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A PROCESSING MODEL OF EMOTION REGULATION:  
INSIGHTS FROM THE ATTACHMENT SYSTEM

by

JUNGEUN HWANG

Under direction of Julia L. Perilla

ABSTRACT

A processing model of emotion regulation (PMER) was investigated by assessing the attachment system and the two types of emotion regulation strategies (adaptive and maladaptive) in undergraduate students (N = 307) at Georgia State University. The analysis of the data revealed an interesting set of findings: (a) attachment anxiety was a stronger indicator of whether people use adaptive or maladaptive emotion regulation strategies than was attachment avoidance; (b) self efficacy, and not cognitive inability to suppress unwanted thoughts, partially mediated the relationship between attachment anxiety and adaptive emotion regulation strategies; and (c) cognitive inability to suppress unwanted thoughts, and not self efficacy beliefs, partially mediated the relationship between attachment anxiety and maladaptive emotion regulation strategies. Overall, the findings provided substantial support for the PMER, and also have important implications for clinical interventions aimed at effective emotion regulation.

INDEX WORDS: Attachment, Emotion regulation, Self-efficacy, Adaptation, Cognitive mechanism, Unwanted thoughts, Rumination

A PROCESSING MODEL OF EMOTION REGULATION:  
INSIGHTS FROM THE ATTACHMENT SYSTEM

by

JUNGEUN HWANG

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

in the College of Arts and Sciences

Georgia State University

2006

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2006

A PROCESSING MODEL OF EMOTION REGULATION:  
INSIGHTS FROM THE ATTACHMENT SYSTEM

by

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## List of Abbreviations

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Abbreviation / Symbol	Definition
CFI	Comparative fit index
DOES	Depending on others' emotional support
<i>df</i>	degree of freedom
DS	Depending on substances
ER	Emotion regulation
<i>f</i>	Frequency
<i>F</i>	Fisher's F ratio
<i>M</i>	Mean ( arithmetic average)
MANOVA	Multivariate analysis of variance
N	Total number in the sample
%	Percentage, percentile
P&G	Positive reinterpretation and growth
PMER	Processing model of emotion regulation
RMSEA	Root mean square error of approximation
RUMI	Rumination
SD	Standard deviation
SPA	Seeking pleasurable activities
SRMR	Standardized root-mean square residual
VENT	Venting negative emotions
$\alpha$	Alpha; Cronbach's index of internal consistency

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## Introduction

The experiences of negative emotions are inevitable in human life. It has become clear that psychological stress, which is obviously linked to negative emotions, produces a wide range of effects on the body by triggering the release of hormones that weaken the immune system (Kiecolt-Glaser, Malarkey, Cacioppo, & Glaser, 1994). For example, experiencing stress is associated with the risk of chronic back pain, diabetes, gum disease, common colds, some forms of cancer, high blood pressure, and gastrointestinal diseases (World Health Organization, 1988). In addition to weakening the immune system, the experience of negative emotions may cause illness by promoting unhealthy behaviors such as drinking alcohol, using drugs, smoking, and overeating food. Thus, the experience of negative emotions produces a desire to take measures to end them, which leads to indulgent behaviors (Cialdini, Darby, & Vincent, 1973; Isen, 1984). More specifically, emotional distress leads smokers to increase smoking (Schachter, Silverstein, & Perlick, 1977), overweight people to eat excessively (Greeno & Wing, 1994; Logue, 1993), and alcoholics to consume more alcohol (Sayette, 1993; Stockwell, 1985).

Psychological adaptation and adjustment also rely heavily on effective emotion regulation. In other words, most psychological disorders are characterized by an emotional disturbance (Thoits, 1985). In fact, this emotional disturbance is fundamentally associated with impaired functioning of emotion regulation (Kring & Werner, 2004). In this regard, it cannot be questioned that there is a considerable potential for emotional distress in everyday life and emotion regulation is one of the most important life tasks for maintaining physical and psychological health.

Because of its importance, emotion regulation has become a popular research topic in many different domains of psychology. For example, there is a good deal of developmental psychology research on emotion regulation in each developmental stage including infancy,

toddlerhood, childhood, adolescence, and adulthood (Field, 1994; Grolnick, Bridges, & Connell, 1996; Magai & Cohen, 1998; Zimmerman, 1999). Some developmental psychologists suggest that emotion regulation is linked to children's socioemotional development and adjustment (Cole, Michel, & Teti, 1994; Eisenberg, 2001; Saarni, 1999). In the social psychology literature, some researchers focus on emotional suppression (Gross, 1998; Gross & Levenson, 1993) while others focus on individual differences in emotion regulation (Fujita, Diener, & Sandvik, 1991; Gross & John, 2003; Mikulincer, Shaver, & Pereg, 2003; Tobin, Graziano, Vanman, & Tassinari, 2000). Emotion regulation also has been considered a central concept within the field of clinical psychology (Barlow, 2001; Berenbaum & Oltmanns, 1992).

The present study was an attempt to investigate individual differences in emotion regulation. I was specifically interested in providing an explanation for why some people use maladaptive strategies in order to repair their emotional distress even though they are aware of harmful costs of them. By proposing a processing model of emotion regulation (PMER), I presented two cognitive mechanisms that play critical roles in using adaptive or maladaptive strategies of emotion regulation. One is the cognitive capacity to suppress unwanted thoughts associated with emotional distress. The other is the sense of self-efficacy which is crucial to one's sense of personal control over one's destiny and successful adaptation to life events (Bandura, 1997). Unlike previous attachment models of emotion regulation (Mikulincer, Shaver, & Pereg, 2003; Shaver & Mikulincer, 2002), the PMER suggested that these cognitive mechanisms stem from attachment anxiety, but not from attachment avoidance based on findings of attachment research.

In the present study, the hypotheses derived from the PMER were assessed by conducting experiments and analyzing responses to a series of questionnaires. Before presenting this work, however, I discuss the definition of emotion regulation to specify the nature of it and provide a

general overview of two current models, a consensual process model of emotion (Gross, 1998) and dynamics of the attachment system (Mikulincer et al., 2003) that guided the present inquiry.

## Literature Review

### *Definition of Emotion Regulation*

Although emotion regulation is a popular research topic in many domains of psychology, there is no consensus on the definition of emotion regulation among researchers. However, it seems that researchers repeatedly emphasize two common features in their definition of this concept: (a) emotion regulation is not only an intrinsic but also an extrinsic process; (b) emotion regulation is a goal-oriented process (e.g., Campos, Campos, & Barrett, 1989; Campos, Mumme, Kermoian, & Campos, 1994; Eisenberg, Fabes, Guthrie, & Reiser, 2000; Eisenberg & Spinard, 2004; Eisenberg, Spinard, & Smith, 2004; Kopp & Neufeld, 2003; Thompson, 1994).

First, this group of scholars regards emotion regulation as both an intrinsic and extrinsic process. In this view, emotion regulation does not seem to be a discrete reaction. Rather, it is associated with a series of components: neurophysiologic responses, cognitive elements, attention management, and overt emotion related behaviors. Second, this group of researchers argues that emotion regulation is a goal-oriented process. To achieve important goals, people often need to regulate their emotions. For example, people need to cope with negative emotions in order to maintain relationships with others and to concentrate on their important daily tasks. In this sense, this argument is congruent with the notion that emotion regulation is a special case of self-regulation (e.g., Baumeister & Heatherton, 1996; Leith & Baumeister, 1996; Tice & Bratslavsky, 2000). Self-regulation is defined as operations by the self to alter his or her own habitual or unwanted responses in order to achieve a conscious or unconscious goal (Vohs & Schemichel, 2003, p. 217). Failure to regulate emotion often leads to failure to control oneself. Empirical research strongly supports this idea. For example, emotional distress is an important determinant of impulsive shopping (Faber, 1992; Rook, 1987) and it leads people to avoid or postpone work

(Baumeister, Bratslavsky, & Tice, 1998). Thus, emotion regulation and self-regulation are inextricably associated.

It appears that these two arguments on the characterization of emotion regulation help us to understand its nature. In addition, it seems that individualistic features of emotion regulation also should be emphasized in its definition because it consistently has been found that emotion regulation is a unique individual process based on a person's developmental trajectory or attachment relationships (Hart, Shaver, & Goldenberg, 2005; Mikulincer, 1998a; 1998b; Mikulincer & Florian, 2000; Mikulincer, Florian, & Weller, 1993; Mikulincer, Hirschberger, Nachmias, & Gillath, 2001; Mikulincer, Orbach, & Iavnieli, 1998). Therefore, I define emotion regulation as the person's unique process to modulate emotional experience in order to attain social desirability and to be in a physical and psychological state primed for the proper response to intrinsic or extrinsic demands. A processing of emotion regulation model takes this definition into consideration.

#### *Current Emotion Regulation Models*

There are two current emotion regulation models: a consensual process model of emotion (Gross, 1998) and an integrative model of activation and dynamics of the attachment system (Mikulincer, Shaver, & Pereg, 2003). The former model highlights the timing of regulatory activities in terms of two common emotion regulation strategies: cognitive reappraisal and expressive suppression. The latter one focuses on individual differences in emotion regulation based on attachment theory and research.

#### *A Consensual Process Model of Emotion*

A consensual process model of emotion proposed by Gross (1998) suggests that emotion begins with an evaluation of external or internal emotion cues, and this evaluation leads to a coordinated set of behavioral, experiential, and physiological emotional response tendencies. In this model, emotion is regulated in two major ways:

antecedent-focused emotion regulation (AFER) and response-focused emotion regulation (RFER). According to Gross, in the AFER pathway, emotion regulation occurs early and intervenes before the emotion response tendencies have been fully activated: For example, people avoid or approach certain situations or people on the basis of their likely emotional impact; people reappraise the emotional situations or their capacities to manage situations so as to alter their emotions; and people also turn their attention toward or away from emotional events to regulate their emotion. In contrast, emotion regulation occurs after an emotion is experienced in the RFER pathway. The strategies of the RFER include to suppress, intensify, diminish, prolong, or curtail ongoing emotional experience, expression, or physiological responding.

Empirical studies reveal that there is a distinction between AFER and RFER (Gross, 1998; Gross & John, 2003). In these studies, the researchers mainly examined the two types of emotion regulation, cognitive reappraisal and expressive suppression. Cognitive reappraisal is a strategy of AFER that involves the construction of a potentially emotion-eliciting situation to change its emotional impact (Lazarus & Alfert, 1964). Expressive suppression is a strategy of RFER that inhibits consciously ongoing emotion-expressive behavior (Gross). It has been found that reappraisers experience and express more positive emotions than do suppressors by taking an optimistic attitude, reinterpreting, and making active efforts to deal with emotional distress; reappraisers also have more adaptive consequences than suppressors in close relationships with friends, self-esteem, emotion regulation, and life satisfaction (Gross & John).

Gross' model and his research enhance our understanding of emotion regulation. However, some questions arise regarding the framework of his model. First, the definition of reappraisal as one example of antecedent emotion regulation in Gross' model seems to be ambiguous. For example, Gross (1998) defined reappraisal as interpreting potentially

emotion-relevant stimuli in unemotional terms (p. 226). In the same article, Gross explained that antecedent-focused emotion regulation might take the form of reevaluating the situation so as to decrease its emotional relevance (p. 226). Therefore, it suggests that a reappraisal should occur after an emotional experience in the emotion regulation process.

However, the instruction of inducing reappraisal in Gross's study (1998), and one example of reappraisal suggested by Gross and John (2003) are not congruent with the above definition (Gross, 1998). The reason for this is that a reappraisal should occur after appraisal of an emotional event in the sequence of emotion regulation (Lazarus, 1991). In fact, the term reappraisal, per se, implies this time sequence. Individuals appraise an emotional event and then experience a certain emotion (Lazarus, Roseman & Evdokas, 2004; Scherer, 2001; Smith & Kirby, 2004). As one form of emotion regulation, individuals try to reappraise an emotional event to attenuate emotional distress (Lazarus). However, in Gross's (1998) study, participants in a reappraisal condition were asked to see film clips showing the treatment of burn victims and the amputation of an arm in terms of the technical aspects of the events. Participants received this instruction before they watched the film clips.

Gross and John's (2003) example of reappraisal also raises the question: what is reappraisal in Gross's consensual process model of emotion? Gross and John's example of reappraisal is, "during an admissions interview, one might view the give and take as an opportunity to find out how much one likes the school, rather than as a test of one's worth"(p.349). However, it seems that this is an example of appraisal instead of reappraisal. Appraisal theories (e.g., Arnold, 1960; Frijda, 1986; Lazarus, 1968; Ortony, Clore, & Collins, 1998; Roseman, 1991; Smith & Ellsworth, 1985) contend that individuals elicit different emotional responses to the same event due to different evaluations and interpretations of the event. Therefore, Gross and John's example illustrates the function of



appraisal. Taken together, the concept of reappraisal in a consensual process model of emotion needs to be clarified.

Second, Gross (1998) suggests that suppression is a form of response modulation that involves inhibiting ongoing emotion-expressive behavior. Thus, he did not classify different kinds of suppression in his model. However, it might be important to differentiate between two kinds of suppression in the process of emotion regulation as the PMER suggested. One is the forced form of suppression of emotions. People suppress their emotions due to some special reasons such as protection of self-image, maintenance of relationships with others, or social hierarchical system. The other is a willful form of emotion regulation that depends on cognitive capacity. The task of this suppression is not emotions but unwanted thoughts. The unwanted thoughts are generally associated with negative emotions. This reasoning will be presented in detail by proposing a processing model of emotion regulation (PMER).

Lastly, Gross's model does not provide the explanation as to why some people use maladaptive strategies (e.g., drinking alcohol, taking drugs, or overeating food) to repair their emotional distress and some people use adaptive strategies (e.g., seeking healthy pleasurable activities, reinterpretation) to do so. The elucidation of these individual differences in emotion regulation will be included in the PMER.

#### *An Integrative Model of Activation and Dynamics of the Attachment System*

Attachment theory (Bowlby, 1969, 1973, 1988) has become one of the most important conceptual frameworks for understanding the process of emotion regulation. According to attachment theory, interaction between infants and their caregivers shapes the children's attachment styles, which play important roles in understanding how people cope with their emotional distress. Ainsworth, Blehar, Waters, and Wall (1978) identify secure,

anxious/ambivalent, and avoidant infant attachment styles. These three styles are roughly comparable to adult attachment styles (e.g., Hazan & Shaver, 1987; Mikulincer, Florian, & Tolmatx, 1990; Mikulincer & Nachshon, 1991). Positive interaction with a caretaker who is consistently sensitive, responsive, and affectionate develops a secure style. Securely attached individuals have a sense of security, which consists of optimism in distress management, a sense of trust in others' goodwill, and a sense of self-efficacy in dealing with threats (Collins & Read, 1994; Mikulincer, 1995; Mikulincer & Florian, 1998; Shaver & Hazan, 1993). Bowlby (1988) considers this sense of security to be an inner resource to buffer life stresses. Insecure attachment style can be one of two types: anxious/ambivalent or avoidant (Ainsworth et al., 1978). Interaction with a caregiver who responds inconsistently and insensitively nurtures an anxious/ambivalent style, while the interaction with a caregiver who is cold, unresponsive, and uncomfortable with close body contact results in an avoidant style. Bowlby believes that these insecurely attached individuals lack a sense of security; therefore, they depend on hyperactivation or deactivation strategies when they encounter threats (Cassidy & Kobak, 1988).

