), RMSEA (Root Mean Square Error of Approximation ,A value of .08 or less indicates adequate fit and a value of 0.06 or less indicates a close to excellent fit ), and AIC ( Akaike information Criterion, the model with smallest AIC is preferred).

Emotion dysregulation accounted as a predictor for the model proposed for depression and suicidality in a study conducted by Bradley, DeFife, Guarnaccia, Phifer, Fani, Ressler and Westen, 2010.

"Emotion regulation when becomes constrained, high levels of negative affect may result, which may organize behavior in ways that are problematic (e.g., withdrawal, aggression), ultimately leading to symptoms of psychopathology" (Cole & Hall, 2008 cf. Neumann,2010).Female adolescents are vulnerable to mental health problems as a function of social and environmental risk factors (Mason, Schmidt, Abraham, Walker and Tercyak, 2009). So a special relevance is there to the current study.

The process model of emotion regulation (by Gross)to depression indicates that depression vulnerability may be associated with more frequent use of emotion suppression and less frequent use of reappraisal, resulting in the maintenance of negative emotions triggered by negative life events or cognitions. "Depression vulnerable individuals may spontaneously respond to emotion suppression which may maintain the mood, also these individuals derive fewer benefits from the emotion regulation skills than controls. An emerging evidence has been proposed by the investigators that emotion regulation deficits are not confined to depression episodes but as a stable characteristics in the developmental process" (Ehring, Tuschen-Caffier, Schnu"lle, Fischer and Gross, 2010).

The current findings from the model for depression shows that family factors along with temperamental predispositions when coloured by emotion regulation difficulties contributes to the emergence of mood disorders or symptoms, especially depression. Management plans focusing on emotion regulation skills acts as a protective factor in adolescents, even when all other factors are not positive.

Depressed children and adolescents may also lack facility with strategies used by other children and adolescents to ameliorate negative affect, such as problem solving or cognitive restructuring (Dodge & Garber, 1991).

Findings suggested that "adolescents who are more emotionally labile ( who have a greater degree of fluctuation in mood state), or who report more intense negative affect, tend to score higher on measures of depressive symptomatology" (Larson, Raffaelli, Richards, Ham, & Jewell, 1990).

Family environments characterized by more cohesive and less conflictual relationships, more communication, and higher engagement in social/recreational activities are associated with girls have a more positive beliefs about the self, world, and future (Herren, 2009)

A recent study concluded that "for people with depressive symptoms, negative emotionality may be targeted to prevent the formation of cognitive vulnerability factors and may also ameliorate the distress that may occur in relation to brooding and cognitive style. Emotion regulation training may be particularly important in reducing the frequency, intensity and reactivity associated with negative emotionality". (Arger, Sanchez, Simon, and Mezulis, 2012) .

Thus from the above model for Depression the following points can be summarized: In the current model Emotion regulation difficulties( DERS) fully mediates the path between System maintenance dimensions of family environment which indicates family environment with low organization and control, influence Depressive symptoms in girls through Emotion regulation Difficulties. Relationship dimension and personal growth of family environment has got both direct and indirect effect on Depression. Among all the variables Relationship dimension has got greatest effect on Depressive symptoms in girls.

Temperamental Factors such as Effortful Control and Negative Affect have got both direct effect and indirect effect through DERS on. Depressive symptoms. The effect of Surgency and Affiliativeness on Depression in the current model is fully mediated by Emotion regulation difficulties (DERS). Effortful Control has got negative effect on Depressive symptoms which can be interpreted as low Effortful Control (EC) contributes more to internalizing symptoms independently and in the presence Difficulties in Emotion Regulation. Positive effect for the variable Negative Affect on Depressive symptoms in girls indicate that, the predisposed negative affect independently and in presence of emotion regulation difficulties DERS results in Depression.

Thus the mediating role of Difficulties in Emotion regulation on Organization and Control of Family factors and temperament such as surgency and affiliativeness can be utilized in future to establish improved management of Depressive symptoms in adolescents by teaching them emotion regulation skills by parents and teachers.

Above models for internalizing disorders provide us information about the need to consider emotion regulation as a risk factor along with family and temperamental factors. All the models show the unique way of influence of these variables on internalizing disorders. Along with emotion regulation difficulties Temperamental predispositions such as negative affect and affiliativeness in adolescent girls act as potential risk factors and lack of family cohesion and relations also act as negative factor. But Effortful control in all models emerged as an important resilient factor against anxiety and depression even in the presence of Emotion Regulation Difficulties. Thus current study provides an important insight about the identification and management of anxiety and depression by focusing on to the emotion regulation skills with the help of parents and other family members.

