9-17-2013

Are your parents to blame? Disentangling temperament, parenting style, and schemas in the development of depressive symptoms

Jenny DeLorme

ARE YOUR PARENTS TO BLAME? DISENTANGLING TEMPERAMENT, PARENTING STYLE, AND SCHEMAS IN THE DEVELOPMENT OF DEPRESSIVE SYMPTOMS

by

Jenny L. DeLorme

A Thesis

Submitted to the

Department of Psychology College of Science and Math

In partial fulfillment of the requirement

For the degree of

Master of Arts in Clinical Mental Health Counseling

at

Rowan University

Thesis Chair: Jim A. Haugh, Ph.D

Dedication

I would like to dedicate this manuscript to all of my passed family members. I hope that you have all found peace and acceptance

Acknowledgements

I would like to express my sincere appreciation to Dr. Haugh and Dr. Dinzeo for their guidance in the research process. I would also like to express my appreciation for my fellow classmates in the Clinical Mental Health Counseling program of 2013 for their never-ending support and encouragement along the way.

Abstract

Jenny L. DeLorme
ARE YOUR PARENTS TO BLAME? DISENTANGLING TEMPERAMENT, PARENTING STYLE, AND SCHEMAS IN THE DEVELOPMENT OF DEPRESSIVE SYMPTOMS
2012/2013
Jim A.Haugh, Ph. D
Master of Arts in Clinical Mental Health Counseling

This study examined Jeffrey Young's Schema Theory (1990; 2003) and its influence in understanding the etiological factors related to depressive symptoms. It was hypothesized that there would be significant interactions between parenting and temperament traits. It was also hypothesized that The Defectiveness and Insufficient Self Control EMSs would mediate the relationship between the significant parenting/temperament interactions and depressive symptoms. Participants were administered the Young Schema Questionnaire Short form-3 to measure the endorsement of schemas; the Beck Depression Inventory to measure symptoms of depression; the Young Parenting Inventory to measure perceived parenting; and the Adult Temperament Questionnaire to measure temperament traits. Hierarchical linear regressions were conducted to determine interaction effects and mediation. It was found that two temperament and parenting traits interacted in the prediction of EMS and mediation was found for one of these interactions.

Table of Contents

List of Figures

List of Tables

Chapter 1

Introduction

Nearly one in ten adults experience symptoms of depression at some period during their lives (Center for Disease Control and Prevention [CDC], 2010). For some individuals, symptoms of sadness, appetite changes, sleep disturbances, and fatigue may occur for a discrete period of time, while others may experience more chronic and pervasive symptomology over the course of their lifetime. One of the reasons that depression may be more chronic and recurrent is that some people have persistent, maladaptive schemas that underlie their depressive disorders (Beck, Rush, Shaw, & Emery, 1979). Schemas are a central component of Cognitive Theory (Beck, 1976) and they represent the underlying structures of how an individual processes information. Theory suggests that faulty processing of information makes an individual more likely to develop patterns of negative thinking and distorted thoughts that make them vulnerable to depressive symptoms. With a greater understanding of how an individual processes information, theories have emerged that attempt to explain the etiology and maintenance of disorders during which depressive symptoms are likely (Beck, 1976).

In order to more clearly specify how these schemas influence psychopathology, Young (1990) developed Schema Theory which expands upon Cognitive Theory (Beck, 1976) by looking more closely at what constitutes a schema. This theory proposes that we are all born with a set of essential emotional needs that must be met in order to develop into a fully functioning individual. If these needs are not met in early childhood, maladaptive schemas may develop and possibly lead to future pathology. Young's theory (1990) suggests that one's schemas are made up of thoughts, memories, emotions, and

physical sensations. He refers to them as early maladaptive schemas, or EMSs. EMSs are usually stable and dysfunctional throughout a person's lifetime (Riso, Fromann, et. al., 2006) and affect how new life experiences are interpreted. The presence of EMSs often results in behaviors that facilitate the continuation of these beliefs (Young, Klosko, & Weishaar, 2003). For example, if a person grows up in a household where there is no one to nurture or take care of his or her basic needs, that person may come to believe that no one will ever be able to provide the support necessary to get his or her needs met. While this may be adaptive and functional for that specific situation and time, an individual may carry this belief into the future and expect that no one will ever be available to fulfill his or her basic needs. This could result in the individual picking a partner who is not emotionally or physically available or could result in the avoidance of intimate relationships all together. The belief that there is no one to take care of his or her emotional needs is both reinforced and maintained.

Young, Klosko, and Weishaar (2003) identified a total of 18 early maladaptive schemas that explain how an individual may think and feel about themselves and the world they live in (see Appendix A for complete list of schemas and their definitions).Young further categorized these 18 EMSs into 5 higher order domains however, research has not supported the validity of the higher order factors. Rather, it has shown strong support for the validity of the individual EMSs (e.g., Schmidt, Joiner, Young, & Telch, 1995; Lachenal-Chevallet, Cottraux, Bouvard, & Martin, 2006; Welburn, Corstine, Dagg, Pontefract, & Jordan, 2002).

While it is important to understand the definition of EMSs, it is also important to consider and understand how they develop. Young, Klosko, & Weishaar (2003)

hypothesized that EMSs develop out of interactions with a child's innate temperament and how they were parented. In a review of the temperament literature, Zetner and Bates' (2008) define temperament as the differences that each individual is biologically born with. This includes how an individual responds both emotionally and physically to his or her environment and how well he/she can regulate this reactivity within oneself. Temperament traits are often viewed as the building blocks of how an individual's personality will develop later in life. This suggests that one's early temperament is enduring and may be predictive of future behavioral outcomes (Zetner & Bates, 2008; Rothbart, 2011).

With this in mind, researchers have developed instruments that allow us to measure an individual's temperament. Among the most theoretically based instruments is the Adult Temperament Questionnaire (Rothbart & Derryberry, 1994). This measure examines four main components of temperament including Effortful Control, characterized by the ability to inhibit impulsive responses and engage in attention-focused problem solving; Extraversion/Surgency, characterized by positive emotions and a rapid approach toward reward; Negative Affect, characterized by either fear (distressful withdrawal) or anger/frustration (distressful approach); and finally Orienting Sensitivity, which is characterized by one's perception of others and environmental stimuli (Rothbart, 2011). A complete list of the temperament factors, along with the components that make each up are listed in Appendix B. Rothbart (2011) suggests that individuals high in Negative Affect and Orienting Sensitivity are at a greater risk for developing internalizing disorders, such as depression while those high in Effortful Control and

Extraversion/Surgency may have a protective factor against developing internalizing disorders.