Based on this theoretical framework, Shaver and Mikulincer (2002) propose the model of the activation and dynamics of the attachment system, which was refined by Mikulincer, Shaver, and Pereg (2003). Shaver and Mikulincer illustrate the process of emotion regulation with three major components. Each component involves both monitoring and appraisal of threatening events, the availability of attachment figures, and the viability of proximity seeking. In the refined model, Mikulincer et al. (2003) attempt to characterize the strategies of emotion regulation in terms of the functioning of the attachment system and the emotion-cognition link.

Mikulincer et al. present two stages in the developmental sequence of security-based strategies in their model. The first stage is a consolidation of coregulation consisting of broadening and enriching of the primary attachment strategy such as proximity seeking.

With the help of available attachment figures, people can achieve effective emotion regulation in the first stage. The second stage is a consolidation of self-regulation, which consists of the passage from coregulation to self-regulation. In this stage, the self is established as the main executive agency of security-based strategies. Mikulincer et al. propose three mechanisms that facilitate the passage from coregulation to self-regulation: the broadening of a person's perspectives and capacities, expansion of the self and internalization of functions that were originally accomplished by attachment figures. Therefore, Mikulincer et al.'s model suggests that secure people eventually regulate their emotional distress alone using the sense of security established through interactions with supportive and stable attachment figures.

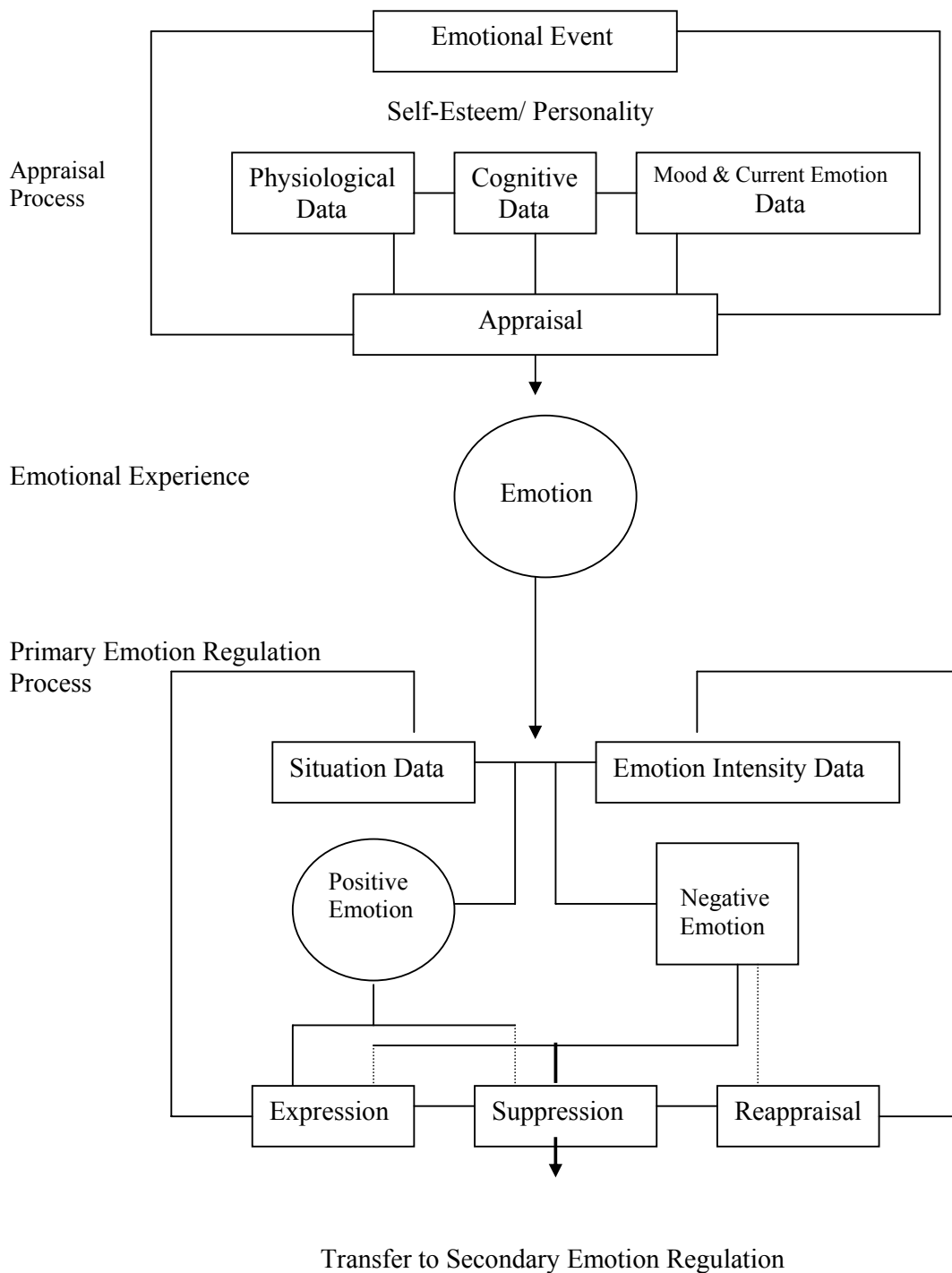
Attachment theory argues that attachment insecurity stems from attachment figure's unavailability or inconsistent caring. Specifically, high attachment anxiety is associated with a compulsive, intrusive, and inconsistent pattern of caregiving which not only prevents the learning of self-regulation skills but also increasing a sense of helplessness, incompetence at emotion regulation ( Mikulincer & Florian, 1998) and fear of being alone ( Mikulincer et al., 2003). In this case, individuals use hyperactivating strategies in order to reduce their emotional distress. Hyperactivating strategies include anxious demands for proximity in relationship to partners, hypervigilance about partners' availability, and attempts to elicit partners' involvement, care, and support by clinging to partners or controlling partners' responses (Shaver & Hazan,1993). These efforts entail an excessive and anxious focus on attachment and distress-related cues (Kobak, Cole, Ferenz-Gillies, & Fleming, 1993). Hyperactivating strategies can be viewed as overdependence on relationship partners as a source of protection (Shaver & Hazan, 1993).

In contrast to people with high attachment anxiety, people with high attachment avoidance adopt deactivating strategies to cope with negative emotions. These individuals

attempt to keep the attachment system deactivated in compulsive attempts to attain self-reliance and autonomy in order to avoid frustration and further distress stemming from the attachment-figure's unavailability or consistent inattention and rejection to proximity seeking (Mikulincer et al., 2003). Therefore, Mikulincer et al. suggest that deactivating strategies lead to the denial of attachment needs, avoidance of closeness, and maximization of cognitive, emotional, and physical distance from others. In addition, the primary characteristic of people with high avoidance is the suppression of thoughts and memories that evoke distress and feelings of vulnerability (Shaver & Mikulincer, 2002).

Although Mikulincer et al.'s (2003) model explains how securely attached individuals develop self-regulation of emotional distress and how insecure individuals develop their distinctive strategies, it does not provide an explanation for understanding individual differences in using strategies of emotion regulation. First, this model avoids explaining differences among people with high attachment anxiety. That is, these people are divided into two categories according to the level of attachment avoidance: preoccupied or fearful avoidance (Brennan, Clark, & Shaver, 1998). It is not surprising that preoccupied people use hyperactivating strategies to reduce their emotional distress because they have high attachment anxiety but low attachment avoidance. However, fearful avoidant people have both high levels of anxiety and avoidance. Therefore, it raises a question of what strategy fearful avoidant people use for dealing with their emotional distress. Second, Mikulincer et al.'s model does not explain why some people use maladaptive strategies of emotion regulation such as drinking alcohol, using drugs, and overeating food in lieu of adaptive strategies. In other words, the current attachment model provides a theoretical explanation why some people seek others' emotional support to reduce emotional distress; however, it does not provide an explanation of people's tendency to use other maladaptive strategies of emotion regulation. In fact, it is an important task for researchers to explain why some people use maladaptive strategies of emotion regulation and why some people

do not. Based on this understanding, clinical interventions can be designed to guide effective emotion regulation. These concerns can be addressed by proposing a processing model of emotion regulation (PMER, see figure 1).



Secondary Emotion Regulation  
Process

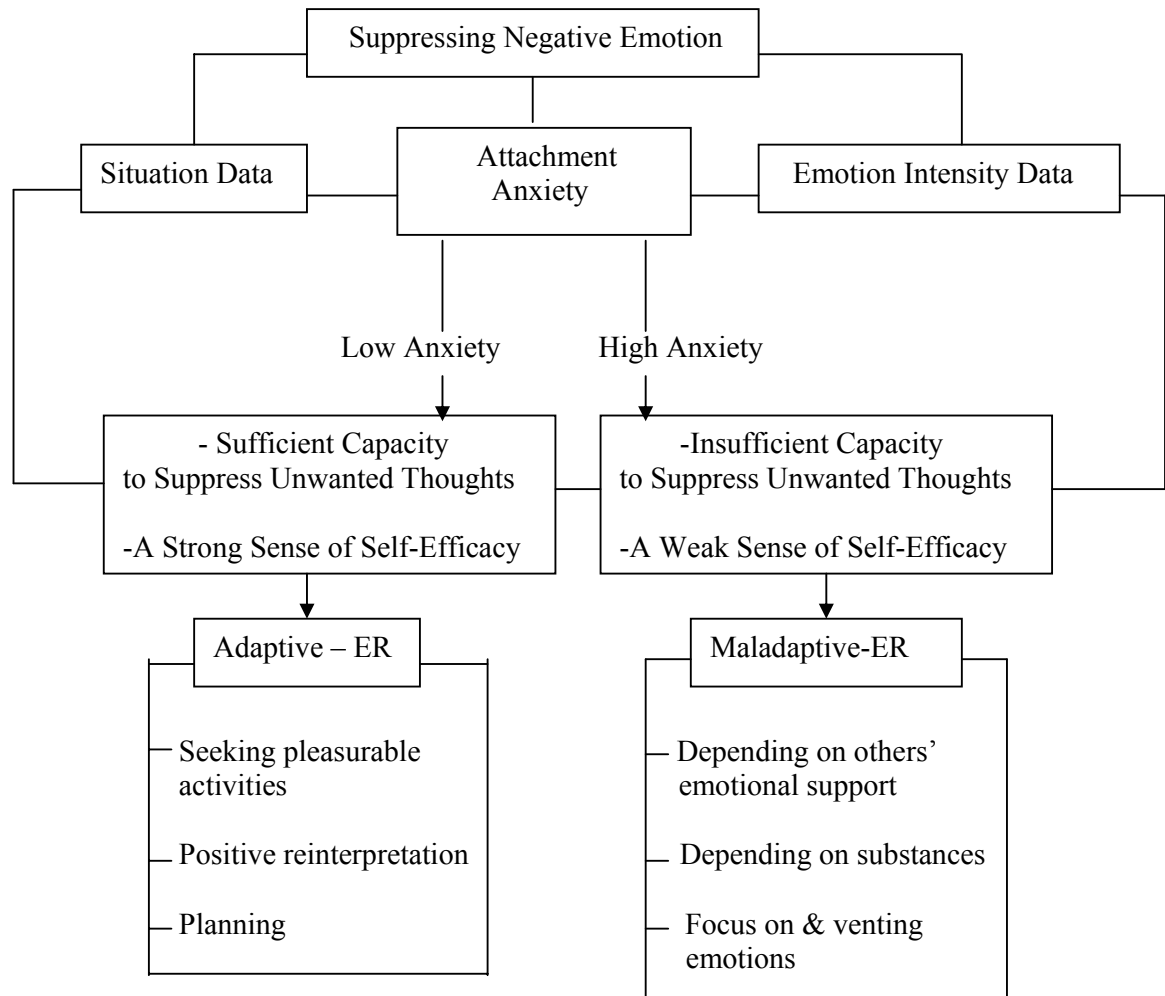


Figure 1. A processing model of emotion regulation (Hwang, 2006)

*A Processing Model of Emotion Regulation*

The framework for the PMER was developed based on three premises. The first premise is that emotions are different from moods in intensity, duration, and causation (Ekman, 1994; Forgas, 1992; Isen, 1984; Nowlis & Nowlis, 1956; Watson & Clark, 1994). Specifically, emotions seem to be more intense and relatively briefer than moods and usually caused by specific events or objects (Forgas, 1992). This distinction is necessary to obtain more accurate

measurements in research on emotions and moods and to elicit more valid results on the relationships between them and other psychological phenomena.

The second premise is that emotions are generated by appraisals of emotional events rather than the events themselves (Frijda, 1986; King, 2005; Lazarus, 1968; Ortony, Clore, & Collins, 1988; Roseman, 1991; Scherer, 1984; Smith & Lazarus, 1993; Stein & Levine, 1999; Weiner, 1985) and appraisal is not just a cognitive element. Appraisal is defined as an evaluation of the implications of one's relationship to the environment for personal well-being (Smith & Lazarus, 1993). Different people experience different emotions from the same emotional event due to their different appraisals of the event. Since appraisal is considered to be an important cognitive aspect of personality (Cervone, 2004), this idea implies that emotion experience is closely related to personality. Moreover, the PMER proposes that the appraisal of an emotional event is obtained by cognitive, physiological, and mood and current emotion data, which is discussed later.

Lastly, emotions are social (Parrott, 2001). Almost all emotions are essentially generated by the interaction with others. For example, people feel happy when they receive compliments, care, and trust from others, whereas people feel angry when they perceive arrogance, dishonesty, and criticism from others. In addition, the proper expression of emotion is determined by the social context, not the true emotion that is experienced in the situation. Thus, it seems that emotional expression is more social than emotional experience. Society demands that people express emotions in an appropriate way so people often need to suppress negative emotions and exaggerate positive emotions to meet social demands. Based on these premises, the PMER proposes that emotion regulation is divided into three processes: the appraisal, the primary, and the secondary emotion regulation processes.