The models for Social Phobia, Separation Anxiety, Panic Disorder, Obsessive Compulsive Anxiety, and Depression revealed that emotion Regulation difficulties have got significant mediating role. In most of the models the Family Environment Dimensions exerts direct influence and indirect influence through Emotion regulation Difficulties. Temperamental Factors such as Effortful Control, Surgency and Affiliativeness when mediated by Emotion Regulation Difficulties results in unique expression as anxiety and depression. Negative Affect when it is combined with emotion regulation difficulties follows a path which was found to be enhancing the intensity of expression of internalizing symptoms. The independent effect of Emotion Regulation Difficulties was also remarkable. As variables such as family Environment and temperamental factors which are difficult to manipulate by therapist, teachers parents or significant others, the management plan can focus on to Emotion Regulation Difficulties in a very primitive stage itself. The tendency to internalize depends on many factors, but training in this area of how to manipulate and manage emotion related skills may help in long term management of the problem. One probability of partial mediation effect of emotion regulation difficulties with family environment and temperament factors is that in our culture the structure of family and its influences on child development and the expression of predisposed factors follow a unique path compared to Western culture. Also the identification and experience of emotion and its elements by teenagers require special training. Thus the mediation effect of Emotion Regulation Skills should be taken in to account and management should start from the primary school level.

**CHAPTER-6**  
**SUMMARY & CONCLUSION**



This chapter deals with, an overview of the important aspects of the Research work, the major findings, their practical implications and suggestions for future research are presented.

- Statement of the Problem
- Variables of the study
- Objectives of the study
- Hypotheses of the study
- Measures used
- Participants
- Statistical Techniques used
- Tenability of the Hypotheses
- Major Findings of the Study
- Implications of the Study
- Limitations and Suggestions for Future Research

It has always been a truth that in everyday life all human beings are exposed to emotion arousing stimuli. Most of the time people are much more flexible in dealing with their emotions. The life period of adolescence evokes a variety of emotions. As with any time in development, emotions must be regulated in order to achieve goals in one's life. Adolescents who fail to learn to regulate their emotions early in their life periods may exhibit behaviors associated with emotion dysregulation starting from adjustment problems to chronic anxiety and depression. A large literature exists linking family factors and temperament to emotion regulation, also to internalizing and externalizing problems. But very few researches explored the actual mechanism through which these factors operate. Current study is a preliminary attempt to identify the role of emotion regulation in the context of Family Environment and Temperamental factors of adolescent girls. In our culture, while both male and female adolescents experience problems related to emotional functions, female adolescents are at more risk for internalizing problems, such as anxiety and depression. The current findings can be utilized to enhance the prevention and intervention programmes.

Reviews of previous literature in the present area revealed that even though many studies invested time for independently understanding these variables, or in combination, in various parts of the world, unfortunately no such research has been undertaken in Kerala population. Hence the current study may be relevant especially giving awareness to Clinicians, teachers and parents about the early detection and management of such problem behaviours.

### **STATEMENT OF THE PROBLEM**

Given the impairing nature of the internalizing disorders such as anxiety and depression in children and adolescents, the current research has attempted to identify the etiological and maintaining factors of these disorders. Despite the strong relations between family environment, temperament, emotion and internalizing symptoms in adolescent population, relatively scant research has examined the actual mechanism by which such factors operate. Current study is an attempt to collectively examine the combined effect of these variables in order to prepare a model which can be used for focusing on to prevention and intervention programmes. So the problem focused in the study is entitled **‘Emotion Regulation Difficulties As A Risk Factor for Internalizing Disorders : A Path Model with Family Environment and Temperament’**.

### **VARIABLES OF THE STUDY**

The present research evaluated the relationship among major variables such as Family Environment, Temperament, Difficulties in Emotion Regulation and Internalizing Symptoms. The sub variables of the Family Environment were Relationship dimension, Personal Growth Dimension, and System maintenance Dimension. Important Temperamental factors under study were Effortful Control, Surgency, Negative Affect and Affiliativeness. Difficulties in Emotion Regulation is another important variable. Finally, Internalizing symptoms were classified as – Social Phobia, Panic Disorder, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive Symptoms and Depression.