The fact that temperament is related to internalizing disorders suggests that it may also be related to early maladaptive schemas, as EMS' have also been related to internalizing disorders (Carr & Francis, 2010; Harris & Curtin, 2002; Sheffield, Waller, Emanuelli, Murray, & Meyer, 2006; Atalay, et al., 2008). Furthermore, additional research suggests that temperament may interact with parenting (Kiff, Lengua, & Bush, 2011; Manfredi et. al., 2011). Literature examining the relationship between temperament and depression suggests that individuals who score high on traits of inhibition and fearfulness rate higher in scores of depression as measured by the Hamilton Depression Scale (Celikel, Kose, Cumurcu, & Erkorkmaz, 2009; Hansenne, Reggers, Pinto, Kjiri, Ajamier, & Anseau, 1999), the Center for Epidemiological Studies for Depression Scale (Gruzca, Pryzbeck, Spitznagel, & Cloninger, 2003), and the Beck Depression Inventory (Elovaino, Kivimaki, & Puttonen, 2004; Sato, Hirano, Kusonoki, Goto, Sakado, & Uehara, 2001; Celikel, et. al., 2009). Temperament has been studied extensively with regard to mood disorders in both clinical (Sato, et. al., 2001; Celikel, et. al., 2009; Hansenne, et. al., 1999) and non-clinical samples (Gruzca, et. al., 2003; Elovaino, et. al., 2004; Cloninger, Bayon, & Svrakic, 1998). Gruzca and colleagues (2003) found that Harm Avoidance had the greatest association with depression. Moreover, reward dependence had a significant, but weaker negative correlation in a sample of community volunteers. Similarly, Hansenne, et al. (1999) found that depressed patients exhibited significantly higher scores on Harm Avoidance compared to the healthy control group. These findings support temperament factors as contributing

vulnerability to depressive disorders and symptoms, however, it does not provide insight into how temperament works and interacts with other environmental factors.

Despite the hypothesized importance of temperament in the development of schemas, there has been only one study that examined the relationship between temperament, EMSs, and depression (Halvorsen, Wang, Richter, Myrland, Pedersen, Waterloo, & Eisemann 2009). Halvorsen, et al. (2009), studied a sample of currently depressed, previously depressed, and never depressed individuals and found that the three groups differed significantly in regards to temperament and character dimensions. Currently depressed individuals reported significantly higher scores on Harm Avoidance and Self Transcendence and significantly lower scores on Reward Dependence, Persistence, Self-directedness, and Cooperativeness than did previously depressed and never depressed individuals. However, it was also found that previously depressed individuals scored significantly higher and lower (respectively) compared to the never depressed group. This suggests that while currently depressed individuals had the most elevated schemas and greater current symptomology, those individuals who were previously depressed still endorse those schemas and are at risk for developing depressive symptoms again. The researchers found that higher Harm Avoidance and lower Self-directedness scores were associated with higher EMS scores across the domains, suggesting that EMSs, depressive symptoms, and temperament may have a unique relationship.

In addition to the importance that temperament has on EMS development, Young, Klosko, and Weishaar (2003) also suggested that the relationship a child has with his or her parent can provide valuable information about the origins of an individual's EMS.

Young identifies parenting style as a main contributing factor in determining whether an individual gets his or her emotional needs met. He suggests that how a person is parented may contribute to the development of schemas or conversely, act as protection from them. This explains why some individuals do not develop schemas (and later pathology) and why others do (Young, Klosko, &Weishaar, 2003).

In attempt to validate Young's theory, some researchers have examined the extent to which parenting influences the development of EMSs. Young's theory suggests that specificity exists between parenting style and the origin of specific EMSs. In accordance with this hypothesis, Young developed a measure called the Young Parenting Inventory (YPI; Young, 1999) that assesses 18 parenting styles which are hypothesized to correspond to and represent the origin of that specific EMSs (Young, Klosko, & Weishaar, 2003). For example, if a person reports that their parents were abusive towards them as a child, the individual may develop a mistrust/abuse schema.

Using the Young Parenting Inventory, Sheffield et al (2006) found that negative parenting styles (including pessimistic/fearful mothers, punitive fathers, and controlling mothers) were associated with the emergence of the emotional deprivation, mistrust/abuse, and subjugation EMSs. Despite the significant relationships found between EMSs and parenting styles in this study, there was little specificity in the correspondence of relationships between EMS and parenting styles. These findings are contrary to Young's theory (2003) which states that specific parenting factors relate to the development of specific schemas, making replication of these findings necessary.

To date, Sheffield et. al., (2006) was the only study to directly test the theory that specific parenting styles result in specific EMSs using the YPI. Research has, however,

supported a non-specific association between parenting and the development of EMSs using the Parental Bonding Instrument (PBI: Harris & Curtin, 2002; McGinn, Cukor, & Sanderson, 2005; Carr & Francis, 2010). Findings of these studies suggest that individuals who perceive their parents to have provided low care and high overprotection reported higher scores on schemas. Higher scores on these two dimensions have also been associated with higher scores on measures of depressive symptoms (Shah & Waller, 2000).

In attempt to further explore Young's theory, some researchers have examined the combined relationship between parenting, early maladaptive schemas, and depressive symptoms in both clinical (Shah & Waller, 2000) and non-clinical samples (Sheffield, et al., 2006; Harris & Curtin, 2002; McGinn, et. al., 2005). In accordance with Young's theory, findings suggest that parenting is a significant contributor to the development of early maladaptive schemas and subsequent depressive symptomology (Sheffield, et al., 2006; Harris & Curtin, 2002; McGinn, Cukor, & Sanderson, 2005; Shah & Waller, 2000.)

Young, Klosko, and Weishaar (2003) hypothesized that EMSs, and the behaviors we engage in to cope with them, may lead to chronic Axis I disorders, such as chronic depression. In order to assess the degree to which EMS can predict pathological symptoms, a great deal of research has been conducted to look at the relationships between EMSs and depressive symptoms. While some research uses the total YSQ score (the sum of all subscale scores) or the domain scores as representing an individual's schemas (Glaser, Campbell, 2002), a majority of the literature examines how the schema subscales *independently* predict depressive symptoms. The literature shows strong

support for individual EMSs predicting depressive symptoms with EMSs accounting for 33% to 63% of the variance in depressive symptoms, as measured using various instruments (e.g., Glaser et. al., 2002; Riso, Maddux, & Santorelli, 2007; Harris & Curtin, 2002; Oei & Baranoff, 2007). In a meta-analyses performed by Hawke and Provencher (2011) the strongest predictors of depression were the Defectiveness (DF-S) and Insufficient Self Control schemas (ISC-S). As a result of these findings, only these two schemata will be the EMSs of focus in this study.

Current Study

Results from previous research support components of Young's (2003) theory. For example, parenting style and temperament have shown to be significant, but independent, contributors to EMS development. The relationship between temperament and parenting has also contributed to what we know about the role that parenting plays in development. Finally, EMSs, parenting, and temperament have shown to independently predict depressive symptoms. Despite the importance of these findings, research has yet to examine Young's (2003) model in its entirety. Young (2003) suggests that EMSs develop out of specific *interactions* between parenting style and temperament. Currently, the role that the interaction between temperament and parenting has on EMS development and subsequent depressive symptomology is not known. The primary goal of the current study is to evaluate this component of Young's Schema Theory. More specifically, this study will examine the interaction between the Defectiveness and Insufficient Self Control parenting styles (DF-P and ISC-P, *respectively*) with Rothbart's (1994) four temperament factors in the prediction of the corresponding EMSs and subsequent depressive symptomology. These two EMSs were chosen because they have

shown to be the most predictive of depressive symptoms out of all of the EMSs in a previous meta-analysis (Hawke & Provencher, 2011).