### *The Appraisal Process*

It is certain that human life consists of both happy and unhappy events. However, some people are generally happy or calm, whereas others are generally unhappy or anxious. These individual differences do not seem to derive from the frequency of negative events but rather from their different appraisals. In this sense, the experience of emotion is a very subjective process. However, although the PMER agrees with the idea that emotional experience is determined by appraisal, this model approaches the concept of appraisal somewhat differently. The PMER proposes that appraisal is not just a cognitive component; it goes beyond this. In the PMER, appraisal of an emotional event is obtained through three types of data: physiological data, cognitive data, and mood and current emotion data. These three types of data also influence each other in the process. Furthermore, the PMER provides persuasive explanation of the appraisal character postulated by Lazarus (1991); appraisal is not only a tentative process but also a stable style. It seems natural in the PMER that physiological, mood, and cognitive data contribute to the stable aspect of appraisal, whereas current emotion data contribute to the tentative aspect of appraisal.

The cognitive data of the appraisal of emotional events are derived from cognitive constructs established over time. Social psychologists have argued that personality and self-esteem are important cognitive structures that involve emotional experience. Thus, personality studies have consistently replicated the finding that negative emotions are significantly correlated with neuroticism (N), while positive emotions are substantially correlated with extraversion (E) in the NEO Five Factor Inventory (e.g., Bolger & Schilling, 1991; Bolger & Zuckerman, 1995; Costa & McCrae, 1980, 1984; Emmons & Diener, 1985, 1986; Izard, Libero, Putnam, & Haynes, 1993; Magnus, Diener, Fujita, & Pavot, 1993; Tellegen, 1985; Warr, Barter, & Brownbridge, 1983; Watson & Clark, 1984).



Specifically, the structure of happiness in the five factor approach to personality is a product of low Neuroticism and high Extroversion, Agreeableness, and Conscientious (Schmutte & Ryff, 1997).

Concerning the influence of personality on emotional experience, it is important to consider why people with a high level of neuroticism experience more negative emotions than people with a low level of neuroticism. It could be that highly neurotic people are often in negative moods (e.g., anger, sadness, or depression), and the negative moods lead them to have more interpersonal conflicts and experience more negative emotions (Bolger & Zuckerman, 1995). This interpretation is consistent with the idea that both daily mood data and cognitive data interact with each other. Another explanation of the present consideration stems from a physiological element: signal sensitivity. According to Gray (1981), neurotics and extroverts differ in the relative strength of their signal-sensitivity systems. Neurotics have high sensitivity to the signals for punishment, which leads to high susceptibility of negative emotions; extroverts have high sensitivity to the signals for reward leading to high susceptibility of positive emotions. Gray's argument suggests that individuals' different neurological structures cause differences in the levels of positive or negative emotion experience (Larsen & Ketelaar, 1991; Strelau, 1987). Therefore, highly neurotic people are more likely to experience negative emotions in any frustrating, stressful, or challenging situations due to their high sensitivity to negative signals (Izard et al., 1993; Larsen and Ketelaar, 1991).

Another important cognitive structure related to emotional experience is self-esteem. High self-esteem and low self-esteem people respond to negative events differently; low self-esteem people have negative emotions in response to negative events, whereas high self-esteem people reject, limit, or try to terminate negative emotions (Brown, 1991; Campbell, 1990). There are two explanations for this difference. First, low

self-esteem people might be in negative moods more often and their negative moods may be stronger than those of high self-esteem people. Because of this, they directly experience negative emotions from negative events (Brown & Mankowski, 1993). Second, compared to high self-esteem people, low self-esteem people are less sure of who they are and therefore they are more influenced by situational factors (Brockner, 1983). It is not surprising that self-esteem and personality are likewise related. In the five factor approach to personality, high-self esteem people usually have high scores on the dimensions of Extroversion, Agreeableness, and Conscientiousness but have low scores on Neuroticism (Robins, Tracy, Trzesniewski, Potter, & Gosling, 2001).

Based on these findings, the PMER proposes that cognitive data, especially personality and self-esteem, are the main influences on appraisal of emotional events. For example, neurotic people who usually have low levels of self-esteem are more likely to appraise emotional events in a way that is harmful to their personal well-being and therefore, experience negative emotions often. They are also often in negative moods and have a neurological element which is sensitive to negative signs. Therefore, they seem to appraise emotional events more negatively and be more susceptible to negative events than positive events in daily life. In addition, the PMER proposes that these cognitive elements constitute the stable aspect of appraisal because they are relatively consistent over time and across occasions. This stable aspect of appraisal is referred to as “appraisal style” (Lazarus, 1991).

The PMER suggests that physiological data also play a role in the appraisal of emotional events. This idea is similar to Schachter’s two factor theory (1964): the experience of emotion depends on two factors: automatic arousal and cognitive interpretation of that arousal. However, the PMER suggests that two such factors contribute not directly to the experience of emotion but to the appraisal of emotional

events. Thus, the PMER describes how physiological data from the body and cognitive data from the mind serve as primary sources to appraise a particular emotional event.

The physiological indicators for the differentiation of discrete emotions are heart rate, finger temperature, skin resistance, and forearm flexor muscle tension (Ekman, Levenson, & Friesen, 1983). Skin conductance level, general somatic activity, finger pulse amplitude, pulse transmission time to the finger, pulse transmission time to the ear, respiration period, respiration depth, and blood pressure are also subsumed into important physiological systems linked to emotion (Kunzmann, Kupperbusch, & Levenson, 2005). There are even some emotion-specific autonomic patterns (Cacioppo, Bernston, Klein, & Poehlmann, 1997). For example, an increasing heart rate is associated with anger, fear, and sadness. Greater increases in nonspecific skin conductance responses and smaller increases in skin conductance are measured in response to fear. Diastolic blood pressure, blood volume, cardiac output, left ventricular ejection time, preejection period, pulse transit time, and heart rate all show significantly greater activation during negative than during positive emotions. It is also important to note that there are individual differences in the threshold for the elicitation of a particular physiological change to emotions (Davidson, 1999), which seems to suggest that the physiological indicators of emotions are relatively stable across time and situation. In fact, there is no direct evidence as of yet that physiological indicators influence appraisal. However, the PMER proposes that these physiological data from the body always interact with cognitive data, contributing to the appraisal of emotional events that then result in the experience of emotion.

The PMER proposes that the last important data of the appraisal of emotional events is dispositional mood and current emotion data. It has been consistently reported that mood state can exert strong effects on information processing (Bouhuys, Bloem, & Groothuis, 1995; David, 1989; Forgas & Bower, 1987; Gouaux, 1971; Griffitt, 1970;

Schiffenbauer, 1974; Terwogt, Kremer, & Stegge, 1991). Based on these findings, the PMER suggests that appraisal of emotional events is influenced by mood state. Research on depressed individuals (Coyne, 1976; Lewinsohn, 1986) has found that they have tendencies to negatively interpret the behaviors around them. Therefore, it is assumed that the dispositional mood exerts effects on the appraisal of emotional events. People in negative moods would often appraise emotional events negatively and experience more negative emotions in their daily life. In contrast, people in positive moods would appraise emotional events positively and experience more positive emotions in their daily life. Regarding this feature, the dispositional mood seems to constitute the stable aspect of appraisal. In addition, the current emotion also plays a role in the appraisal process. That is, the same emotional event can be appraised differently by the same person based on his/her current emotion. Compared to dispositional mood data, emotion data are more changeable according to obvious causes. Therefore, it seems that emotion data constitute the changeable aspect of appraisal.

In summary, the PMER argues that people appraise an emotional event based on three sources of data: physiological data, cognitive data, and mood and current emotion data. This appraisal leads people to the experience of emotion. In this view, the PMER argues that appraisal of an emotional event is a consequence of multiple data. Although it is assumed that appraisal has two contradictory features, stable and changeable, the PMER proposes that appraisal is a relatively stable pattern which may depend to a large extent upon the consistency of cognition, physiology, and mood. In this light, the appraisal of emotional events and the experience of emotions are considered to be highly subjective and relatively consistent psychological experiences. In the PMER framework, emotion experienced by appraisal of an emotional event is transferred to the primary emotion regulation process.

### *The Primary Emotion Regulation Process*

In the PMER, the purpose of the primary process is to attain social desirability. In order to achieve this goal, people cannot express their real emotions in many occasions. In the primary emotion regulation process, it is assumed that people regulate their emotions in three possible ways. People may express, suppress, or reappraise their emotions, depending upon the intensity of emotion and the acceptability of the emotion in the situation. Specifically, negative emotions are usually suppressed in the primary process and transferred to the secondary process to be repaired. However, if the intensity of negative emotions is very high or the situation warrants the expression of negative emotions, people directly express their negative emotions to others. The PMER proposes that such expressed negative emotions in the primary process may or may not need to be regulated by the secondary emotion regulation process. Reappraisal is another possible way to regulate negative emotions in the primary emotion regulation process. Reappraisal is a form of cognitive change that involves constructing a potentially emotion-eliciting situation in a way that changes its emotional impact (Lazarus & Alfert, 1964). If the negative emotion could be dealt with by reappraisal in the primary process, such negative emotions might be resolved immediately. Therefore, these negative emotions would have no need for the secondary emotion regulation process.

Contrary to the regulation of negative emotions, the regulation of positive emotions in the primary process is generally to express them immediately since the expression of positive emotions is socially desirable. Indeed, the regulation of positive emotions seems to be a slight exaggeration of the expression of positive emotions. People like people who display high levels of positive emotions when they see each other. Furthermore, people like people who display high levels of positive emotions toward others' pleasant events that occur in their lives. Therefore, under the pressure of social desirability, people have to

display more positive emotions than their real emotions to others. However, people also sometimes need to suppress their positive emotions to attain social desirability. For example, people are discouraged from displaying positive emotions to others' tragedy no matter what the reason. The PMER proposes one more obvious difference between the positive and the negative emotion regulation: the positive emotion regulation does not need to be transferred to the secondary process. Although people exaggerate or suppress their positive emotions due to social demands, it seems that they do not need to do something in order to repair such emotions, because experiencing positive emotions per se is congruent with the well-being of the human body and mind.

Considering the ability to regulate emotions, the ability to regulate negative or positive emotions is not always parallel. While some people successfully suppress negative emotions, they may not restrain their positive emotions equally well, or vice versa. However, it seems that the adaptive emotion regulation needs to properly regulate both positive and negative emotions according to social desirability. This adaptive emotion regulation requires the ability to control one's own emotions and to consider others' emotions as well. So far most of the studies on emotion regulation have mainly focused on negative emotions, and only a few studies have attempted to examine positive emotions (e.g., Mikulincer & Sheffi, 2000; Shiota, Campos, Keltner, & Hertenstein, 2004). With regard to the regulation of positive emotions, it has been found that displaying proper positive emotions to others plays a critical role in human life, especially interpersonal relationships (Shiota et al., 2004). To understand human adaptation, I argue that the management of positive emotions deserves further scrutiny in the realm of emotion regulation.

It is also important to note that the suppression of negative emotions is not always the best form of negative emotion regulation. Specifically, in close relationships, chronic

suppression of negative emotions might be a detriment to intimacy. Maintaining good relationships with significant others such family members and friends seems to be accompanied by proper forms of emotion expressions, both positive and negative.

#### *The Secondary Emotion Regulation Process*

The secondary emotion regulation process is conceptualized as the process of repairing emotional distress transferred from suppressing negative emotions in the primary process for social desirability. In this process, the PMER proposes that people repair their negative emotions through adaptive or maladaptive strategies based on the attachment system. These two categories of emotion regulation strategies are developed in previous research (Carver, Scheier, & Weintraub, 1989; Thayer, Newman, & McClain, 1994). People adopt a typical strategy to cope with intense emotional distress but they might be flexible in using strategies according to the intensity of negative emotions or the situational factors.

*Theoretical relationship between cognition and emotion regulation.* Emotion regulation is considered to be one type of self-regulation, and the capacity for self-regulation is considered to be a limited resource (Muraven, Tice, & Baumeister, 1998). From this viewpoint, it is assumed that when people who have high cognitive capacity for self-regulation are confronted with many negative events simultaneously, they might use maladaptive strategies of emotion regulation due to the depletion of cognitive capacity for self-regulation. Furthermore, I suggest that one of the main functions of cognitive mechanisms in emotion regulation is to suppress unwanted thoughts associated with negative emotions. For example, in order to protect themselves from emotional distress, people may want to suppress thoughts of failure at work, of the offensive attitudes of others, or of hurtful comments from significant others. There is empirical evidence that

people often try to suppress negative thoughts as a mental control strategy (Clark & Isen, 1982; Mayer & Gascheke, 1988).

It is important to notice that there are differences between suppression in the primary and suppression in the secondary emotion regulation processes in the PMER. As mentioned above, suppression in the primary process is a forced form of emotion regulation because of the social hierarchical system, or the desire to preserve self-image. In this regard, the task of suppression in the primary process is either to suppress the expression of negative emotion or to suppress the negative emotion itself. However, the PMER suggests that suppression in the secondary process may be a willful form of emotion regulation that depends on the cognitive capacity derived from the attachment system. The task of suppression in the secondary process is to control unwanted thoughts that are the causes of negative emotions. Successful suppression of unwanted thoughts generally leads people to experience moderate emotional distress and then enables them to use adaptive strategies to repair their negative emotions; while unsuccessful suppression of unwanted thoughts leads people to experience intense emotional distress and use maladaptive strategies of emotion regulation. Furthermore, the levels of cognitive capacity to suppress unwanted thoughts are different due to individual differences in the attachment system.

The PMER suggests that personal self-efficacy may be also an important inner cognitive factor that influences the adoption of either adaptive or maladaptive emotion regulation strategies. Judge and Bono (2001) considered self-efficacy to be one's estimation of one's fundamental ability to cope, perform, and be successful. They conducted a meta-analysis of the extensive research on four traits: self-esteem, locus of control, neuroticism, and self-efficacy. They found that there is a high positive correlation between self-efficacy and emotional stability. In fact, Bandura (1997) has argued that self-efficacy is an important



indicator for psychological maladjustment, including symptoms of anxiety, phobias, and depression. Based on this research, the PMER assumes that a strong sense of self-efficacy protects people from intense emotional distress by acting as an effective buffer against stressful events. Therefore, people with strong sense of self-efficacy can cope with their emotional distress by using adaptive strategies of emotion regulation. However, people with a weak sense of self-efficacy tend to be overwhelmed by stressful events and use maladaptive strategies to make themselves feel better immediately despite knowledge of the potential self-damaging effect of those strategies.

*Individual differences in cognitive capacity and self-efficacy in emotion regulation.*

Bowlby (1969) emphasized that attachment serves as a protective mechanism against life stress. Bowlby (1973) also delineated individual differences in the attachment system in terms of interaction with significant others who are available in times of need, and this argument was supported by empirical evidence. That is, Ainsworth et al. (1978) found three different attachment styles in infants based on their responses to emotional distress and on their attachment history. These three infant attachment styles are secure, anxious-ambivalent, and avoidant.