The study variables were classified as follows:

**1) Independent Variables**

Family Environment and its subvariables, and Temperament and its sub variables

**2) Mediator Variable**

Difficulties in Emotion Regulation

**3) Dependent Variables**

Internalizing symptoms such as social phobia, Panic disorder, Separation Anxiety, Generalized Anxiety, Obsessive Compulsive symptoms, and Depression are taken as Dependent variables

**OBJECTIVES OF THE STUDY**

1. To examine the relation between family environment, temperament, Emotion regulation Difficulties and internalizing disorders.
2. To examine family environment & temperament pathways through Difficulties in emotion regulation on Social phobia
  - To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on Social phobia.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on Social phobia
  - To understand the mediating role and impact of Difficulties in emotion regulation on Social phobia.
3. To examine family environment & temperament pathways through Difficulties in emotion regulation on Panic disorder

- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on Panic disorder.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on Panic disorder.
  - To understand the mediating role and impact of Difficulties in emotion regulation on Panic disorder.
4. To examine family environment & temperament pathways through Difficulties in emotion regulation on Separation anxiety
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on Separation anxiety.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on Separation anxiety
  - To understand the mediating role and impact of Difficulties in emotion regulation on Separation anxiety.
5. To examine family environment & temperament pathways through Difficulties in emotion regulation on Generalized anxiety.
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on Generalized anxiety.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on generalized anxiety.

- To understand the mediating role and impact of Difficulties in emotion regulation on Generalized anxiety.
6. To examine family environment & temperament pathways through Difficulties in emotion regulation on obsessive compulsive symptoms
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on Obsessive Compulsive symptoms.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on Obsessive Compulsive symptoms.
  - To understand the mediating role and impact of Difficulties in emotion regulation on Obsessive Compulsive symptoms.
7. To examine family environment & temperament pathways through Difficulties in emotion regulation on Depression.
- To study the direct and indirect effects of Relationship dimension, Personal growth dimension, and system maintenance dimensions of family environment on d Depression.
  - To study the direct and indirect effects of temperament factors such as effortful control, surgency, negative affect and affiliativeness on Depression.
  - To understand the mediating role and impact of Difficulties in emotion regulation on Depression.

## **HYPOTHESES OF THE STUDY**

1. There will be significant relation between Difficulties in emotion regulation, temperament, family environment and internalizing disorders.
  - 1.1. There will be significant relation between Difficulties in emotion regulation and temperament factors.
  - 1.2. There will be significant relation between Difficulties in emotion regulation and dimensions of family environment.
  - 1.3. There will be significant relation between Difficulties in emotion regulation and different types of Internalizing disorders.
  - 1.4. There will be significant relation between temperamental factors and dimensions of family environment.
  - 1.5. There will be significant relation between temperamental factors and different types of internalizing disorders.
  - 1.6. There will be significant relation between dimensions of family environment and different types of internalizing disorders.

To examine the mediating role of emotion regulation with temperament and family environment to internalizing disorders, six models were proposed. The common hypotheses for the models were as follows:

### **Path model for Social Phobia the following hypotheses were proposed.**

2. The effect of family environment and temperament on Social Phobia will be mediated by Difficulties in Emotion Regulation.
  - 2.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact upon Social Phobia.
  - 2.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Social Phobia.

- 2.3. Temperamental factor, Negative affect will have direct positive impact up on Social Phobia.
- 2.4. Difficulties in Emotion Regulation will have direct positive impact up on Social Phobia.

**Path model for Panic Disorder the following hypotheses were proposed.**

3. The effect of family environment and temperament on Panic Disorder will be mediated by Difficulties in Emotion Regulation.
  - 3.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Panic Disorder.
  - 3.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Panic Disorder.
  - 3.3. Temperamental factor, Negative affect will have direct positive impact up on Panic Disorder.
  - 3.4. Difficulties in Emotion Regulation will have direct positive impact up on Panic Disorder.

**Path model for Separation Anxiety the following hypotheses were proposed.**

4. The effect of family environment and temperament on Separation Anxiety will be mediated by Difficulties in Emotion Regulation.
  - 4.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Separation Anxiety.
  - 4.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Separation Anxiety.

- 4.3. Temperamental factor, Negative affect will have direct positive impact up on Separation Anxiety.
- 4.4. Difficulties in Emotion Regulation will have direct positive impact up on Separation Anxiety.