Goals of current study

1) Test the hypothesized theoretical interaction between temperament and parenting in the prediction of EMSs.
2) Test how the DF-S and ISC-S influence the relationship between temperament/parenting interactions and depressive symptoms.

Hypotheses of Current Study

1) There will be a significant interaction between the DF-P and the four temperament traits in the prediction of the DF-S.
2) There will be a significant interaction between the ISC-P style and the four temperament traits in the prediction of the ISC-S.
3) The Defectiveness and Insufficient Self Control EMSs will mediate the relationship between the significant parenting/temperament interactions and depressive symptoms.

Chapter 2

Methodology

Participants

Participants were 226 undergraduates enrolled in Introduction to Psychology classes at a mid-sized University in the Northeast United States. Initially, 266 participants began the study; however, 40 participant's data were excluded from analyses due to missing data. The mean age of participants was 20 years old with ranges between 18 to 30 years old. The sample consisted mostly of participants who identified as White/Non-Hispanic (62%), who were in their freshman (40%) or sophomore (30%) year of college, and who were single at the time they completed the study. A majority of participants identified that their mother (70%) was their primary caregiver during their childhood and adolescence, (see Table 1 for complete demographic information).

Table 1.*Sample Demographics and Characteristics*

Characteristic	Percent	N
Class rank		
Freshman	40%	(90)
Sophomore	30%	(67)
Junior	20%	(45)
Senior	10%	(24)
Ethnicity		
American Indian	0.5%	(1)
Asian	4%	(9)
Black	11%	(25)
White/Hispanic	20%	(45)
White/Non-Hispanic	62%	(139)
Other	3%	(7)
Marital Status		
Single	65%	(146)
In committed relationship	33%	(75)
Engaged	1%	(3)
Married	0.5%	(1)
Divorced	0.5%	(1)
Caregiver		
Mother	70%	(155)
Father	23%	(51)
Aunt/Uncle	0.5%	(1)
Grandparent	1%	(3)
Other	6%	(13)
Age	*M*= 20	

Measures

Young Schema Questionnaire-Short Form-3: (YSQ-SF-3; Young and Brown, 1990). The YSQ-SF-3 is a 90-item self-report questionnaire that measures the existence of 18 early maladaptive schemas. Questions are scored on a 6-point Likert scale from 1 '*completely untrue of me'* to 6 '*describes me perfectly.*' The YSQ-SF is a briefer version of the Young Schema Questionnaire-Long Form (YSQ-LF; Young, 1990) which consists of 205 questions. Items for each schema are summed and then divided by the total number of items for that schema to yield the scaled score. For the current study, only the Defectiveness and Insufficient Self Control scales were used in the analyses, as these EMSs were the strongest predictors of depression in a meta-analysis conducted by Hawke and Provencher (2011). The YSQ-SF has maintained the validity and reliability that was present in the longer form of the YSQ-LF (Stopa, et. al., 2001). The YSQ-SF shows high internal consistency across both clinical and non-clinical samples with alpha coefficient's above 0.80 for each group (Oei & Baranoff, 2007 and Baranoff, Oei, Cho, & Kwon, 2006). Many studies have further demonstrated the predictive validity of early maladaptive schemas in the occurrence of depression (e.g., Glaser, et. al., 2002; Halvorsen, et al., 2009; Harris & Curtin, 2002; Oei & Baranoff, 2007).

Adult Temperament Questionnaire-Short Form (ATQ-SF: Rothbart, 1994).The ATQ-SF was used to measure participants' temperament. The ATQ-SF is a 77-item questionnaire that measures a total of 13 temperament subscales that can be organized into four higher order factors. For the purpose of the current study, and to be consistent with the use of this measure in prior research, only the four higher order temperament traits were examined. Items are scored on a 7-point Likert scale from 1 *'extremely untrue of you'* to 7 *'extremely true of you.'* Items for each trait are then added and divided by

the total number of items to yield the scaled score. A few items are reversed scored and are labeled as such in the scoring manual. Alpha's for the four higher order factors range from .75 to .85 suggesting adequate to good reliability. The subscales also demonstrate adequate to good reliability with alphas ranging from .60 to .79. Additionally, the ATQ-SF has shown excellent internal consistency with the longer form of this measure (ATQ-LF) with alphas ranging from .85 to .96 (Evans & Rothbart, 2007).

Beck Depression Inventory-Second Edition **(**BDI-II; Beck, Steer, & Brown, 1996). The BDI-II was used to measure the presence of depressive symptoms. The BDI is a self-report measure consisting of 21 items measuring the degree to which depressive symptoms have been experienced by the participant in the past two weeks. The items were rated on a four-point Likert scale from 0 '*not at all'* to 3 '*severely.*' The scores from each item were be summed together to produce a total score that could range from 0 to 63. Scores ranging between 0 and 13 signify minimal depressive symptoms; 14 to 19 are considered mild; 20 to 28 are moderate; and scores between 29 and 63 represent a severe level of depressive symptomology. The BDI-II has been demonstrated as both reliable and valid (BDI-II; Beck, Steer, & Brown, 1999). Coefficient alphas in both clinical and non-clinical samples were .92 and .93 (respectively) suggesting high internal consistency for this measure (Eack & Singer, 2008).

Young Parenting Inventory (YPI: Young, 1999). The YPI is a 72-item measure of parenting styles. This measure asks participants to look at statements and rate how well each statement describes their mothers and fathers (separately) on a scale from 1 *'completely untrue'* to 6 '*describes him/her perfectly.'* Items are then summed and divided by the number of items to yield a scaled score. High scores (typically scores of 5

or 6) suggest that parenting behaviors likely influenced the development of the corresponding EMS (Young, Klosko, & Weishaar, 2003). There are a total of 18 parenting styles that correspond with each of the 18 EMS (as measured in the YSQ-SF). In accordance with the hypotheses of this study, only the Defectiveness and Insufficient Self Control parenting scores were examined. Furthermore, only the data for the individual identified as a primary caregiver data were used in calculating parenting styles. The YPI has demonstrated adequate test-retest reliability (ranging from .53 to .86) and adequate internal consistency with Cronbach alphas ranging from .53 to .89 (Sheffield, et al., 2006).

Procedure

Prior to carrying out data collection for the current study, Institutional Review Board (IRB) approval was obtained from the institution where participants were enrolled. Participants were then recruited through an online subject pool in which they chose the present study from a list of numerous studies. Upon signing up, participants were directed to a website where they completed the survey. Students were free to complete the survey at any time. Participants provided consent by typing their name in a box at the end of the informed consent page.

Upon submission, participants were directed to a debriefing page that described the intentions of the study and provided contact information for the head researcher. Due to the sensitive nature of the questions that were asked and the likelihood that participants would be asked to recollect potentially distressing memories, the contact information for the campus counseling center was also provided. All participants who completed the survey were given credit in their introductory psychology course.

Chapter 3

Results

All data analyses were conducted using SPSS 19.0 (IBM Corp., 2010). Prior to data analysis, the data were screened for missing data and random responding. There was incomplete data on 40 participant surveys so these were deleted from the dataset. A total of 226 participants' data were used in the following analyses. Additionally, temperament and parenting variables were centered prior to testing for significant interactions in the prediction of EMSs.