Bowlby's (1988) theory also implied that attachment working models, which are internalized by interaction with the primary caregiver, provide future guidance to people to cope with their emotional distress. Thus, individuals who experienced stable and sensitive caring from the early relationship with a nurturing adult have basic trust in the world and the self. Based on this trust, they shape secure working models that function as a "secure base" (Bowlby, 1973). Consequently, these individuals develop a strong sense of control and positive images of both themselves and others (Bartholomew & Horowitz, 1991). This sense of security may become a main coping source to manage life's adversities (Mikulincer & Florian, 1998). However, the interaction with the frustrating attachment figure impairs

the establishment the sense of security. According to Mikulincer et al. (2003), the typical caregiving patterns of high anxiety people are compulsive and intrusive patterns that are unrelated to the individual's requests or need for help and prevent the learning of self-regulation skills. These caregivers also convey explicit or implicit messages that emphasize a person's helplessness, incompetence, or weakness. Therefore, the attachment anxiety links to a sense of helplessness, negative beliefs about the self, and deficits in instrumental behavior (Mikulincer & Florian, 1998). In the case of avoidant people, caregivers are insensitive or angry to proximity seeking desire and convey explicit or implicit messages that encourage self-reliance and prohibit overt expressions of neediness and vulnerability. Therefore, the individuals become afraid of failure and punishment in future proximity seeking attempts, which result in a compulsive self-reliance attitude (Mikulincer et al., 2003).

Attachment theory has received extensive support through research with adults as well. Researchers confirmed that the attachment system influences appear to regulate emotional distress in adults (Babcock, Jacobson, Gottman, & Yerington, 2000; Brennan & Shaver, 1995; Kobak & Sceery, 1988; Mikulincer, 1998; Mikulincer & Florian, 1998; Mikulincer et al., 1990; Sroufe & Waters, 1977). According to these findings, people classified as having a secure attachment style regulate their negative emotions successfully with constructive strategies, whereas insecurely attached people are not able to be successful in coping with their negative emotions. For instance, when anxious-ambivalent people encounter stressful events, they cope with emotional distress by directing attention in a hypervigilant manner and by mentally ruminating on negative thoughts, memories, and affects (Kobak & Sceery, 1998; Mikulincer & Orbach, 1995; Shaver & Hazan, 1993). These results suggest that anxious-ambivalent people are unable to suppress their unwanted thoughts related to negative emotions. Indeed, Mikulincer and Orbach confirmed that

anxious-ambivalent attached people were unable to suppress negative thoughts and to detach from inner pain.

In 1998, there was an advance in understanding the adult attachment system. Brennan, Clark, and Shaver identified two dimensions of the adult attachment system: avoidance (discomfort with closeness and dependency) and anxiety (fear of abandonment). They developed a 36-item self-report attachment scale (ECR: The Experiences in Close Relationships) to measure both dimensions. In terms of this dimensional approach to the attachment system, Meyer, Pilkonis, and Beevers (2004) found that the anxiety dimension, but not the avoidance dimension, had a predictive validity for emotional experience. They reported that the anxiety dimension was negatively related to being happy and content, but positively related to being nervous.

In line with these findings, research on the relationships between personality and the attachment system reported that high attachment anxiety was positively related to neuroticism in the NEO Personality Inventory (Carver, 1997; Shaver & Brennan, 1992). A good deal of research has argued that the neuroticism factor in personality is a valuable predictor of negative emotional experiences (Bolger & Schilling, 1991; Bolger & Zuckerman, 1995; Costa & McCrae, 1980, 1984; Emmons & Diener, 1985; Emmons, Diener, & Larsen, 1986; Izard, Libero, Putnam, & Haynes, 1993; Magnus et al., 1993; Tellegen, 1985; Warr, Barter, & Brownbridge, 1983; Watson & Clark, 1984). Even though these studies did not directly examine the relationship between attachment dimensions and emotion regulation, it is possible that the anxiety dimension relates to emotion regulation because successful emotion regulation is the core factor in maintaining one's overall emotional stability. In fact, Fraley and Shaver (1997) found more specific relationships between the suppression of unwanted thoughts and the two dimensions of the attachment system. Thus, individuals categorized in the dismissing-avoidant attachment style,

characterized by high avoidance and low anxiety, successfully suppressed unwanted thoughts, while individuals categorized in the preoccupied attachment style, characterized by high anxiety and low avoidance, did not successfully suppress unwanted thoughts.

With regard to self-efficacy, Mikulincer (1990, 1993, 1995a, 1998) has repeatedly found that secure attachment plays an important role not only in romantic relationships, but also in the individual's coping skills, feelings of personal worth, and self-efficacy. It is assumed from attachment theory and research that adaptive and constructive strategies for dealing with emotional distress are developed through secure attachment. More specifically, the PMER proposes that the anxiety dimension in the attachment system involves cognitive mechanisms such as self-efficacy beliefs and cognitive ability to suppress unwanted thoughts which are related to emotional adjustment. Specifically, high anxiety people in the attachment system may not have strong enough self-efficacy beliefs to cope with emotional distress, so they may become overwhelmed by emotional distress and use maladaptive strategies to regulate their negative emotions. Consistent with this reasoning, Mikulincer et al., (1993) found that anxious- ambivalent attached people used emotion-focused strategies and reported high levels of anxiety, depression, and hostility during a specific and traumatic real-life event, the Gulf War in Israel.

In examining the mental representation of the self, individuals who showed high anxiety in the attachment system had a negative self-image (Bartholomew & Horowitz, 1991) and revealed a negative and less integrated self-structure (Mikulincer, 1995). It is possible that their negative self-images and a lack of a sense of control may lead to weak self-efficacy beliefs and cognitive capacities, which are not strong enough to suppress unwanted thoughts. Taken together, these findings support the proposition that cognitive mechanisms for emotion regulation are highly associated with attachment anxiety. Therefore, individuals with low anxiety in the attachment system can suppress unwanted

thoughts and use adaptive strategies to cope with emotional distress. Using the terminology of Wegner who conducted a series of research on unwanted thoughts (Wegner, & Erber, 1992; Wegner, Erber, & Zanakos, 1993; Wegner, Shortt, Blake, & Page, 1990), it seems that individuals with low anxiety in the attachment system can control the rebound effects of suppressed unwanted thoughts associated with negative emotions. In fact, unlike Wegner's arguments, the rebound effect of suppressed thoughts or the hyperaccessibility of suppressed thoughts is not common in mental control (Kelly & Kahn, 1994). Thus, as mentioned above, individuals with low anxiety in the attachment system have a better ability to suppress unwanted thoughts than individuals with high anxiety (Fraley & Shaver, 1997; Mikulincer & Orbach, 1995). In addition, individuals with low anxiety can have strong self-efficacy beliefs stemming from positive interaction with attachment figures or the tendency to be self-reliant. Empirical research has shown that individuals with low attachment anxiety have a highly positive and differentiated self-structure that is not pervaded by emotional experience (Mikulincer, 1995).

At the strategies of emotion regulation level, the PMER hypothesizes that people with low attachment anxiety will use different adaptive strategies according to their levels of attachment avoidance. Thus, secure people, characterized by low anxiety and low avoidance in the attachment system, will be more likely to use strategies such as positive interpretation and growth, and planning, while dismissing avoidant people, characterized by low anxiety and high avoidance will be more likely to seek healthy pleasurable activities. Drawing on Bowlby's (1988) theory, Mikulincer et al. (1998) argue that secure people have optimistic and constructive attitudes toward life due to their inner secure base. In line with this argument, I propose that secure people will be more likely to take active steps to handle life stresses by making plans to cope with their problems. They also try to use stressful events as opportunities to learn life lessons or try to look for something good in stressful

events with optimistic and constructive attitudes toward life. However, the typical method of dismissing avoidant people to cope with emotional distress is to escape from any confrontation with distress-eliciting sources of information (Mikulincer, Orbach, & Iavnieli). For this reason, it is probable that dismissing avoidant people are more likely to seek pleasurable activities to take their mind off stressful events.

The PMER also hypothesizes that people with high attachment anxiety will use different maladaptive strategies according to their levels of attachment avoidance. Preoccupied people, characterized by high anxiety and low avoidance, will be more likely to seek others' emotional support, whereas fearful avoidant people, characterized by high anxiety and high avoidance, will adopt dependence on substances to do so. Empirical support for this reasoning can be found in Mikulincer, Orbach, and Iavnieli's (1998) study, in which they examined the manifestations of attachment-related strategies to emotion regulation in mental representations of self-other similarity. Under stressful situations, avoidant people tended to underestimate their similarity to significant others and to maximize their distance from others. Because of this tendency, the PMER proposes that people with high anxiety and high avoidance are more likely to depend on substances (rather than people) in order to repair their negative emotions.

In summary, the attachment system is a useful framework for understanding individual differences in emotion regulation based on both Bowlby's (1969, 1973, 1982) attachment theory and empirical findings as mentioned above. Based on attachment theory (Bowlby, 1988) and research (Fraley & Shaver, 1997; Mikulincer & Orbach, 1995), the PMER proposes that the anxiety dimension in the attachment system is a more reliable predictor than the avoidance dimension for adopting either adaptive strategies or maladaptive strategies to cope with emotional stress in daily life. The underpinning of this reasoning is that self-efficacy beliefs and the cognitive capacity to suppress unwanted

thoughts are directly related to habitual usage of certain emotion regulation strategies, and this cognitive capacity and self-efficacy beliefs are strongly correlated to attachment anxiety. Consistent with previous findings (Fraley & Shaver, 1997; Mikulincer & Orbach, 1995), the PMER proposes that attachment anxiety resulting from the internalization of unstable attachment experiences plays an important role in overall emotional stability.

On the basis of this theoretical framework, it is suggested that individuals with high anxiety in the attachment system might not have a strong enough cognitive capacity to suppress unwanted thoughts and strong self-efficacy beliefs, so they tend to depend on others' emotional support or substances in order to detach from unwanted thoughts and repair emotional distress. However, individuals with low anxiety in the attachment system might have both strong enough cognitive capacity to suppress unwanted thoughts and strong self-efficacy beliefs. Therefore they turn their attention to reappraisal, planning, or pleasurable healthy activities to repair their emotional distress. Both the attachment model (Mikulincer et al., 2003; Shaver & Mikulincer, 2002) and the PMER proposed here use the attachment system to interpret individual differences in emotion regulation. However, an important difference between these two models is that the PMER suggests how the attachment system affects the adoption of real-life strategies to repair emotional distress in terms of the functions of cognitive mechanisms: self-efficacy beliefs and suppression of unwanted thoughts.

*Adaptive and maladaptive strategies of emotion regulation.* The PMER categorizes strategies of emotion regulation into adaptive and maladaptive based on previous research (Carver et al., 1989; Morrow & Nolen-Hoeksema, 1990; Thayer et al., 1994). The adaptive category includes three kinds of strategies: seeking pleasurable healthy activities, positive reinterpretation and growth, and planning. Thayer et al. found that seeking healthy pleasurable activities, such as exercising and listening to music, were very successful

strategies for reducing tension and anxiety. This positive effect of mental disengagement is explained by spreading activation theory (Boden, & Baumeister, 1997; Bower, 1981, 1991; Clark & Isen, 1981; Ingram, 1984; Lang, 1984) which suggests that emotion is conceptualized as a central organizing node that links together causally related information stored in a semantic network in memory. When an emotion node is activated by stressful events, past events and beliefs associated with that emotion are brought to mind, which results in enhancing and prolonging the emotion. In this sense, seeking healthy pleasurable activities interrupts the spreading of negative emotion and enables people to reduce their emotional distress. Positive reappraisal and planning are also included in adaptive strategies of emotion regulation because these cognitive activities seem to decrease emotional distress and lead people to make efforts to cope with stressful events.

In the PMER, the maladaptive category includes three kinds of strategies which have disadvantages in spite of reducing emotional distress: depending on others' emotional support, depending on substances, and focusing on and venting emotions. Mikulincer et al. (2003) argue that the consolidation of self-regulation is the final stage in the development of security-based strategies in emotion regulation. They suggest that people with inner-security have confidence in their abilities to deal with emotional distress without depending on others' emotional support. In line with this reasoning, emotional independence is considered to be a principal developmental task that adolescents encounter (Blos, 1962; Grotevant & Cooper, 1985; Josselson, 1980, 1988; Lapsley, Rice, & Shadid, 1989). To seek out emotional support has maladaptive consequences (Berman & Turk, 1981; Costanza, Derlega, & Winstead, 1988; Lapsley et al, 1989; Tolor & Fehon, 1987). For instance, rather than reducing emotional distress, talking about one's negative emotions with a friend is associated with a relatively high level of negative emotions (Costanza et al.). The tendency for emotional dependence of college students is highly related to greater adjustment



problems such as social and personal-emotional adjustment (Lapsley et al.). Based on these theoretical and empirical aspects, the PMER regards depending on others' emotional support to cope with emotional distress as a maladaptive strategy of emotion regulation.

Another maladaptive strategy of emotion regulation is dependence on substances such as overeating unhealthy food, drinking alcohol, and taking drugs. These strategies provide a momentary pleasure and then temporarily reduce emotional distress. However, they are associated with maladjustment in diverse domains, including social and romantic relationships, educational and occupational attainment, and physical and mental health (Essau, 2003; SAMHSA, 2004). Lastly, focusing on and venting negative emotions is considered a maladaptive strategy in the PMER. Ruminative responses to the negative emotions aroused by stressful events seem to put people at the risk of intense and prolonged periods of emotional distress (Carver & Scheier, 1990; Fenigstein, Scheier, & Buss; 1975; Nolen-Hoeksema, 1991; Pyszczynski, & Greenberg, 1987). In fact, one example of ruminative responses to negative emotions is to tell their negative events or emotions to others repeatedly (Morrow & Nolen-Hoeksema, 1990). Therefore, it seems that these two maladaptive strategies, rumination and dependence on others' emotional support, are positively correlated. In addition, venting negative emotions can impede adjustment in various domains of everyday life. That is, the lack of capacity to manage emotional expression, especially negative emotional expression, leads to vulnerability in communication of needs, development of social relationships, or achievement of other important goals.

With regard to gender effects in emotion regulation, Carver et al. (1989) found that there were gender differences in using coping strategies. More women than men reported that they focus on venting emotions and depending on others to repair negative emotions. On the other hand, more men than women reported that they drink alcohol or take drugs as a

way of coping. Based on these findings, I also anticipate a similar pattern of gender differences in using strategies of emotion regulation in the current sample. That is, women may be more likely to depend on others' emotional support, eat food, or go shopping than men in coping with their negative emotions, while men may be more likely to drink alcohol, go to the gym, or take drugs than women.