**Path model for Generalized Anxiety the following hypotheses were proposed.**

5. The effect of family environment and temperament on Generalized Anxiety will be mediated by Difficulties in Emotion Regulation.
  - 5.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Generalized Anxiety.
  - 5.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Generalized Anxiety.
  - 5.3. Temperamental factor, Negative affect will have direct positive impact up on Generalized Anxiety.
  - 5.4. Difficulties in Emotion Regulation will have direct positive impact up on Generalized Anxiety.

**Path model for Obsessive Compulsive Symptoms the following hypotheses were proposed.**

6. The effect of family environment and temperament on Obsessive Compulsive Symptoms will be mediated by Difficulties in Emotion Regulation.
  - 6.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Obsessive Compulsive Symptoms



- 6.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Obsessive Compulsive Symptoms.
- 6.3. Temperamental factor, Negative affect will have direct positive impact up on Obsessive Compulsive Symptoms.
- 6.4. Difficulties in Emotion Regulation will have direct positive impact up on Obsessive Compulsive Symptoms.

**Path model for Depression the following hypotheses were proposed.**

7. The effect of family environment and temperament on Depression will be mediated by Difficulties in Emotion Regulation
  - 7.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment will have direct negative impact Depression.
  - 7.2. Temperamental factors such as effortful control, surgency and affiliativeness will have direct negative impact up on Depression.
  - 7.3. Temperamental factor, Negative affect will have direct positive impact up on Depression.
  - 7.4. Difficulties in Emotion Regulation will have direct positive impact up on Depression.

## **METHOD**

### **Participants of the Study**

The Sample for the study was selected from educational institutions mainly from the Middle, Middle East and Middle West part of Kerala. Adolescent girls studying in 8<sup>th</sup> standard to plus two classes were taken for study. Age range between 13-17 years was included in the present study. The sampling was done using stratified random sampling technique.

### **Measures Used**

- 1) Difficulties in Emotion Regulation Questionnaire (DERS)
- 2) The Early Adolescent Temperament Questionnaire-Revised (EATQ-R)
- 3) Family Environment Scale (FES)
- 4) Revised Children's Anxiety and Depression Scale (RCADS)
- 5) Personal data sheet

### **Procedure**

Prior appointment was taken from the Principals of the schools which have been selected for the present study. An awareness programme, lasting for 40 minutes, was conducted for students about "Psychological Problems of Children and Adolescents". After the awareness programme, those students who were willing to participate in the study were provided with Questionnaires, and the purpose of the study was explained to them. Confidentiality was assured. The four questionnaires: 1) Difficulties in Emotion Regulation Questionnaire (DERS) 2) The Early Adolescent Temperament Questionnaire-Revised (EATQ-R) 3) Family Environment Scale (FES) 4) Revised Children's Anxiety and Depression Scale (RCADS) along with personal data sheet were distributed among them.

All the materials had printed information. The investigator explained the instructions clearly and read out each questions clearly, so that all the students were able to mark their responses in the respective places at the same time and with same speed. This was done in order to rectify the reading difficulties of students and also to prevent incomplete responses. Clarifications were done whenever required.

### **Statistical Techniques Used**

The following statistical techniques were used for the analysis of the data: Preliminary Analysis, Correlation analysis, and Path way analysis. Computer analysis (SPSS version 17) for the preliminary analysis and correlational analysis and AMOS was used for conducting pathway analysis.

## **TENABILITY OF THE HYPOTHESES**

Seven Major Hypotheses were formulated in the study. From the results of the research study the tenability of these Hypotheses is tested:

**The first major hypothesis states: There will be significant relationships between the variables Difficulties in Emotion Regulation, Temperament, Family Environment and Internalizing Disorders.**

**1.1 Difficulties in emotion regulation and temperament variables have got significant relation with each other.**

It was found that temperament Effortful Control has got significant negative relation with emotion regulation difficulties. Temperament factors such as Negative Affect and Affiliativeness have got significant positive relation with Difficulties in emotion regulation. Surgency has got positive relation with Difficulties in Emotion Regulation, but the relation was not statistically significant. Thus the hypothesis is confirmed, except for Surgency.

**1.2. There will be significant relation between Difficulties in Emotion Regulation and dimensions of family environment.**

Family Environment variables such as Relationship Dimension, Personal Growth Dimension and System maintenance Dimension all shows significant negative relation with Difficulties in Emotion Regulation. Thus the second hypothesis is established.