Descriptive Statistics

Mean scores and standard deviations for each measure are presented in Table 2. In the first set of analyses, Pearson product moment correlations were run to examine the inter-correlations amongst schema, temperament, and parenting. More specifically, correlations were run to examine the relationships among the defectiveness and insufficient self control EMSs subscales, the four temperament factors of Extraversion, Negative Affect, Effortful Control, and Orienting Sensitivity, the defectiveness and insufficient self control parenting subscales, and depressive symptoms. Results are displayed in Table 3.

Table 2.
Mean Scores on Measures

Measure	Mean	SD
ATQ		
Orienting Sensitivity	4.45	.78
Negative Affect	3.86	.68
Effortful Control	4.22	.62
Extraversion/Surgency	4.73	.74
YPI-Parent		
Defectiveness	1.51	.85
Insufficient self-control		
YSQ-SF-3		
Defectiveness	1.71	.92
Insufficient self-control	2.66	1.01

Note: ATQ: Adult Temperament Questionnaire; YPI: Young Parenting Inventory; YSQ-SF-3: Young Schema Questionnaire-Short Form-3rd edition

Examination of Table 3 indicates that 45 of the 55 correlations were statistically significant. Significant positive correlations ranged from .16 to .59. Significant negative correlations ranged from -.15 to -.45. In examining the relationships between parenting and temperament, it was found that six of the eight correlations were statistically significant. The only correlations that did not reach statistical significance were between the orienting sensitivity temperament trait and ISC-P (r=.02, p>.05) and between the extraversion temperament and DF-P (r=-.05, p>.05), however they trended in the expected directions.

In looking at the temperament and EMS relationships, seven of the eight relationships between the four temperament factors and the DF-Sand ISC-S were also statistically significant and in the expected directions. The only non significant

correlation was between the orienting sensitivity temperament and the ISC-S variables (*r*=.07, *p*>.05). The relationships between EMSs and parenting styles were also examined and it was found that both the ISC-S and DF-S were positively and significantly correlated with corresponding parenting styles. The relationship between the ISC-P the DF-S did not reach statistical significance, (*r*=.09, *p*>.*05*). In looking at all of the variables relationship to depressive symptoms, it was found that all were significant and in the expected directions.

Table 3.
Correlations between parenting, temperament, Early Maladaptive Schemas, and Depressive Symptoms

		Temperament				*Parenting*		*EMS*	
	BDI	OS	EC	NA	E/S	ISC	DF	ISC	DF
Temperament									
Orienting Sensitivity	.24**	-							
Effortful Control	-.43**	-.04	-						
Negative Affect	.51**	.25**	-.45**	-					
Extraversion	-.28**	.36**	.20**	-.30**	-				
Parenting									
ISC-Parent	.22**	.02	-.14*	.16*	-.18**	-			
Defective-Parent	.18**	.28**	-.18*	.16*	-.05	.20**	-		
Early Maladaptive Schemas									
Insufficient Control	.53**	.07	-.55**	.37**	-.21**	.23**	.13	-	
Defectiveness	.59**	.23**	-.34**	.40**	-.28**	.09	.29**	.53**	-

Note: BDI= Beck Depression Inventory total score; OS=Orienting Sensitivity; EC= Effortful Control; NA=Negative Affect; E/S= Extraversion/Surgency; ISC=Insufficient Self Control; and DF= Defectiveness
*$p<.05$, **$p<.01$

Inferential Statistics

To test the hypothesis that parenting and temperament interact to predict the ISC-S and DF-S, eight hierarchical linear regressions were conducted. For each analysis, the respective parenting and temperament variables were entered on the first step and the corresponding interactions were entered on the second step. The criterion variables were the DF-S and ISC-S, *respectively*. Results of these analyses are presented in Table 4. Two of the eight interactions that were run were statistically significant. The two interactions that significantly predicted the DF-S were the DF-P x Negative Affect interaction, F_{change} (1, 201) = 4.27, p=.040; and the DF-P x Extraversion interaction, F_{change} (1, 201) =7.35, p=.001. These interactions are depicted in Figures 1 and 2, respectively. Interactions were decomposed using "Utilities for Examining Interactions" in Microsoft Excel (Sibley, 2008). Decompositions of interactions revealed that among individuals with high defectiveness parenting, high levels of negative affect were significantly related to high levels of the defectiveness schema, t(2, 204) = 2.32, p = .021. In contrast, among individuals with low defectiveness parenting style, the relationship between negative affect and the defectiveness schema was non-significant, t(2, 204) = -.94, p = .35 (see figure 1 for visual representation of this interaction).

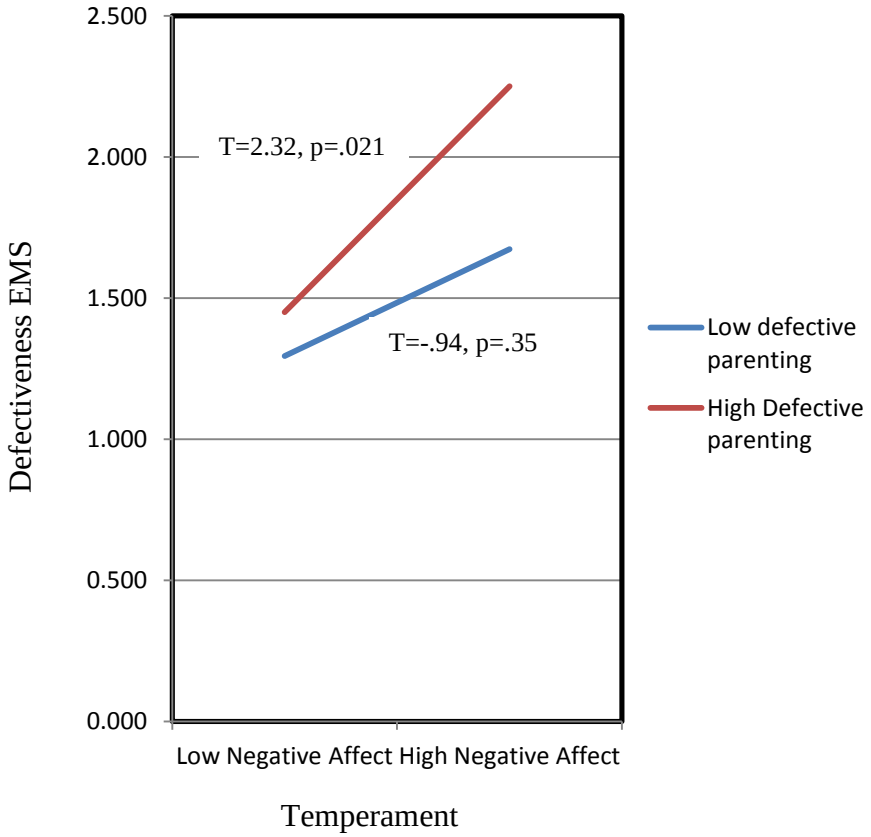

Figure 1
Interaction Effects between Defective Parenting Style and Negative Affect in the prediction of the Defectiveness EMS

Decomposition of the second interaction between parenting and extraversion revealed that among individuals with high defectiveness parenting, low levels of extraversion were significantly related to high levels of the defectiveness schema, t (2, 204) = 10.29, *p*= .000. Additionally, among individuals with low defectiveness parenting style, high levels of extraversion were significantly related to low levels of the defectiveness schema, t (2, 204) = 4.77, *p* =.000 (see figure 2 for visual representation of this interaction).