In sum, the PMER proposes that attachment anxiety plays an important role in using either adaptive or maladaptive strategies of emotion regulation through the cognitive mechanisms of self efficacy beliefs and the capacity to suppress unwanted thoughts. The purpose of present study was to examine the secondary emotion regulation process in the PMER.

With this purpose in mind, the present research has the following main hypotheses:

1. Attachment anxiety will be a stronger indicator than attachment avoidance to predict whether people use adaptive or maladaptive strategies of emotion regulation.
2. Lower attachment anxiety will lead to higher levels of using adaptive emotion regulation strategies. This relationship will be mediated by the effects of both self-efficacy beliefs and cognitive capacities to suppress unwanted thoughts.
3. Higher attachment anxiety will lead to higher levels of using maladaptive emotion regulation strategies. This relationship will be mediated by the effects of both self-efficacy beliefs and cognitive capacities to suppress unwanted thoughts.
4. Secure and dismissing avoidant people will use adaptive emotion regulation strategies more often than preoccupied and fearful avoidant people.
5. Preoccupied and fearful avoidant people will use maladaptive emotion regulation strategies more often than secure and dismissing avoidant people.
6. Men will use adaptive emotion regulation strategies more often than women.

7. Women will use maladaptive emotion regulation strategies more often than men.
8. At the strategies of emotion regulation level, people with low anxiety will use different adaptive strategies according to their levels of attachment avoidance.
9. At the strategies of emotion regulation level, people with high anxiety will use different maladaptive strategies according to their levels of attachment avoidance.
10. At the strategies of emotion regulation level, people will use different strategies according to their gender.

## Methods

### *Participants*

The participants were 320 (229 women, 91 men) undergraduate students at Georgia State University who participated in the study to fulfill course requirements. The average age of participants was 20 years (  $SD = 3.27$ ); 39 % were Caucasian, 34 % were African American, 17 % were Asian, and 10 % were from other races.

### *Procedure*

Participants were recruited from the undergraduate research pool at Georgia State University. The study was conducted at the psychology department computer lab using groups of participants, with 23 to 25 in each group. On arriving at the experiment entitled, “The relationship between the attachment system and emotion regulation”, participants were informed that the study was composed of a series of self-report questionnaires and two computerized Stroop tasks (Washburn & Putney, 1998). The experimenter emphasized that participants’ responses were completely anonymous and that their individual participant numbers were used only for keeping each person’s questionnaires together. In particular, participants were told that there were no right or wrong answers to any of the questions and that their honesty in responding were of great importance to the study.

Next, participants read and signed a consent form and were asked to perform a computerized 70 trial Stroop task: participants were asked to ignore each word's content and rapidly identify its color. After all participants had completed the Stroop task, the experimenter told them that they would be asked to fill out a series of questionnaires. All participants began to fill out each questionnaire at the same time and were told to wait for further instructions. To induce negative thoughts, the experimenter used two tasks: an imagination task (Keltner, Ellsworth, & Edwards, 1993) and a 14-minute written description of a recent stressful event and negative thoughts related to the event (Gasper & Clore, 1998; Gohm, 2003; Schwartz & Clore, 1983). The imagination task was a story about an unfair male teaching assistant. The story consisted of five paragraphs, and each of the five paragraphs was shown on a separate paper. Participants were given exactly two minutes to read and imagine the event in each paragraph. At the end of the imagination task, participants were asked to describe their thoughts related to the story during five minutes and to complete the check list for negative thoughts induction. They then wrote about a recent personal event that made them upset and also wrote about negative thoughts associated with the event. Participants had seven minutes for each writing. After the induction procedure, participants were asked to perform the second Stroop task used to measure their cognitive capacity to suppress unwanted thoughts. This cognitive capacity was also assessed directly by measuring the level of rumination through a self-report scale (The Response Styles Questionnaire: Nolen-Hoeksema, 1994). Finally, participants completed the last questionnaire and left the computer lab.

### *Measures*

#### *The Attachment System and Style*

Participants' attachment system and style were assessed with the Experiences in Close Relationships (ECR: Brennan, Clark, & Shaver, 1998), a 36-item self-report measure

that contained two subscales: attachment avoidance and attachment anxiety. The Avoidance subscale measured the extent to which a person is comfortable with closeness and dependence in romantic relationships. The Anxiety subscale measured the extent to which a person was worried about being rejected, abandoned, or unloved. Sample items were “I prefer not to show a partner how I feel deep down” and “I worry a fair amount losing my partner.” Participants responded to each item on a 7-point Likert-type scale ranging from 1 (disagree strongly) to 7 (agree strongly). The ECR also revealed participants’ attachment styles based on the combination of two dimensions in the attachment system. The reliability and validity of the scale have been demonstrated (see Brennan et al., 1998). In the present sample, Cronbach alpha coefficients were .90 for the 18 anxiety items and .93 for the 18 avoidance items. The avoidant and anxiety dimensions were not significantly correlated with each other ( $r = .08$ , ns), which supported the intended orthogonality of the two dimensions. This measure is considered an appropriate measure of the adult attachment system and has been widely used for attachment research (see Mikulincer, Dolev, & Shaver, 2004).

#### *Strategies of Emotion Regulation*

The Cope Scale (Carver, Scheier, and Weintraub, 1989) is a 53-item questionnaire of strategies of coping in stressful situations. For the present study, a modified version of this questionnaire was used, which adapted 6 subscales from the 14 original subscales. The modified version consisted of 24 items each yielding three subscales of adaptive and maladaptive emotion regulation strategies respectively. The subscales of adaptive emotion regulation strategies were seeking pleasurable activities, positive reinterpretation & growth, and planning. Sample items of these three subscales were “I watch TV, listen to music, or surf the internet”, “I try to see it in a different light, to make it seem more positive”, and “I make a plan of action to avoid repeating the same problem.” The subscales of maladaptive

emotion regulation strategies were seeking others' emotional support, focusing on and venting of emotions, and depending on substances. Sample items were "I discuss my feelings with someone", "I feel a lot of emotional distress and I find myself expressing those feelings a lot", and "I drink alcohol." Participants responded to each item on a 4-point scale ranging from 1 (I usually don't do this at all) to 4 (I usually do this a lot). Carver et al. (1989) reported Cronbach  $\alpha$ s for each scale in a sample of college students: seeking others' emotional support (.85), focusing on & venting of emotions (.68), positive reinterpretation & growth (.77), planning (.80), and seeking pleasurable activities (.45). In the present sample, Cronbach  $\alpha$ s for each scale were as follow: seeking others' emotional support (.82), focusing on and venting of emotions (.75), positive reinterpretation and growth (.82), planning (.83), seeking pleasurable activities (.35), and depending on substances (.64).

#### *Self-Efficacy*

Self-efficacy was measured with the General Self-Efficacy Scale (Sherer, Maddux, Mercandante, Prentice-Dunn, & Jacobs, 1982). The measure consisted of 17 items and the reliability for the present sample was adequate (Cronbach's  $\alpha = .86$ ). Sample items were "When I have something unpleasant to do, I stick to it until I finish it" and "Failure just makes me try harder." Each item was rated on a 7-point Liker-Type scale ranging from 1 (Disagree strongly) to 7 (Agree strongly). A higher score on the scale indicated a stronger sense of self-efficacy.

#### *Unwanted Negative Thoughts Induction*

In order to induce negative thoughts, two tasks were used. In one, participants read a story about an unfair male teaching assistant (adapted from Keltner et al., 1993) and were asked to describe their negative thoughts related the story. Participants were also asked to complete a 5 item check list about the previous story. Sample items were "I thought the TA was very unfair" and "I thought the student should complain about this TA through official

channels and get the proper grade.” Participants responded to each item on a 7-point Likert-type scale ranging from 1 (disagree strongly) to 7 (agree strongly). In the current sample, the Cronbach alpha coefficient was .91.

For the second task, participants were asked to describe a recent stressful event and to write about negative thoughts associated with the event. Previous research (Gasper & Clore, 1998; Gohm, 2003; Schwarz & Clore, 1983) has demonstrated that writing about a recent stressful event induces negative emotions successfully. In this session, participants received the following two questions:

1. Describe a situation that occurred during the past 6 months that still makes you upset when you think about it.
2. When describing the above situation, what negative thoughts automatically come to your mind?

### *Stroop Task*

A computerized 70 trial Stroop task (Washburn & Putney, 1998) was used to assess participants' capacity to suppress unwanted thoughts associated with negative emotions. Participants learned that the words in different colors (red, blue, yellow or green) would be presented on the computer monitor and that their task was to correctly identify the color without considering the word content. Each trial began with an “X” in the center of the monitor (for 500 ms) followed by the stimulus that came from one of three categories: basic, congruent, and incongruent. The basic stimulus was composed of four Xs. The congruent stimulus was a word displayed in a color that matched the color it actually named. The incongruent stimulus was a word displayed in a different color from the color it actually named. Responses were given by pressing the mouse button: If the color of stimulus was blue or yellow, participants were instructed to press the left mouse button and if the color of stimulus was red or green, they were instructed to press the right mouse button. Response

times were defined as the time between stimulus onset and participant's response. A delay in the color identification would indicate a failure to suppress unwanted thoughts. If the response was incorrect, a feedback sound was provided. The presentation order of stimuli was random. This task was performed two times: prior to and after the induction of negative thoughts. The response times for correctly identified colors of incongruent stimuli were analyzed. The error rate in color identification was low (1.24 %). The difference between the first and the second average response time to incongruent stimuli was a quantitative value of cognitive capacity to suppress unwanted thoughts.

### *Rumination*

The Response Styles Questionnaire (RSQ; Nolen-Hoeksema, 1994) was used to assess rumination. The scale has high internal consistency (for this sample, Cronbach's  $\alpha = .89$ ). The scores of this questionnaire were also regarded as an indicator of the capacity to suppress unwanted thoughts. Sample items were "I analyze recent events to try to understand why I am depressed" and "I think about all my shortcomings, failings, faults, and mistakes." Response options ranged from 1 (I usually don't do this at all) to 4 (I usually do this a lot).

## Results

Of the 320 participants, 13 individuals were excluded from the data analysis because 9 of them could not follow the instruction of the Stroop task instructions, 3 of them could not finish the questionnaire packet, and 1 of them dropped out of the experiment before data collection was completed. Therefore, the data from 307 (218 women, 89 men) participants were retained for analysis.

### *The Attachment System and the Two Types of Emotion Regulation Strategies*

I hypothesized that attachment anxiety would be a stronger indicator than attachment avoidance to predict whether people use adaptive or maladaptive strategies of



emotion regulation. To assess this hypothesis, the path model (Figure 2) was tested in order to identify the relative contribution of independent variables on dependent variables. The path model was estimated using LISREL 8.7 program (Jöreskog & Sörbom, 2005). The results indicated that, of the two types of emotion regulation strategies, the anxiety dimension was a stronger predictor than the avoidance dimension. Table 1 shows standardized regression parameters of the two attachment dimensions for the two types of emotion regulation strategies. In addition, the results revealed that higher attachment anxiety led to higher levels of maladaptive strategies and to lower levels of adaptive strategies to repair emotional distress.

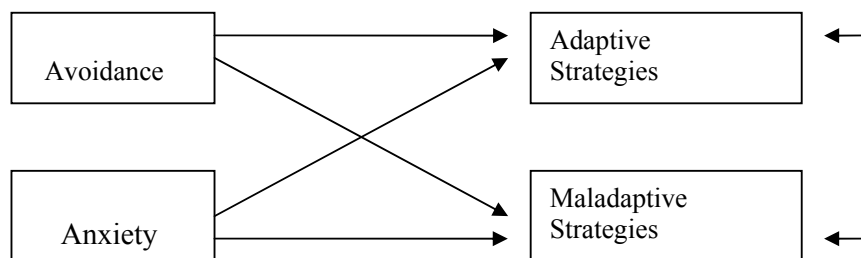


Figure 2. Path diagram for regression of the two types of emotion regulation strategies

Table 1

*Standardized Regression Parameters for the Two Types of Emotion Regulation Strategies*

	Anxiety Dimension	Avoidance Dimension
Adaptive Strategies	-.43**	-.17*
Maladaptive Strategies	.48**	.24**

Note. N = 307  $p^* < .01$   $p^{**} < .001$ .

Next, a chi-square difference test was conducted to evaluate whether or not the effects of avoidance and anxiety are equal on both adaptive and maladaptive strategies of emotion regulation. The results indicated that the effects of these two attachment dimensions are not equal on both adaptive and maladaptive strategies,  $\Delta X^2(2, N = 307) = 93.35, p < .005$ .

### *Attachment Anxiety and Emotion Regulation Strategies*

#### *Preliminary Analysis*

The conceptual model was presented (Figure 3) for hypotheses 2 and 3. Hypothesis 2 predicted that lower attachment anxiety will lead to higher levels of using adaptive emotion regulation strategies. Hypothesis 3 predicted that higher attachment anxiety will lead to higher levels of using maladaptive emotion regulation strategies. Both hypotheses suggested that the relationship between attachment anxiety and the two type of emotion regulation strategies will be mediated by the effects of both self-efficacy beliefs and cognitive capacities to suppress unwanted thoughts. Based on the guidelines of Little, Cunningham, Shahar, and Widaman (2002), three 6-item parcels for attachment anxiety and three 5-item parcels for self-efficacy were created. The 18 items in the attachment anxiety subscale were randomly parceled into three 6-item indicator parcels. In a similar manner, the 15 items in the general self-efficacy scale were randomly parceled into three 5-item indicator parcels. The internal consistency of all these parcels was acceptable (Alphas = .75 – .86). Means, standard deviations, and zero-order correlations for the 14 observed variables are presented in Table 2. In order to check a critical assumption underlying the maximum-likelihood procedure, data were assessed for normality. Results indicated that the data were multivariate normal for all observed variables.



*Note.*  $N=307$ . VENT = venting negative emotions; DOES = depending on others' emotional support; DS= depending on substances; SPA = seeking pleasurable activities; P&G = positive reinterpretation and growth; PLAN = planning; STROOP = the Stroop task; RUMI = rumination; SELFP 1, 2, 3 = three parcels from the General Self-Efficacy Scale; ANXP 1, 2, 3 = three parcels from the Anxiety subscale of the Experiences in Close Relationships Scale.