**1.3. There will be significant relation between Difficulties in Emotion Regulation and different types of Internalizing disorders.**

Difficulties in Emotion Regulation in the current study show statistically significant positive relation with all the different types of Internalizing Symptoms/disorders, such as Social Phobia, Symptoms of panic anxiety (Panic Disorder, Separation Anxiety, Generalized Anxiety, and Depression. Thus the third hypothesis is also established.

**1.4. There will be significant relation between temperamental factors and dimensions of family environment.**

Relationship Dimension of Family environment shows statistically significant positive relation with temperament factors such as Effortful Control and Affiliativeness and significant negative relation with Surgency and Negative Affect. Thus the fourth hypothesis is accepted

**1.5. There will be significant relation between temperamental factors and different types of internalizing disorders.**

Temperament Effortful Control has got statistically significant negative relation with Social Phobia, Panic Symptoms, Generalized anxiety and Obsessive Compulsive Symptoms and significant positive relation with Separation Anxiety, and Depression. Surgency has got Significantly high negative relation with Social Phobia, and Separation Anxiety and statistically insignificant positive relation with Panic Symptoms. With Generalized anxiety and Obsessive Compulsive Symptoms the relation was found to be positive but not statistically significant. Negative Affect has got significantly high positive relation with all the internalizing symptoms. Thus hypothesis is established except for Surgency.

**1.6. There will be significant relation between dimensions of family environment and different types of internalizing disorders.**

Relationship Dimension of Family Environment shows significant negative relation with all the internalizing symptoms. For generalized anxiety the relation was established but not, statistically significant. Personal Growth Dimension of Family Environment has got significant negative relation with all internalizing symptoms, but for generalized anxiety the relation was not significant. System Maintenance Dimension of family has got Significant negative relation with Social Phobia, Separation anxiety, and Obsessive Compulsive symptoms. The negative relation with panic anxiety symptoms and positive relation with Generalized anxiety were not statistically significant. Thus the hypothesis is partially accepted

From the models the established hypotheses were

**Path model for Social Phobia**

2. Difficulties in Emotion Regulation fully mediate the relation between Personal growth dimension, system maintenance dimensions of family environment and Social Phobia. All other variables were only partially mediated by Difficulties in Emotion Regulation.
  - 2.1. In the model for Social Phobia, Relationship dimension, and Personal growth dimension of family environment have got direct negative impact upon social phobia. And system maintenance dimensions have got positive impact on Social Phobia.
  - 2.2. Temperamental factors such as effortful control and surgency have got direct negative impact on Social phobia, but the impact exerted by affiliativeness was found to be positive.
  - 2.3. Temperamental factor, Negative affect has got direct positive impact up on social Phobia.
  - 2.4. Emotion dysregulation will have direct positive impact up on social phobia.

Thus the hypotheses were partially established.

**Path model for Panic Disorder**

3. Difficulties in Emotion Regulation fully mediate the relation between Personal growth dimension, System maintenance dimensions of family environment and Panic Disorder. All other variables were only partially mediated by Difficulties in Emotion Regulation.
  - 3.1. In the model for Panic Disorder, Relationship dimension, and Personal growth dimension of family environment have got direct negative impact upon Panic Disorder and system maintenance dimensions has got positive impact on Panic Disorder.

- 3.2. Temperamental factors such as effortful control and surgency have got direct negative impact on Temperamental factors such as effortful control and surgency have got direct negative impact on Panic Disorder, but affiliativeness exerts a positive impact on Panic Disorder.
- 3.3. Temperamental factor, Negative affect has got direct positive impact on Panic Disorder.
- 3.4. Emotion dysregulation has got direct positive impact up on Panic Disorder.

Thus the hypotheses were partially established.

Path model for Separation Anxiety the following hypotheses were proposed.

4. The relationship between all the family environment variables and Separation anxiety were fully mediated by Difficulties in Emotion Regulation. But the relationship between all the temperament variables and Separation Anxiety were only partially mediated by Emotion regulation difficulties.
  - 4.1. Relationship dimension, and System maintenance dimensions of Family Environment have got direct positive impact on Separation Anxiety. Personal growth dimension has got direct negative impact on Separation Anxiety. Thus the hypotheses only partially established.
  - 4.2. Temperamental factors such as effortful control and surgency show direct negative impact on Separation Anxiety. Affiliativeness shows a direct positive impact on Separation Anxiety.
  - 4.3. Temperamental factor, Negative affect exerts a direct positive impact on Separation Anxiety.
  - 4.4. Emotion dysregulation has shown a direct positive impact up on Separation Anxiety.