Main effects were examined for the interactions that did not reach statistical significance in relationship to the DF-S. It was found that the main effects for the temperament traits of orienting sensitivity and effortful control were statistically significant suggesting that they contributed significantly to the development of the DF-S (see Table 5 for main effect statistics). None of the interaction terms were significant predictors of the ISC-S. However, the main effects were statistically significant in each analysis. Main effects suggest that temperament and parenting factors significantly contribute to the development of the ISC-S (see Table 6 for main effect statistics).

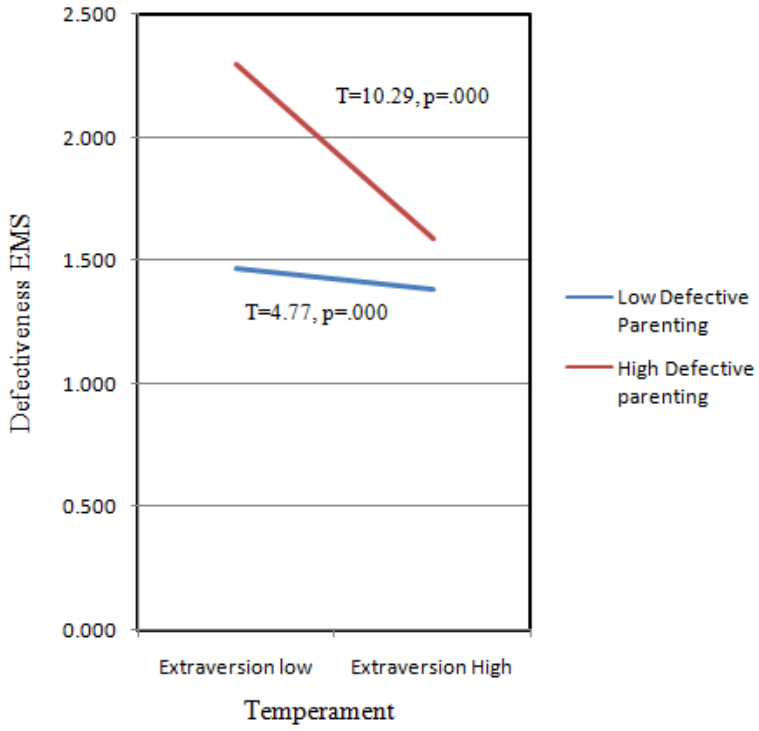

Figure 2
Interaction Effects between Defective Parenting Style and Extraversion in the prediction of the Defectiveness EMS

Due to our focus on examining interaction effects, the remaining analyses were carried out for those variables that had significant interactions. According to the Baron and Kenny (1986) method of determining mediating effects of variables, relationships between all variables should be statistically and significantly correlated. To test whether the variables, which were to be entered into the mediational model, met this criterion hierarchical linear regressions were run. Results of these analyses support the hypothesized relationships between variables. Figures 3 and 4 represent visual examination of these relationships.

To test for the mediating effects of the DF-S on the relationship between the parenting/temperament interactions and depressive symptoms, two hierarchical linear regressions were run with the mediator (DF-S) entered into the first block and the interaction term entered into the second block. In both analyses, the total score from the BDI-II was the criterion variable. Conducting the analyses in this manner allowed us to first, determine how much variance in depression is accounted for by the DF-S (r^2=.35, p>.01). Second, we were able to then determine, when controlling for the DF-S, whether the relationship between the interaction term and depressive symptoms remained statistically significant.

Table 4

Hierarchical Linear Regressions in the prediction of Defectiveness Schema

	Negative Affect			Extraversion			Effortful Control			Orienting Sensitivity		
Predictor	β	*t*	R^2	*β*	*t*	R^2	*β*	*t*	R^2	*β*	*t*	R^2
Step 1			.20**			.15**			.15**			.12**
Parenting	.24	3.79		.28	4.35		.25	3.78		.24	3.51	
Temperament	.34	5.34		-.25	-3.78		-.25	-3.79		.19	2.83	
Step 2			.22**			.18**			.15			.13
Parent x Temperament	.14	2.07		-.18	-2.71		-.05	-.725		.13	1.59	
Total R^2			.42**			.33**			.30			.25

*p<.05

**p<.01

Table 5

Hierarchical Linear Regressions in the prediction of the Insufficient Self Control Schema

	Negative Affect			Extraversion			Effortful Control			Orienting Sensitivity		
Predictor	β	*t*	R^2	*β*	*t*	R^2	*β*	*t*	R^2	*β*	*t*	R^2
Step 1			.19**			.08**			.30**			.07**
Parenting	.182	2.84		.213	3.12		.170	2.88		.239	3.53	
Temperament	.365	5.70		-.150	-2.19		-.501	-8.48		.106	1.57	
Step 2			.19			.09			.31			.07
Parent x Temperament	.003	.04		-.085	-1.17		-.019	-.302		.047	.687	
Total R^2			.36			.17			.61			.14

*p<.05

**p<.01

Results of the hierarchical linear regressions suggest that the DF-P x negative affect interaction accounted for 4.5% of the variance in BDI-II scores, (see Figure 3a for a visual representation of this relationship). The DF-P x extraversion interaction accounted for 10% of the variance in BDI-II scores, (see Figure 4a for a visual representation of this relationship).

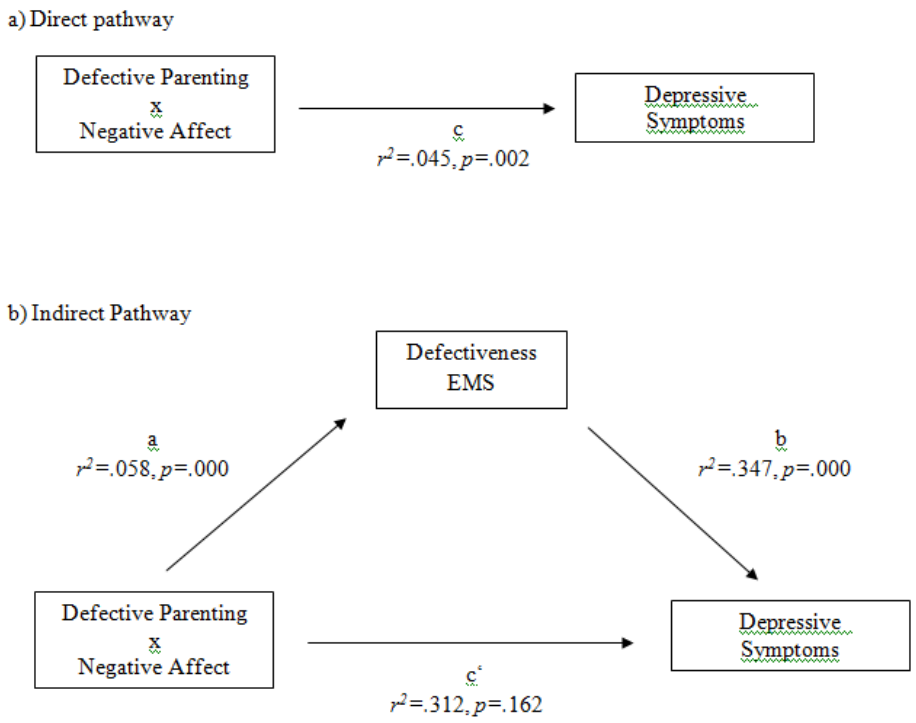

Figure 3.