### *Stage 1: Measurement Model*

The proposed conceptual mediation model presented in Figure 3 was tested by a three stage procedure. In the first stage, a confirmatory factor analysis was conducted to develop a measurement model with an acceptable fit for the data, as recommended by Anderson and Gerbing's two-step approach (1998). After developing an acceptable measurement model, a direct effects model was tested in the second stage and then a mediation model was tested in the third stage as recommended by Holmbeck (1997). In addition, the proposed mediation model in the third stage was compared with a rival alternative model. To estimate model fit, the suggestions of Hu and Bentler (1999) were followed. Thus, model fit was estimated using three indices: the comparative fit index (CFI; values of .95 or greater are desirable), the standardized root-mean square residual (SRMR; values of .08 or less are desirable), and the root-mean-square error of approximation (RMSEA; values of .06 or less are desirable).

In this study, the measurement model was estimated using the maximum-likelihood method in the LISREL 8.7 program (Jöreskog & Sörbom, 2005). All of the loadings of the measured variables on the latent variables were statistically significant at  $p < .001$  except for one factor: the loading of depending on others' emotional support was significant at  $p < .02$ . Also this variable had a low factor loading compared with two other indicators for the latent variable, maladaptive emotion regulation strategies. To create the

best-fitting model, this indicator was dropped. The measurement model without this indicator for maladaptive emotion regulation strategies was tested. The results showed a very good fit of the modified model to the data,  $X^2 (55, N = 307) = 80.25, p < .01, X^2 / df = 1.46, CFI = .99, SRMR = .04,$  and  $RMSEA = .04$  (90 % Confidence Interval [CI]: .01, .05). A chi-square difference test conducted to compare the initial model with the modified model indicated that the modified model fit the data better than did the initial model,  $\Delta X^2 = 36.45, \Delta df = 12, p < .005$ . Based on this result, I used the modified model as the measurement model for testing the conceptual model. Correlations among latent constructs and factor loadings are presented in Table 3 and in Table 4 respectively. All of the loadings of the measured variables on the latent variables were statistically significant ( $p < .001$ , see Table 4). Therefore, all of the latent variables appear to have been adequately measured by their respective indicators.

Table 3

*Correlations among Latent Variables for the Initial Measurement Model*

Latent Variable	1	2	3	4	5
1. Attachment Anxiety	—	.62**	-.52**	-.39**	.69**
2. Maladaptive ER		—	-.40	-.36**	-.68**
3. Adaptive ER			—	.45**	-.47**
4. Self-Efficacy				—	-.37**
5. Cognitive Inability					—

Note.  $N = 307. p^{**} < .01$ . ER = emotion regulation.

Table 4

*Factor Loadings for the Initial Measurement Model*

Measure and Variable	Standardized factor loading	SE
<i>Attachment Anxiety</i>		
Anxiety Parcel 1	.90***	.05
Anxiety Parcel 2	.76***	.05
Anxiety Parcel 3	.86***	.05
<i>Maladaptive Emotion Regulation Strategies</i>		
Focusing & Venting Emotions	.71***	.07
Depending on Substances	.54***	.07
<i>Adaptive Emotion Regulation Strategies</i>		
Seeking Pleasurable Activities	.40***	.06
Positive Reinterpretation & Growth	.83***	.06
PLAN	.80***	.06
<i>Self-Efficacy</i>		
Self-Efficacy Parcel 1	.77***	.05
Self-Efficacy Parcel 2	.83***	.05
Self-Efficacy Parcel 3	.82***	.05
<i>Cognitive Inability to suppress unwanted thoughts</i>		
Stroop Response	.75***	.05
Rumination	.85***	.05

*Note.*  $N = 307$ . \*\*\*  $P < .001$ .

*Stage 2: Direct Effects Model*

The direct effects model was tested before testing the mediated model based on the recommendations of Holmbeck (1997). The maximum-likelihood method in the LISREL 8.7 program was used for the testing. The direct effect model fit the data very well,  $X^2(18, N = 307) = 27.61$ , CFI = .99, SRMR = .04, and RMSEA = .04 (90 % Confidence Interval

[CI]: .00, .07). The results are presented in Figure 4. All of the structural paths were significant at  $p < .01$ . In the second stage, the results indicated that higher levels of attachment anxiety predicted higher levels of using maladaptive emotion regulation strategies ( $\beta = .62, p < .01$ ) and lower levels of using adaptive emotion regulation strategies ( $\beta = -.53, p < .01$ ).

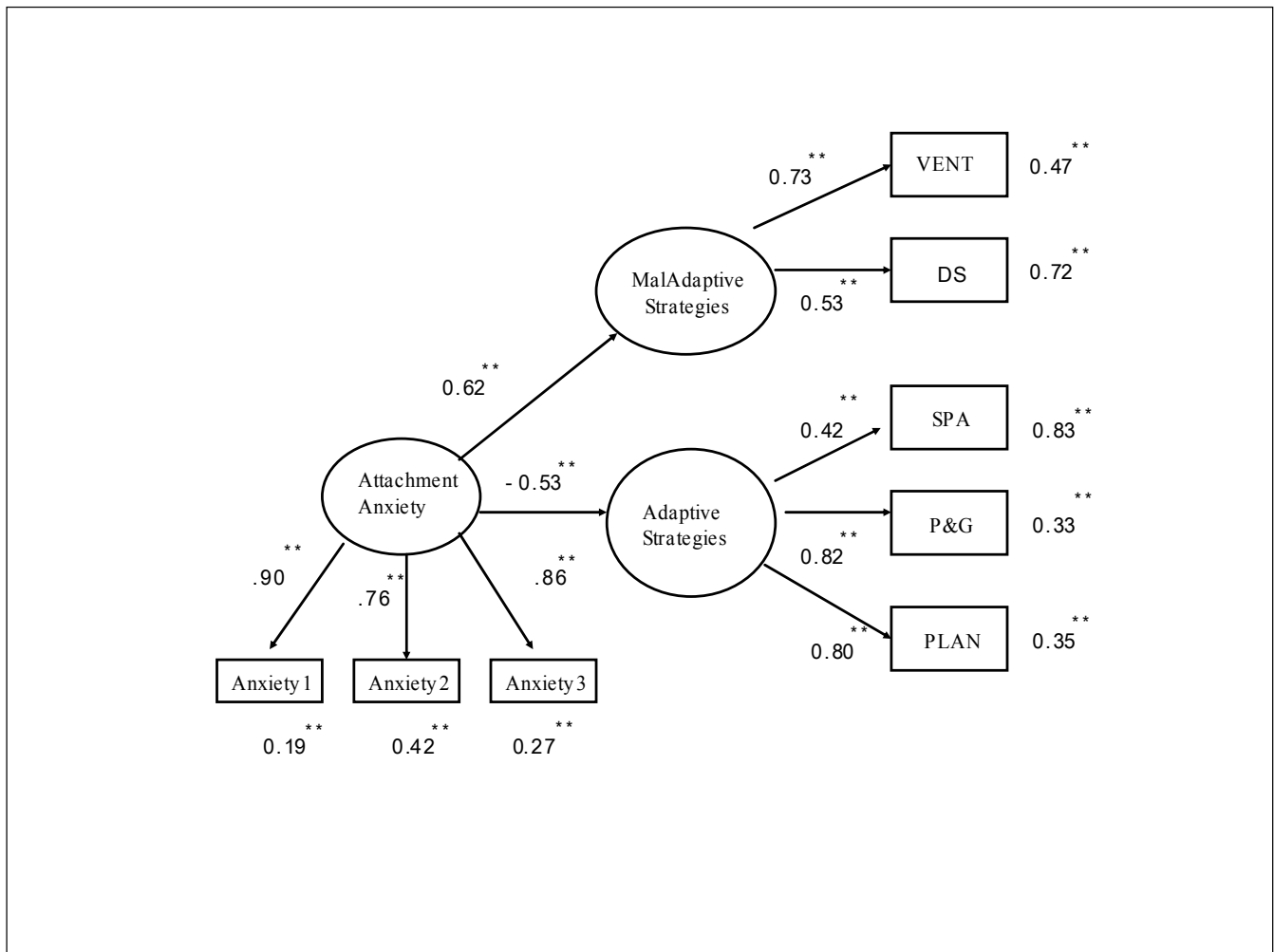


Figure 4. Direct effects model: standardized parameters of the effect of attachment anxiety on both adaptive and maladaptive emotion regulation strategies. \*\*  $p < .001$ .

### *Stage 3: The Mediated Model*

To examine the mediating effects of cognitive mechanisms, two constructs were added to the direct effects model: cognitive inability to suppress unwanted thoughts and self-efficacy beliefs. The results showed a very good fit of the model to the data,  $X^2 (57, N = 307) = 83.77, p < .05, X^2 / df = 1.47, CFI = .99, SRMR = .04,$  and  $RMSEA = .04$  (90 % Confidence Interval [CI]: .01, .05). However, in this initial model, two path coefficients were not statistically significant: the path from self-efficacy to maladaptive strategies of emotion regulation ( $\beta = -.09, ns$ ) and the path from cognitive inability to adaptive strategies of emotion regulation ( $\beta = -.16, ns$ ). Therefore, the modified model without these two paths was proposed and tested. The results also showed a very good fit for the data,  $X^2 (59, N = 307) = 88.03, p < .05, X^2 / df = 1.49, CFI = .99, SRMR = .05$  and  $RMSEA = .04$  (90 % Confidence Interval [CI]: .02, .06 see Figure 5). The comparison of the initial model and the modified model revealed no significant difference in the fit for these two models,  $\Delta X^2 (3, N = 307) = 5.26, p > .05$ . This result indicated that these two paths did not make a significant contribution to the model. Therefore, the modified model was used as the mediated model based on the parsimony principle (Raykov & Marcoulides, 1999).

One alternative model was compared and evaluated for fit to determine the model that more accurately depicted the effect of mediators in the relationship between attachment anxiety and the two types of emotion regulation strategies. The alternative model added a single path from self-efficacy to cognitive inability in order to examine the effect of self-efficacy beliefs on cognitive inability to suppress unwanted thoughts. Although this pathway was not hypothesized, it could be alternatively argued in terms of the ideas that self-efficacy beliefs contributed to concurrent depression (Bandura, Pastorelli, & Caprara, 1999), and people's ruminative responses to the negative emotions are at risk for long-term emotional difficulties such as depression (Nolen-Hoeksema, Parker, & Larson, 1994). A



chi-square difference test indicated that the alternative model was a significant improvement in fit over the modified hypothetical model,  $\Delta X^2 = (1, N = 307) = 5.16, p < .05$ . The alternative model fit the data very well,  $X^2 (58, N = 307) = 83.87, p < .05, X^2 / df = 1.45$ , CFI = .99, SRMR = .04, and RMSEA = .04 (90 % Confidence Interval [CI]: .01, .05). Figure 6 presents the parameter coefficients for the alternative mediated model.

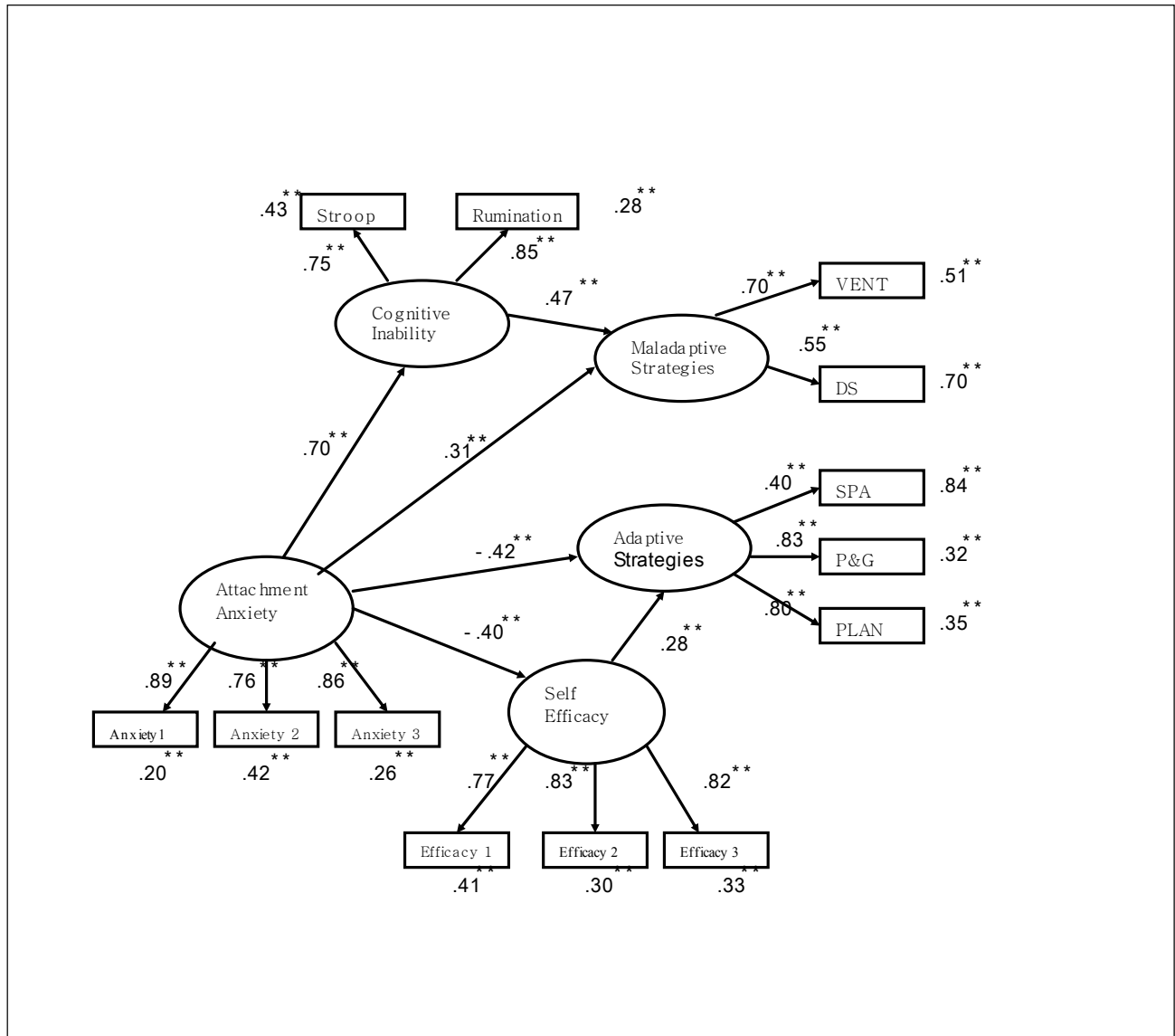


Figure 5. The hypothetical mediated model: standardized parameters of the effect of attachment anxiety on two cognitive mechanisms and the two types of emotion regulation strategies.  $N = 307$ . VENT= venting negative emotions; DS= depending on substances; SPA=seeking pleasurable activities; P&G= positive reinterpretation and growth; PLAN= planning.  $p^{**} < .01$ .