Thus the Hypotheses were partially established.

### **Path model for Generalized Anxiety**

5. The relationship between Personal growth dimension of family environment, temperament Surgency and Generalized Anxiety was found to fully mediate by emotion regulation difficulties. The relation between generalize Anxiety and all other variables were only partially mediated by Difficulties in Emotion Regulation.
- 5.1. Relationship dimension, and System maintenance dimensions of family environment shows a direct negative impact on Generalized Anxiety .Personal growth dimension has got direct positive impact on Generalized Anxiety
- 5.2. Temperament factors such as Effortful control and surgency exerts direct negative impact on Separation Anxiety. Affiliativeness shows a direct positive impact on Generalized Anxiety.
- 5.3. Negative affect has got significant direct positive impact on Generalized Anxiety.
- 5.4. Emotion regulation difficulties show direct positive impact up on Generalized Anxiety.

Hypotheses proposed were partially accepted based on the above findings.

### **Path model for Obsessive Compulsive Symptoms**

6. Difficulties in Emotion Regulation fully mediate the relation between Personal growth dimension, system maintenance dimensions of family environment and Obsessive Compulsive Symptoms.. All other variables were only partially mediated by Difficulties in Emotion Regulation
- 6.1. Relationship dimension has got significant direct negative impact on Obsessive Compulsive Symptoms .Personal growth dimension and System maintenance dimensions of family environment shows direct positive impact on Obsessive Compulsive Symptoms.

- 6.2. Temperament factors such as Effortful control and surgency exerts direct negative impact on Obsessive Compulsive Symptoms. Affiliativeness shows a direct positive impact on Obsessive Compulsive Symptoms.
- 6.3. Temperamental factor, Negative affect has got direct positive impact up on Obsessive Compulsive Symptoms.
- 6.4. Emotion regulation difficulties have got direct positive impact up on Obsessive Compulsive Symptoms.

Thus the hypotheses were partially accepted.

### **Path model for Depression**

7. The relationship between family environment variable System maintenance dimension temperament surgency and Depression was found to be fully mediated by Emotion regulation difficulties. All other variables and its relation to Depression were only partially mediated by emotion regulation difficulties.
- 7.1. Relationship dimension, personal growth dimension and system maintenance dimensions of family environment have direct negative impact on Depression
- 7.2. Temperament factors such as Effortful control and surgency exerts direct negative impact on Depressive Symptoms. Affiliativeness shows a direct positive impact on Depression.
- 7.3. Temperamental factor, Negative affect shows direct positive impact on Depression.
- 7.4. Emotion dysregulation has got direct positive impact on Depression.

Thus the hypotheses were partially accepted.



## **MAJOR FINDINGS OF THE STUDY**

### **The current study provides the following major findings:**

- 1) Difficulties in Emotion Regulation and Temperament are strongly related to one another.
- 2) As temperamental factor effortful control was effectively functioning in an adolescent the chances that emotion regulation difficulties will be less for such individuals.
- 3) Temperamental surgency/extraversion has got very weak positive relation with difficulties in emotion regulation in current sample of adolescent girls, may that the cultural factors do not provide many opportunities for girls to be more assertive and extraverted, this factor was found to be less significant.
- 4) Difficulties in emotion regulation are promoted by temperamental predisposition called negative affect.
- 5) Temperament Affiliativeness or the inherent need to relate to others in girls in the current sample, found to promote emotion regulation difficulties.
- 6) Family Environment factors in general shows strong negative relation to Emotion Regulation Difficulties.
- 7) Relationship dimension which has been composed of cohesion, expressiveness and openly expressed conflict has got notable negative relation with each other. The family which, parents provide less stressful relationship factors may foster emotion regulation in adolescent girls.
- 8) Emotion regulation difficulties will be prominent when the factors that provide personal growth of an individual is lacking in the family environment, such as independence, moral religious and cultural orientation which enhances the personal and social outlook of an individual.