Mediation Model: Results of Hierarchical Linear Regression

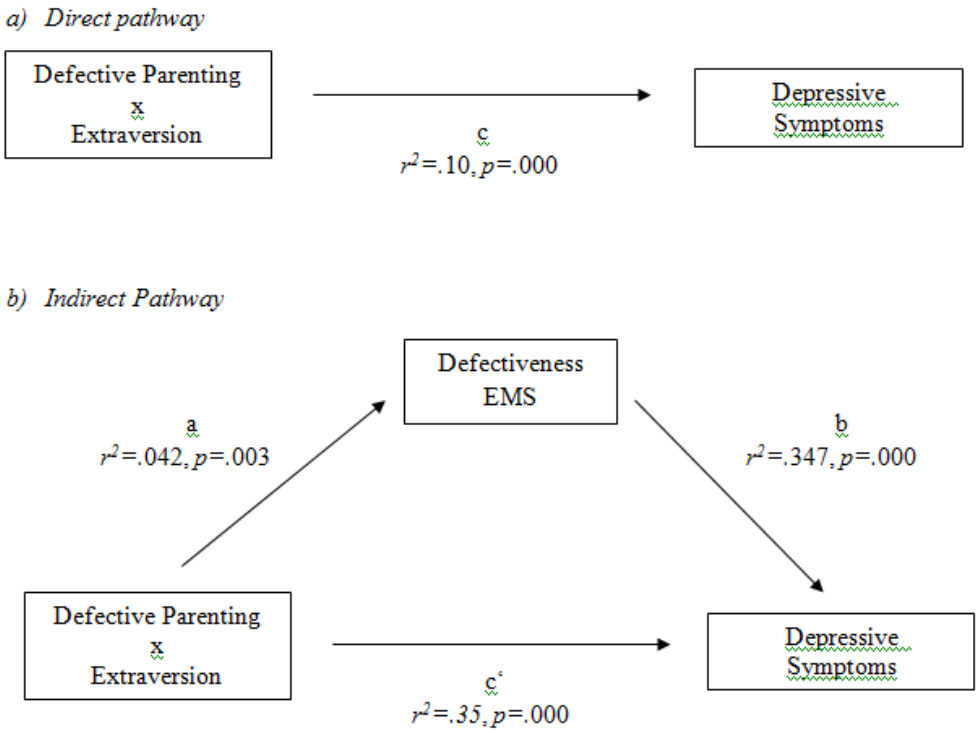

Figure 4.

Mediation Model: Results of Hierarchical Linear Regression

Results of the hierarchical linear regressions testing mediation suggest that the DF-S fully mediated the relationship between the DF-P x negative affect interaction and depressive symptoms. When DF-S was controlled for in the model, the relationship between the DF-P x negative affect interaction and depressive symptoms, F (1, 206) = 90.57, p< .001, was no longer statistically significant, F (2, 205) = 46.48, p = .162, (see Table 6 and figure 3b). The mediating effect of the DF-S did not reach full statistical significance when testing the relationship between the DF-P x Extraversion interaction and depressive symptoms (see Table 9 for results of this analysis and figure 4b for visual model of the indirect pathway). However, partial mediation was found. When the DF-S

was controlled for, the amount of variance in depressive symptoms that was predicted by the DF-P x extraversion interaction was reduced (Δr^2=.31, Δr^2=.04).

Table 6
Mediation Model 1: Hierarchical Linear Regression

	Depressive Symptoms			
	β	*t*	R^2	ΔR^2
Step 1				
Defectiveness	.553	9.52	.305	.305
Step 2				
Defective Parenting x Negative Affect	.084	1.40	.312	.007

Table 7
Mediation Model 2: Hierarchical Linear Regression

	Depressive Symptoms			
	β	*t*	R^2	ΔR^2
Step 1				
Defectiveness	.553	9.52	.305	.305
Step 2				
Defective Parenting X Extraversion	-.215	8.84	.350	.044

Chapter 4

Discussion

It was the goal of the current study to examine Young's theory (2003) which identifies temperament and parenting as the key factors in shaping an individual's early life experiences and view of the world. He theorized that these factors are not only important but the specific interaction between a child's temperament and how they are parented determines whether core emotional needs will be met. In turn, if core needs are not met, Young (2003) suggests belief systems, or schema, develop which lead to future pathology. Correlations revealed that parenting styles were not uniquely related to corresponding schemas as Young (2003) suggested, rather they were highly inter-correlated suggesting that the relationships between parenting and schemas are significant but not specific. These findings are congruent with prior research (e.g. Sheffield, et. al., 2006; Harris & Curtin, 2002). Additionally, higher scores on the BDI-II were significantly related to higher scores for the Orienting Sensitivity, Negative Affect, ISC-P, ISC-S, DF-P, and DF-S scores. Higher scores on the BDI-II were also significantly related to lower scores in Effortful Control and Extraversion scores. Both the ISC-S and DF-S were significantly correlated with temperament traits (positively for Orienting Sensitivity and Negative Affect and negatively for Effortful Control and Extraversion) with the exception of the relationship between Orienting Sensitivity and ISC-S, which did not reach statistical significance.

The first goal of the current study was to test the hypothesized theoretical interaction between temperament and parenting in the prediction of the DF-S and ISC-S, *respectively*. In relationship to this goal, two specific hypotheses were explored. The first hypothesis was that there would be a significant interaction between the DF-P and the four temperament traits in the prediction of the DF-S. Significant interactions resulted for two of the temperament traits (extraversion and negative affect) in the prediction of the DF-S. The interactions between parenting and temperament were able to predict the DF-S better than parenting or temperament alone which offers support to Young's Theory (2003). The finding that two of the four temperaments significantly interacted with the DF-P to predict the DF-S tells us that the affective component that is present in both Extraversion and Negative Affect is an important factor in determining whether DF-S will develop. These results could be best explained by looking at how a child's temperament may influence parenting. For example, it can be generalized that children who are introverted and generally fearful and sad are more difficult to parent. In combination with a parent who is highly critical of their child, this can create a child who begins to believe that they are defective and inadequate.

The second hypothesis that there would be a significant interaction between the ISC-P and the four temperament traits in the prediction of the ISC-S was also examined. Interactions were not significant predictors of the ISC-S. It can be argued that the ISC-P x temperament interactions did not significantly predict the ISC-S because this schema has not consistently been shown to be endorsed in college samples.

The second goal of the current study was to test how the DF-S and ISC-S influence the relationship between temperament/parenting interactions and depressive

symptoms. It was hypothesized that the DF-S and ISC-S would mediate the relationship between the significant parenting x temperament interactions and depressive symptoms. This hypothesis was supported for the analysis that used the DF-S as the mediator between the DF-P x Negative Affect interaction and depressive symptoms. In alignment with Young, Klosko, and Weishaar's theory (2003), results indicate that the development of an individual's belief system explains why an individual who tends to view the world in a negative manner and who has a critical parent is at greater risk for experiencing depressive symptoms.