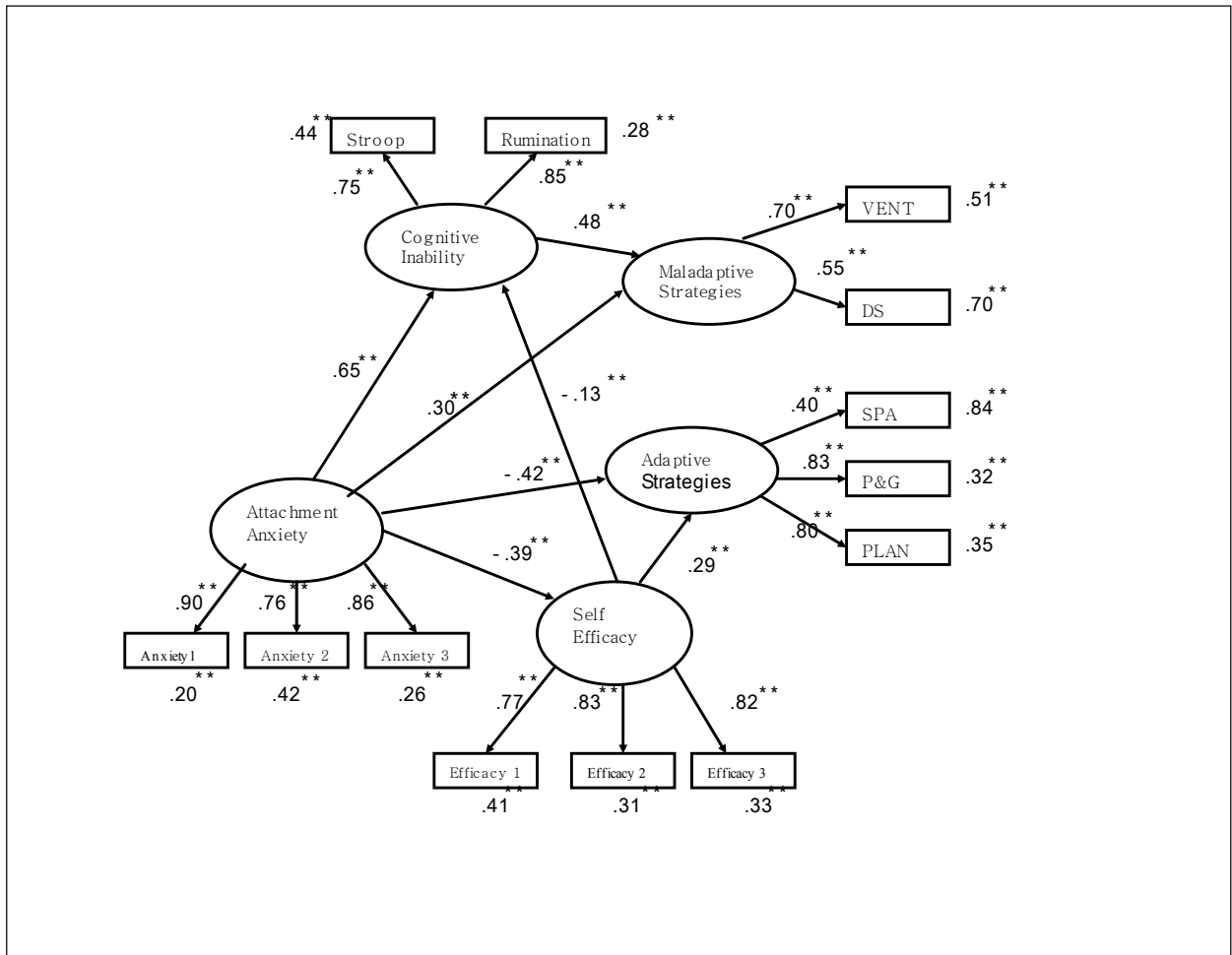


Figure 6. The Mediated Model: standardized parameters of the effect of attachment anxiety on two cognitive mechanisms and the two types of emotion regulation strategies.  $N = 307$ . VENT= venting negative emotions; DS= depending on substances; SPA=seeking pleasurable activities; P&G= positive reinterpretation and growth; PLAN= planning.  $P^{**} < .01$ .

The results of the mediation analysis showed that hypothesis 2 and 3 were partially supported. Thus, attachment anxiety was partially mediated by the effect of self-efficacy beliefs in the relationship with adaptive strategies of emotion regulation. Attachment anxiety was also partially mediated by the effect of cognitive inability to suppress unwanted thoughts in the relationship with maladaptive strategies of emotion regulation. Table 5 shows the relative strength of mediation effects calculated by the product of the two standardized path coefficients. The results showed that, compared to the effect of self-efficacy beliefs between attachment anxiety and adaptive emotion regulation, the effect of cognitive inability to suppress unwanted thoughts was stronger between attachment anxiety and maladaptive emotion regulation. To assess whether the coefficient for the direct effect was attenuated once the indirect effect was taken into account, two chi square difference tests were conducted. One test was conducted between the direct effect model and a mediated model in which the standardized parameter of direct effect of attachment anxiety on adaptive strategies (-.53) was set. The other test was conducted between the direct effect model and a mediated model in which the standardized parameter of direct effect of attachment anxiety on maladaptive strategies (.62) was set. The results revealed that only the chi-square difference test for the latter was statistically significant. Therefore, this result confirmed the above finding that the effect of cognitive inability was stronger than the effect of self-efficacy beliefs as a mediator.

Table 5 shows one statistically significant indirect effect where I had not expected to find mediation. The sense of self-efficacy was a significant mediator for the association between attachment anxiety and cognitive inability to suppress unwanted thoughts. However, as seen in Table 5, cognitive inability was not a significant mediator of the relationship between the sense of self efficacy and maladaptive emotion regulation strategies. Therefore, cognitive inability was the only significant mediator of the relationship between attachment

anxiety and maladaptive emotion regulation strategies. The structural model revealed that attachment anxiety and cognitive inability to suppress unwanted thoughts accounted for 51 % of the variance in using maladaptive emotion regulation strategies. Attachment anxiety and self-efficacy beliefs accounted for 35 % of the variance in using adaptive emotion regulation strategies. Based on the findings, the secondary process of the PMER was modified (see Figure 7).

Table 5

*Analysis of Magnitude and Significance of Indirect Effects*

Independent Variable	Mediator Variable	Dependent Variable	$\beta$ (Standardized path coefficient and product)
Indirect effects hypothesized to be statistically significant			
Anxiety	Cognitive Inability	Maladaptive	$(.65) \times (.48) = .31^{**}$
Anxiety	Self-Efficacy	Adaptive	$(-.39) \times (.29) = .11^{**}$
Indirect effects not expected to be statistically significant			
Anxiety	Self-Efficacy	Cognitive Inability	$(-.39) \times (-.13) = .05^*$
Self-Efficacy	Cognitive Inability	Maladaptive	$(-.13) \times (.48) = -.06$

Note.  $N = 307$ .  $p^* < .05$ .  $p^{**} < .01$ .

Secondary Emotion Regulation  
Process

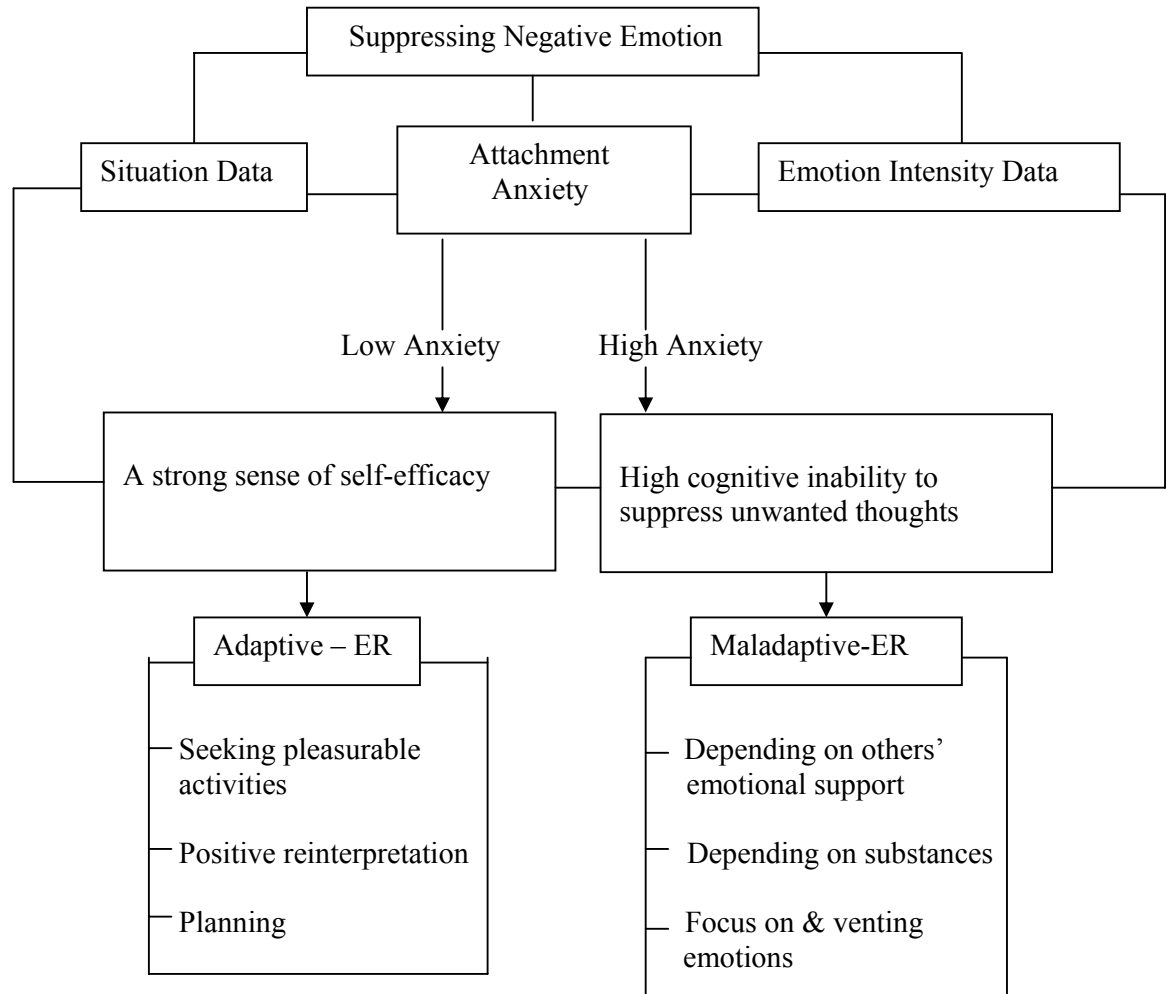


Figure 7. A modified version of the PMER.

*Adult Attachment Styles and Gender in Using Adaptive or Maladaptive Emotion Regulation Strategies*

The data were analyzed by a two-way between-groups multivariate analysis of variance (MANOVA) to test hypotheses 4, 5, 6 and 7. The independent variables were attachment style (secure, fearful avoidant, preoccupied, and dismissing avoidant) and gender. Attachment style was assessed using the ECR. In the present sample, 33% of the

participants ( $N = 101$ ; 66 women and 35 men) were classified as securely attached, 23 % ( $N = 71$ ; 54 women and 17 men) as fearful avoidant, 30% as preoccupied ( $N = 94$ ; 68 women and 26 men), and 14 % as dismissing avoidant ( $N = 41$ ; 30 women and 11 men). With regard to gender, a majority (71%) of the participants were women ( $N = 218$ ) whereas men are only 29 % ( $N = 89$ ) of the study sample. The dependent variables were the two type of emotion regulation strategies: adaptive and maladaptive. According to the preliminary assumption test, there were no serious violations of the assumptions: normality, linearity, univariate and multivariate outliers, homogeneity of covariance matrix, and multicollinearity. However, Levene's test of equality of error variances indicated one dependent variable violated the assumption of equality of variance. Therefore, a more conservative alpha level (.025) was set for maladaptive emotion regulation strategies. The MANOVAs revealed two multivariate main effects for attachment style and gender, but no interaction effect between attachment style and gender.

As mentioned above, a MANOVA yielded a statistically significant difference among four attachment styles on the dependent variables:  $F(6, 596) = 18.49, p < .001$ ; Wilks' Lambda = .71; partial eta squared = .16. Analysis for each dependent variable using a Bonferroni adjusted alpha level of .025 yielded that attachment styles influence the using of adaptive or maladaptive strategies of emotion regulation:  $F(3, 299) = 15.23, p < .001$ , partial eta squared = .13:  $F(3, 299) = 25.28, p < .001$ , partial eta squared = .20. Tukey HSD post hoc test revealed the following differences: (a) Secure and dismissing avoidant people used adaptive strategies of emotion regulation more often than preoccupied and fearful avoidant people. (b) Preoccupied and fearful avoidant people used maladaptive strategies of emotion regulation more often than dismissing avoidant people. The results indicated that preoccupied people had the highest levels of using maladaptive strategies of emotion

regulation among the four attachment styles. Table 6 presents the means and standard deviations of the different attachment style groups.

Table 6

*Means and Standard Deviations of Adaptive and Maladaptive Emotion Regulation Strategies According to Attachment Style*

Emotion Regulation Strategies	Attachment Styles			
	Secure ( <i>N</i> = 101)	Fearful Avoidant ( <i>N</i> = 71)	Preoccupied ( <i>N</i> = 94)	Dismissing Avoidant ( <i>N</i> = 41)
Adaptive				
<i>M</i>	33.84	28.80	28.61	33.29
<i>SD</i>	5.26	6.83	6.73	5.98
Maladaptive				
<i>M</i>	26.83	28.35	32.16	25.12
<i>SD</i>	5.49	5.67	4.62	5.31

With regard to gender differences, a MANOVA revealed that there was a statistically significant difference between women and men on the dependent variables:  $F(2, 298) = 23.37, p < .001$ ; Wilks' Lambda = .86; partial eta squared = .14. At the univariate level, the main effect for gender was significant for adaptive emotion regulation strategies,  $F(1, 299) = 9.05, p < .01$ , partial eta squared = .03 and also significant for maladaptive emotion regulation,  $F(1, 299) = 38.87, p < .001$ , partial eta squared = .12. The findings indicated that men used adaptive strategies more often than women, while women used maladaptive strategies more often than men. Therefore, hypothesis 6 and 7 which



predicted these findings were supported. Table 7 presents the means and standard deviations according to gender.