- 9) Organization and control exerted by the family as a whole including parents and siblings of the adolescent child and imparting a system of functioning is an important element for developing emotion regulation skills.
- 10) Family environment and Temperament exert strong relation to each other.
- 11) Relationship dimension of family environment which is concerned with the personal and interpersonal relations inside the family enhances the development and expression of temperamental factor effortful control.
- 12) Surgency and relationship dimension, both shows high negative relation to each other, with an inherent meaning that the high relationship oriented factors do not promote surgency or extraversion in teenage girls.
- 13) High relationship oriented family environment reduce the chances of developing predisposition such as negative affect.
- 14) Family rich in relationship oriented functioning foster affiliativeness in developing children.
- 15) Family environment with better Personal growth elements are positively related to the experience of Effortful Control in adolescent girls.
- 16) Surgency has got better expression when families provided with an environment with more independence, achievement orientation and better orientation towards religious, moral and cultural factors.
- 17) Personal growth dimension when not effective in one family, the chances for developing negative affect is more pronounced.
- 18) More independence, achievement orientation etc. provide more expression of the temperament affiliativeness in an individual.
- 19) Organization and control which are part of system maintenance dimension of family is positively related to the proper development of temperamental factors effortful control and affiliativeness.

- 20) Temperament Surgency not much related to the system maintenance dimensions such as organization and control.
- 21) High negative affect is associated with lower systems in the family.
- 22) Emotion regulation difficulties show a strong positive relation to all types of internalizing disorders/symptoms.
- 23) Temperament Effortful Control shows strong negative relation to symptoms of Social Phobia Compulsive anxiety. But shows a high positive relation to Depression.
- 24) Temperament Surgency and symptoms of Social Phobia, Panic anxiety, Separation Anxiety and depression are negatively related where as generalized anxiety and obsessive compulsive symptoms are positively related.
- 25) Negative affect has got strong positive relation with all the types of internalizing symptoms.
- 26) Affiliativeness temperament also has got positive relation with all the internalizing symptoms in the current sample.
- 27) Relationship dimension of family environment has got strong negative relation with all internalizing symptoms.
- 28) Personal growth dimension of family environment has got strong negative relation with all internalizing symptoms.
- 29) System maintenance dimension has got strong negative relation with all internalizing symptoms, except for Separation anxiety.
- 30) In the accepted model for Social Phobia, Relationship Dimension, Personal Growth Dimension and System Maintenance dimensions of Family Environment have negative impact on Social Phobic Symptoms.

- 31) **Model for Social phobia** also indicated negative impact of Temperamental factors such as Effortful Control and Surgency on Social Phobic Symptoms. So low EC and SU contribute directly and in the presence of and in the presence Difficulties in Emotion Regulation to Social Phobic symptoms.
- 32) Negative Affect and Affiliativeness in the current study showed significant positive impact on Social Phobic symptoms, indicates that the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in anxiety /social phobic symptoms.
- 33) Difficulties in Emotion regulation fully mediated the relation Personal growth and System maintenance dimensions to Social Phobic symptoms and for all other factors such as Relationship dimension of family environment and all the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS.
- 34) **Model for Panic Symptoms** shows that Difficulties in Emotion regulation fully mediated the relation Personal growth and System maintenance dimensions of family environment.
- 35) Relationship dimension of family environment has got both direct and indirect effect on Social Phobic symptoms. Compared to all other factors in the current model Relationship Dimension has got highest independent impact on Panic Symptoms
- 36) All the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through Difficulties in Emotion Regulation to anxiety such as panic symptoms.
- 37) **Model for Separation Anxiety** indicated that Difficulties in Emotion Regulation (DERS) acts as a mediator for the paths between family environment variables- such as , Relationship Dimension, Personal growth and System maintenance dimensions- to Separation anxiety, which indicates

a defective family environment influence Separation Anxiety through Emotion regulation Difficulties.

- 38) All the Temperamental Factors such as Effortful Control, Surgency, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS to Separation Anxiety.
- 39) Effortful Control and Surgency has got positive effect on Separation Anxiety which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation. Among all the variables Surgency has got greatest effect on Separation Anxiety
- 40) High positive effect for variables such as Negative Affect and Affiliativeness on separation Anxiety symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS Separation anxiety.
- 41) Model for Generalized Anxiety shows that Difficulties in emotion Regulation (DERS) fully mediates the path between Personal growth dimension of family environment which indicates lack of independence, and achievement orientation, and also inadequate influence Generalized anxiety through Emotion regulation Difficulties.
- 42) Relationship dimension and system maintenance dimensions of family environment have got both direct and indirect effect on Generalized anxiety symptoms. Among all the variables Relationship Dimension has got high negative effect on generalized anxiety
- 43) Temperamental Factors such as Effortful Control, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS.
- 44) Effortful Control and Surgency has got positive effect on Generalized anxiety symptoms which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation.