The hypothesis that the DF-S would mediate the relationship between the DF-P x Extraversion interaction and depressive symptoms was partially supported. Although full mediation was not achieved, with the inclusion of the DF-S into the model, the amount of variance that the interaction term predicted in depressive symptoms was reduced. This suggests that the DF-S accounted for most of the variance in the relationship. This relationship may not have reached significance because endorsing a trait of Extraversion may offer a subtle protective factor that, even with critical or depriving parents, slightly reduces ones risk for experiencing depressive symptoms.

The results of the current study have implications for clinical mental health counseling interventions. For adults who endorse schemas, treatment would focus directly on altering their cognitions and challenging their current beliefs as well as help them develop new belief systems. In children, the implications are even more profound. The findings of the current study would imply that by intervening at the family level, including parent training, the development of early maladaptive schema can be prevented from being developed, reducing an individual's vulnerability to depression.

Limitations and Future Directions

Although this study was the first to successfully examine Young's model in its entirety, there were some limitations that should be considered when interpreting the current findings. First, the participants did not endorse high levels of the Defectiveness or Insufficient Self Control EMSs. The results cannot be generalized to clinical samples. Future research should conduct the same study in a clinical sample to see how results compare. Second, the sample consisted of mostly first and second year college students. Research has shown that schema presentation differs in college samples compared to the general population (e.g., Atalay, et. al., 2008; Camara & Calvete, 2012; Carr & Francis, 2010). It would be important to look at this study in the general population as well as replicate the findings in a college study to make the findings of the current study generalizable to a larger population.

Third, the Young Parenting Inventory (Young, 1999) asks participants to retrospectively describe their parents. As with all retrospective self-report measures, it is important to consider the error that could result in reporting upon past memories. Also the parenting measure that was used in the current study was done with the intention of testing Young's model of EMSs. However, there are other, more reliable and valid measures of parenting that may provide a more accurate assessment of how an individual was parented, such as the Parental Bonding Instrument, as was used in the study by Harris and Curtin (2002). Finally, we asked participants to select a primary caregiver and only used the data on the person selected in the analyses. It can be suggested that individuals who had another, positive adult in their life, who they may not have identified as their primary caretaker, may be less prone to developing early maladaptive schemas.

Due to this possibility, research that takes into account all caretakers should be considered.

References

Atalay, H., Atalay, F., Karahan, D., & Çaliskan, M. (2008). Early maladaptive schemas activated in patients with obsessive compulsive disorder: A cross-sectional study. *International Journal of Psychiatry in Clinical Practice,* 12(4), 268-279.

Baranoff, J., Oei, T., Ho Cho, S., & Kwon, S. (2006). Factor structure and internal consistency of the Young Schema Questionnaire (Short Form) in Korean and Australian samples. *Journal of Affective Disorders*, *93*(1), 133-140

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical consideration. *Journal of Personality and Social Psychology, 51*, 1173-1182.

Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G., (1979). *Cognitive therapy of depression*. New York: Guilford.

Beck, A. T. (1976). *Cognitive therapy and the emotional disorders.* New York: Penguin Group.

Beck, A.T., Steer, R.A., & Brown, G.K. (1996). Beck depression inventory-second edition: Manual. San Antonio: The Psychological Corporation (Harcourt Brace & Company).

Cámara, M., & Calvete, E. (2012). Early maladaptive schemas as moderators of the impact of stressful events on anxiety and depression in university students. *Journal of Psychopathology and Behavioral Assessment, 34(*1), 58-68.

Carr, S. N., & Francis, A. P. (2010). Do early maladaptive schemas mediate the relationship between childhood experiences and avoidant personality disorder features? A preliminary investigation in a non-clinical sample. *Cognitive Therapy and Research*, 34(4), 343-358.

Celikel, F.C., Kose, S., Cumurcu, B.E., Erkorkmaz, U., Sayar, K., Borckardt, J.J., & Cloninger, C.R. (2009). Cloninger's temperament and character dimensions of personality in patients with major depressive disorder. *Comprehensive Psychiatry, 50*, 556-561.

Center for Disease Control and Prevention [CDC]. (2010). Current depression among adults: United States, 2006 and 2008. MMWR 2010; 59(38); 1229-1235. Retrieved from: <http://www.cdc.gov/features/dsdepression/> on August 3, 2012.

Cloninger, C.R., Bayon, C., & Svrakic, D.M. (1998). Measurement of temperament and character in mood disorders: a model of fundamental states a personality types. *Journal of Affective Disorders, 51*, 21-32.

Elovaino, M., Kivimaki, M., Puttonen, S., Heponiemi, T., Pulkki, L., & Jarvinen, K.L. (2004). Temperament and depressive symptoms: a population-based longitudinal study on Cloninger's psychobiological temperament model. *Journal of Affective Disorders, 83*, 227-232.

Evans, D.E. & Rothbart, M.K. (2009). A two-factor model of temperament. *Personality and Individual Differences, 47*, 565-570.

Glaser, B. A., Campbell, L. F., Calhoun, G. B., Bates, J. M., & Petrocelli, J. V. (2002). The Early Maladaptive Schema Questionnaire-Short Form: A construct validity study. *Measurement and Evaluation in Counseling and Development*, 35(1), 2-13

Grucza, R.A., Przybeck, T.R., Spitznagel, E.L., & Cloninger, C.R. (2003). Personality and depressive symptoms: a multi-dimensional analysis. *Journal of Affective Disorders, 74*, 123-130.

Halvorsen, M., Wang, C.E., Eisemann, M., & Waterloo, K. (2010). Dysfunctional attitudes and early maladaptive schemas as predictors of depression: A 9-year follow-up study. *Cognitive Therapy Research 34*, 368-379.

Halvorsen, M., Wang, C.E., Richter, J., Myrland, I., Pederson, S.K., Eisemann, M., & Waterloo, K. (2009). Early maladaptive schemas, temperament and character traits in clinically depressed and previously depressed subjects. *Clinical Psychology and Psychotherapy, 16*, 394-407.

Hansenne, M., Reggers, J., Pinto, E., Kjiri, K., Ajamier, A., &Ansseau, M. (1999). Temperament and character inventory and depression. *Journal of Psychiatric Research, 33*, 31-36.

Harris, A.E., & Curtin, L. (2002). Parental perceptions, early maladaptive schemas, and depressive symptoms in young adults. *Cognitive Therapy and Research, 26* (3), 405-416.

Hawke, L.D., & Provencher, M.D., (2011). Schema theory and schema therapy in mood and anxiety disorders: A review. *Journal of Cognitive Psychotherapy, 2*(4), 257-276.

IBM Corp. Released 2010. IBM SPSS Statistics for Windows, Version 19.0. Armonk, NY: IBM Corp.

Kiff, C.J., Lengua, L.J., & Bush, N.R. (2011). Temperament variation in sensitivity to parenting: predicting changes in depression and anxiety. *Journal of Abnormal Child Psychology, 39*, 1199-1212.

Lachenal-Chevallet, K., Cottraux, J., Bouvard, M., & Martin, R. (2006). Factor analysis of the schema questionnaire-short form in a non-clinical sample. *Journal of Cognitive Psychotherapy: An International Quarterly, 20* (3), 311-318.

Manfredi, et al. (2011). Temperament and parenting styles as predictors of ruminative brooding and worry. *Personality and Individual Differences, 50,* 186-191.

McGinn, L.K., Cukor, D., & Sanderson, W.C. (2005). The relationship between parenting style, cognitive style, and anxiety and depression: does increased early adversity influence symptom severity through the mediating role of cognitive style? *Cognitive Therapy and Research, 29* (2), 219-242.

Mezulis, A. H., Hyde, J.S., & Abramson, L.Y. (2006). The developmental origins of cognitive vulnerability to depression: temperament, parenting, and negative life events in childhood as contributors to negative cognitive style. *Developmental Psychology, 42* (6), 1012-1025.

Oei, T. S., &Baranoff, J. (2007). Young schema questionnaire: Review of psychometric and measurement issues. Australian Journal of Psychology, 59(2), 78-86.

Riso, L.P., Froman, S.E., et al. (2006). The long-term stability of early maladaptive schemas. *Cognitive Therapy and Research, 30 (4).*

Riso, L., Maddux, R., &Santorelli, N. (2007). *Early Maladaptive Schemas in Chronic Depression*. Washington, DC, US: American Psychological Association.

Rothbart, M.K. & Derryberry, D. (1994). *The Adult Temperament Questionnaire-Short Form.*

Rothbart, M.K. (2011). *Becoming who we are: Temperament and personality in development.* Guilford Press: New York.

Sato, T., Narita, T., Hirano, S., Kusonoki, K., Goto, M., Sakado, K., &Uehara, T. (2001). Factor validity of the temperament and character inventory in patients with major depression. *Comprehensive Psychiatry,* 42 (4), 337-341.

Schmidt, N., Joiner, T., Young, J., & Telch, M. (1995). The Schema Questionnaire: Investigation of psychometric properties and the hierarchical structure of a measure of maladaptive schemas. *Cognitive Therapy and Research*, *19*(3), 295-321.

Shah, R., & Waller, G. (2000). Parental style and vulnerability to depression: The role of core beliefs. *Journal of Nervous and Mental Disease*, 188(1), 19-25.

Sheffield, A., Waller, G., Emanuelli, F., Murray, J., & Meyer, C. (2006). Links between parenting and core beliefs: preliminary psychometric validation of the young parenting inventory. *Cognitive Therapy and Research, 29* (6), 787-802.

Sibley, C. G. (2008). *Utilities for examining interactions in multiple regression* [computer software]. University of Auckland.

Stopa, L., Thorne, P., Waters, A., & Preston, J. (2001). Are the short and long forms of the Young Schema Questionnaire comparable and how well does each version predict psychopathology scores? *Journal of Cognitive Psychotherapy*, 15(3), 253-272.

Welburn, K., Corstine, M. Dagg, P., Pontefract, A., & Jordan, S. (2002). The Schema Questionnaire-Short Form: Factor analysis and relationship between schemas and symptoms. *Cognitive Therapy and Research, 26*(4), 519-530.

Young, J. E., & Brown, G. (1990). *Young Schema Questionnaire*. New York: Cognitive Therapy Center of New York

Young, J.E. (1999). Young Parenting Inventory (YPI) (On-line). New York: Cognitive Therapy Centre. (Available: http://www.schematherapy.com).

Young, J. E., Klosko, J.S., & Weishaar, M.E. (2003). *Schema therapy: A practitioner's guide.* New York: Guilford Press.

Zentner, M. & Bates, J.E. (2008). Child temperament: An integrative review of concepts, research programs, and measures. *European Journal of Developmental Sciences, 2* (1/2), 7-37.

Appendix A

Schema Domains and Associated Schema Definitions

DOMAIN I: DISCONNECTION AND REJECTION

Abandonment/Instability	Belief that others will leave you
Mistrust/Abuse	Expectation of others to lie, manipulate, or take advantage of you
Emotional Deprivation	Belief that one's desire for emotional connection will not be Fulfilled
Defectiveness/Shame	Feeling that one is flawed, inferior, and unlovable
Social Isolation/Alienation	Feeling that one does not fit into the larger social world

DOMAIN II: IMPAIRED AUTONOMY AND PERFORMANCE

Dependence/Incompetence	Belief that one is unable to handle responsibilities without others help
Vulnerability to Harm or Illness	Exaggerated fear that catastrophe will strike and cannot be Prevented
Enmeshment/ Underdeveloped Self	Excessive emotional involvement with significant other at expense of one's own needs
Failure	Belief that one has, or will, inevitably fail in areas of Achievement

DOMAIN III: IMPAIRED LIMITS

Entitlement/ Grandiosity	Feels self is superior to others and that they are entitled to special rights.
Insufficient Self-Control	Difficulty restraining oneself from excessive emotional or physical expression

DOMAIN IV: OTHER-DIRECTEDNESS

Subjugation	Excessive surrendering of control to others because one feels coerced
Self-Sacrifice	Voluntarily helps others at the cost of one's own emotional needs
Approval/ Recognition Seeking	Excessive emphasis on gaining recognition or fitting in at the expense of developing a secure and true sense of self

DOMAIN V: OVERVIGILANCE/ INHIBITION

Negativity/ Pessimism	A focus on negative aspects of life and minimization of the positive
Emotional Inhibition	Tries to control emotions of self and others; is rigid and inflexible
Unrelenting Standards	Belief that one needs to meet internalized set of standards in order To avoid criticism.
Punitiveness	Belief in harsh punishment of self and others for breaking rules

Appendix B

Hierarchical Listing of Rothbart's Temperament Scales (Evans & Rothbart, 2007)

NEGATIVE AFFECT	
Fear	Negative affect related to anticipation of distress.
Sadness	Negative affect and lowered mood and energy related to exposure to suffering, disappointment, and object loss.
Discomfort	Negative affect related to sensory qualities of stimulation, including intensity, rate or complexity of visual, auditory, smell/taste, and tactile stimulation.
Frustration	Negative affect related to interruption of ongoing tasks or goal blocking.
EXTRAVERSION/SURGENCY	
Sociability	Enjoyment derived from social interaction and being in the presence of others.
Positive Affect	Latency, threshold, intensity, duration, and frequency of experiencing pleasure.
High Pleasure	Pleasure related to situations involving high stimulus intensity, rate, complexity, novelty, and incongruity.
EFFORTFUL CONTROL	
Attentional Control	Capacity to focus attention as well as to shift attention when desire.
Inhibitory Control	Capacity to suppress inappropriate approach behavior.
Activation Control	Capacity to perform an action when there is a strong tendency to avoid it.
ORIENTING SENSITIVITY	
Neutral Perceptual Sensitivity	Detection of slight, low intensity stimuli from both within the body and the external environment.
Affective Perceptual Sensitivity	Spontaneous emotionally valenced, conscious cognition associated with low intensity stimuli.
Associative Sensitivity	Spontaneous cognitive content that is not related to standard associations with the environment.