- 45) Positive effect for variables such as Negative Affect and Affiliativeness on Generalized anxiety symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in Generalized anxiety.
- 46) **Model For Obsessive Compulsive Anxiety**, DERS fully mediates the path between Personal growth dimension an System maintenance dimensions of family environment which indicates a defective family environment influence Obsessive Compulsive symptoms in girls through Emotion regulation Difficulties.
- 47) Relationship dimension of family environment has got both direct and indirect effect on Obsessive Compulsive symptoms.
- 48) Temperamental Factors such as Effortful Control, Negative Affect and Affiliativeness have got both direct effect and indirect effect through DERS on Obsessive Compulsive symptoms.
- 49) The effect of Surgency on Obsessive Compulsive anxiety in the current model is fully mediated by DERS.
- 50) Effortful Control and Surgency has got positive effect on Obsessive Compulsive anxiety symptoms which can be interpreted as low EC and SU contribute more to internalizing symptoms and in the presence Difficulties in Emotion Regulation.
- 51) Positive effect for variables such as Negative Affect and Affiliativeness on Generalized anxiety symptoms in girls indicate that, the predisposed negative affect and increased need for affiliativeness independently and in presence of DERS results in Obsessive Compulsive anxiety.
- 52) Among all the variables Negative affect has got greatest effect on obsessive compulsive anxiety.
- 53) **Model for Depression**, Difficulties in Emotion regulation (DERS) fully mediates the path between System Maintenance dimension of family

environment and temperamental factors Surgency and Affiliativeness internalizing symptom Depression.

- 54) Greatest negative impact was exerted by the path from Relationship Dimension to Depression.
- 55) Greatest positive impact was exerted by the path from Negative affect.
- 56) All the internalizing symptoms have got unique influence by the factors.
- 57) Difficulties in Emotion regulation as mediator and risk factor is established in the study which can be used for later management of the adolescents who require management for internalizing problems.

#### **MAJOR IMPLICATIONS OF THE STUDY**

The present study was designed to understand and find out the relations between family environment factors, Temperamental factors, difficulties in Emotion Regulation, and Internalizing disorders. Although a large literature exists linking family environment factors, temperament, and internalizing disorders such as anxiety and depression, the current research has limited the scope and examined the mechanism by which the variables relate to anxiety and depression. The .current study was one of the first attempts to investigate the effects of these variables as an integrated system. The present study identified difficulties in emotion regulation as one way in which temperament and family environment variables influence different types of internalizing disorders.

The results from our study have implications for conceptual models for internalizing symptoms /disorders. This also suggested consideration of multiple variables is necessary to fully understand the development and maintenance of anxiety and depression. Findings also support the notion that difficulties in emotion regulation is an important factor in psychopathology.

Thus more clinical implications are noted as these conceptual formulations derived from the current study can be used in the prevention and intervention from an earlier stage of life. The family factors identified indicates the role of parents and

their role in prevention and management attempts. Temperamental predispositions are also very important in the future refinement of treatment for anxiety and depressive disorders.

The study findings were also helpful for researchers to explain the adaptive and harmful effects of emotion regulation. This has also implications for parents and teachers in teaching emotion regulation or promoting emotion regulation strategies aimed at helping adolescent population, especially teenage girls.

### **LIMITATIONS OF THE PRESENT STUDY AND SUGGESTIONS FOR FUTURE RESEARCH**

The current study supported the notion that family environment, and temperament in combination with emotion regulation difficulties follows distinct paths for different internalizing disorders. As we all know that prevention is better than cure, the current study is considered as an initial support for the early detection and management of symptoms in a non clinical sample. Future studies can incorporate more predictors of Emotion regulation such as parenting styles, disciplinary methods, coping skills of individuals etc. in order to get more understanding about the underlining mechanisms. Also longitudinal studies in this area are more recommended by future researches. Future studies can incorporate the participation of parents and also can use comparison groups. A similar study can be conducted on adolescent boys to understand the mechanism through which these variables operate in them. Our sample was drawn from a non –clinical population. The results can be only speculatively generalized to clinical population. A similar study in the clinical sample is also advised.



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# **APPENDIX**