Table 7

*Means and Standard Deviations of Adaptive and Maladaptive Emotion Regulation Strategies According to Gender*

Emotion Regulation Strategies	Gender	
	Women ( <i>N</i> = 218)	Men ( <i>N</i> = 89)
Adaptive		
<i>M</i>	30.17	33.03
<i>SD</i>	6.25	7.24
Maladaptive		
<i>M</i>	29.91	25.35
<i>SD</i>	5.33	5.75

*Attachment Styles and Gender in the Use of Specific Emotion Regulation Strategies*

Hypothesis 8 predicted that, at the strategies of emotion regulation level, people with low attachment anxiety will use different adaptive strategies according to their levels of attachment avoidance. To test this hypothesis, a one-way between-groups multivariate analysis of variance (MANOVA) was performed. The independent variables were two attachment styles: secure and dismissing avoidance. The dependent variables were three adaptive emotion regulation strategies: seeking pleasurable activities, positive interpretation and growth, and planning. A preliminary assumption test showed that there were no serious violations. The MANOVA revealed that there was no statistically significant difference between secure and dismissing avoidant people on using three adaptive emotion regulation

strategies. Thus, hypothesis 8 was not supported. Table 8 presents the means and standard deviations of the three dependent variables according to two attachment styles.

Table 8

*Means and Standard Deviations on the Dependent Measures According to Attachment Style*

Dependent Measures	Secure ( <i>N</i> = 101)		Dismissing Avoidant ( <i>N</i> = 41)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SPA	9.98	2.12	10.00	2.63
P&G	11.90	2.59	11.90	2.71
PLAN	11.92	2.58	11.51	2.56

Note. Total *N* = 307. SPA =seeking pleasurable activities, P&G=positive interpretation & growth, PLAN = planning.

The data were analyzed by a one-way between-groups multivariate analysis of variance (MANOVA) to assess hypothesis 9. This hypothesis suggested that, at the strategies of emotion regulation level, people with high anxiety will use different maladaptive strategies according to their levels of attachment avoidance. The independent variables were two attachment styles: fearful avoidance and preoccupied. The dependent variables were three maladaptive emotion regulation strategies: focusing and venting emotions, depending on others' emotional support, and depending on substances. According to preliminary assumption test, one dependent variable violated the assumption of equality of variance. Therefore, a more conservative alpha level (.025) was set for the dependent variable, depending on substances.

A MANOVA revealed a statistically significant difference between fearful avoidance and preoccupied people on using three maladaptive emotion regulation strategies,  $F(3, 161) = 1.17, p < .001$ ; Wilks' Lambda = .71; partial eta squared = .29. Table 9 presents

the means and standard deviations of the three dependent variables according to two attachment styles. Univariate F using a Bonferroni adjusted alpha level of .017 revealed the only difference to reach statistical significance was depending on others' emotional support:  $F(1, 163) = 62.17, p = .001$ , partial eta squared = .28. The result indicated that preoccupied people depended on others' emotional support more often than fearful avoidant people, but they did not show differences in the use of other two strategies such as venting negative emotions or depending on substances.

Table 9

*Means and Standard Deviations on the Dependent Measures According to Attachment Style*

Dependent Measures	Fearful Avoidant ( <i>N</i> = 71)		Preoccupied ( <i>N</i> = 94)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
VENT	10.56	.32	11.28	.28
DOES	9.01	.34	12.55	.29
DS	8.73	.31	8.31	.27

With regard to gender differences, a MANOVA yielded that gender differences on the six dependent variables were statistically significant,  $F(6, 300) = 9.25, p < .001$ ; Wilks' Lambda = .84; partial eta squared = .16. Table 10 presents the means and standard deviations of the six dependent variables according to gender. Univariate F using a Bonferroni adjusted alpha level of .008 revealed that the gender differed significantly on four dependent variables. In other words, there were no gender differences in the use of two emotion regulation strategies such as positive interpretation and growth and depending on substances. Table 11 shows the results of the univariate F test. The findings indicated that

women used two strategies of emotion regulation more often than men: focusing and venting negative emotions and depending on others' emotional support, while men sought pleasurable healthy activities and made plans more often than women to repair their emotional distress.

Table 10

*Means and Standard Deviations on the Dependent Measures According to Gender*

Dependent Measure	Women (N = 218)		Men (N = 89)	
	M	SD	M	SD
SPA	9.06	2.27	9.98	2.47
P&G	10.54	2.89	11.36	3.09
PLAN	10.65	2.89	11.70	2.93
VENT	10.56	2.86	8.58	2.67
DOES	11.17	3.26	9.35	3.12
SS	8.16	2.39	7.41	2.58

Table 11

*The results of Univariate F test for Gender*

Dependent Measures	df	F	Patial Eta Squared	Significance Level
SAP	1	9.94	.03	$p < .005$
P&G	1	4.86	.02	$p < .05$
PLAN	1	8.30	.03	$p < .005$
VENT	1	31.52	.09	$p < .001$
DOES	1	20.13	.06	$p < .001$
DS	1	6.05	.02	$p < .05$

## Discussion

The present study provides crucial information about the emotion regulation process by testing hypotheses derived from a conceptual emotion regulation model, a processing model of emotion regulation (PMER). As the PMER suggests, the findings revealed that attachment anxiety was a stronger predictor of whether people cope with adaptive or maladaptive strategies than attachment avoidance. Specifically, higher levels of attachment anxiety were associated with higher levels of using maladaptive strategies of emotion regulation, and lower levels of attachment anxiety were linked to using adaptive strategies of emotion regulation. Furthermore, the PMER specifies how the attachment anxiety influences the use of the two types of emotion regulation strategies through the functions of two cognitive mechanisms: self-efficacy beliefs and cognitive capacity to suppress unwanted thoughts.

The results partially support the proposed mediation hypotheses. Thus, self-efficacy beliefs accounted for the relationship between attachment anxiety and adaptive emotion regulation strategies while cognitive inability to suppress unwanted thoughts did not. Also, cognitive inability to suppress unwanted thoughts accounted for the connection between attachment anxiety and maladaptive emotion regulation strategies while self-efficacy beliefs did not. Compared to the effect of self-efficacy beliefs between attachment anxiety and adaptive emotion regulation, the effect of cognitive inability to suppress unwanted thoughts was stronger between attachment anxiety and maladaptive emotion regulation. In addition, the sense of self-efficacy explained the association between attachment anxiety and cognitive inability to suppress unwanted thoughts, which was not expected to be a statistically significant indirect effect.

Based on the present results and spreading activation theory (Boden & Baumeister, 1997; Bower, 1981, 1991; Clark & Isen, 1981; Ingram, 1984; Lang, 1984), it is indicated that

individuals with high levels of attachment anxiety are more likely to fail to suppress unwanted thoughts associated with negative emotions. They would respond to these emotions by focusing ruminatively on them, which in turn may activate past events and beliefs related to the present negative emotions, thus exacerbating them. As a result, they might be overwhelmed by these intense negative emotions and may adopt maladaptive emotion regulation strategies despite the harmful costs of such strategies.

These results are consistent with previous findings: people with high levels of attachment anxiety fail to engage in distress-eliciting thought suppression (Mikulincer et al., 2004) and show the shortest retrieval times for negative memories and the highest emotional intensity linked to these memories (Mikulincer & Orbach, 1995). Furthermore, this ruminative response to negative thoughts relates to severe and prolonged periods of distress (Caver & Scheier, 1990; Nolen-Hoeksema, 1991; Nolen-Noeksema et al., 1994). In contrast, individuals with low attachment anxiety have strong self-efficacy beliefs, which may allow them to encounter stressful events with a sense of mastery, and they are therefore not overwhelmed by emotional distress and use adaptive emotion regulation strategies.

Above all, the critical contribution of the present research is that the identification of these mediating factors may lead to more helpful interventions aimed at guiding effective emotion regulation if such factors are taken into account in the design of treatment. Based on these findings, it is suggested that the intervention, particularly with regard to effective emotion regulation, could be designed to enhance self-efficacy beliefs and decrease ruminative responses to negative thoughts aroused by stressful events.

Although not very strong in the current sample, it is an interesting and potentially important finding that enhanced self-efficacy beliefs increase the cognitive capacity to suppress unwanted thoughts. This finding is consistent with Bandura's (1997) argument that self-efficacy beliefs control depressing thoughts. In fact, Bandura has broadly argued for the

importance of self-efficacy in psychological adjustment. However, as mentioned above, the results of the present study suggest more specifically that self-efficacy beliefs are directly related to the likelihood of using adaptive emotion regulation strategies. Aside from the mediation issue and in line with considerable research (Mikulincer, 1998a; 1998b; Mikulincer, Florian, & Weller, 1993), the current findings demonstrated a central tenet of Bowlby's (1973, 1982) attachment theory: individual differences in attachment security are crucial for understanding how people cope with emotional distress.

It is interesting to note that the strategy of depending on others' emotional support as an indicator for the maladaptive emotion regulation latent variable had a low loading relative to the other two indicators. This finding is incongruent with the suggestion of the PMER based on previous studies (Berman & Turk, 1981; Costanza, Derlega, & Winstead, 1988; Lapsley et al, 1989; Tolor & Fehon, 1987) and the rationale of Mikulincer et al.'s (2003) model. One possible reason for this unexpected finding might be attributed to the gender bias of the sample of the present study (women = 218, men = 89). According to meta-analyses of gender differences in personality (Costa, Terracciano, & McCrae, 2001; Feingold, 1994), women are more agreeable, gregarious, and warmer than men; they are also more open about their feelings and actions to others than men. These characteristics of women are consistent with gender role norms. Thus, it seems that women seek emotional support from others without any sense of conflict to their gender role. In other words, seeking emotional support is more accepted for women than men as a strategy of emotion regulation according to their gender role norms. In this sense, replication of the present study with samples balanced in gender is necessary to categorize whether the seeking of others' emotional support is as a maladaptive or an adaptive strategy.

The findings support hypotheses about the relationship between attachment styles and the two types of emotion regulation. Thus, secure and dismissing avoidant people used

adaptive strategies of emotion regulation more frequently than fearful avoidant and preoccupied people; the latter used maladaptive strategies of emotion regulation more often than the former. In fact, these results confirmed the hypothesis that attachment anxiety was a stronger predictor of whether people use adaptive or maladaptive strategies of emotion regulation than was attachment avoidance. Both secure and dismissing avoidant people are characterized by low levels of attachment anxiety, while fearful avoidant and preoccupied people are characterized by high levels of attachment anxiety. Therefore, these results are consistent with the argument that attachment anxiety is a stronger indicator than attachment avoidance to predict whether people use adaptive or maladaptive strategies of emotion regulation.

The findings also supported the idea that gender differences influenced the use of emotion regulation strategies; thus, men used adaptive strategies more often than women, while women used maladaptive strategies more often than men. As stated before, seeking others' emotional support may be more acceptable for women as a strategy of emotion regulation in the context of gender role norms; therefore, this result was predictable in the current study which categorized seeking others' emotional support into maladaptive strategies.

At the strategies of emotion regulation level, the results only partially supported the hypothesis that people with high attachment anxiety used different maladaptive strategies according to their levels of attachment avoidance; thus, preoccupied people used the strategy of depending on others' emotional support more often than fearful avoidant people. However, they did not show any differences in the use of two other strategies such as venting negative emotions and depending on substances. Unexpectedly, people with low attachment anxiety did not differ in the use of adaptive strategies according to their levels of attachment avoidance; thus, secure and dismissing avoidant people showed no differences



in the use of three adaptive strategies of emotion regulation. This finding contradicts previous research which found that avoidant people are susceptible to emotional distress (Carnelley, Pietromonaco, & Jaffe, 1994; Mikulincer, Dolev, & Shaver, 2004; Patrick, Hobson, Castle, Howard, & Maughan, 1994). Mikulincer et al. argue that avoidant people show relatively poor coping and high levels of distress in intense stressful situations because these severe stressful situations impair their function of defense although they display adequate levels of psychological adjustment in daily life.

This unexpected result regarding avoidant people with low attachment anxiety may have three possible explanations. First, the contradiction may be due to differences in what the term “avoidant people” includes. In the current study, the term avoidant people includes only dismissing avoidant people, characterized by high attachment avoidance and low attachment anxiety. However, in previous research this term included both dismissing avoidant *and* fearful avoidant people. Fearful avoidant people are characterized by high attachment anxiety and high attachment avoidance. In the emotion regulation process, fearful avoidant people are apparently different from dismissing avoidant people. For example, fearful avoidant people showed an inability to suppress unwanted thoughts like preoccupied people but dismissing avoidant people did not. This difference entails variant results in emotion regulation.

A second explanation might be that the present study mainly used self-report measures to assess participants’ emotion regulation strategies. This type of measure may elicit self-image protection responses from participants. According to Mikulincer and colleagues (Mikulincer 1995; Mikulincer & Orbach, 1995), dismissing avoidant people are defensive and have a highly positive self-view and differentiated self-structure that is not pervaded by emotional distress. These findings indicated that dismissing avoidant people could not delineate their “real-self” through the self-report measure. That is, dismissing

avoidant people's defensive and highly positive self-view may lead them to believe that they are people who often use constructive emotion regulation strategies such as making plans to handle problems, thinking positively, and trying to learn something from the experience.

Lastly, almost all attachment research on emotion regulation, including the present research, focuses on the intrapersonal level. On this level, avoidant people with low anxiety might maintain an emotional equanimity similarly to secure people in terms of highly positive self-views even though they lack balance, integration, and inner coherence compared to secure people's positive self-views. However, they may show problematic emotional reactions to significant others in close relationships, unlike secure people. Avoidant people divert their attention from conflict and display low levels of perspective-taking skills such as support and validation toward their partner in conflict interactions. In contrast, secure people make efforts to communicate with their partner about feelings and concerns in conflict interaction (Fenney, Noller, & Callan, 1994; Kobak & Duemmler, 1994). From this point of view, only secure people can achieve adaptive emotion regulation at both intrapersonal and interpersonal levels.

In relation to gender differences in the use of six strategies of emotion regulation, men sought pleasurable activities and made plans more often than women, while women vented negative emotions and depended on others' emotional support more often than men. As stated before, meta-analyses (Costa et al., 2001; Feingold, 1994) has found significant gender differences in personality. In addition, during two years in high school, boys find their competence in the physical domains of appearance and athletic ability, while girls find their competence in the social domains of close friendships and social acceptance (Shapka & Keating, 2005). These gender differences develop from social interaction, particularly from same gender peer groups (Maccoby, 1990) and media exposure.

Playing appropriate social gender roles may create a foundation for overall self-worth. In this sense, the strategy of depending on others' emotional support might be more natural and effective for women than men for coping with emotional distress. In fact, the present results showed that secure and preoccupied women depended on others' emotional support more often than fearful avoidant and dismissing avoidant women. There was no statistically significant difference between secure and preoccupied women in the use of depending on others' emotional support. More research is required to explain the gender difference in the use of the strategy of depending on others' emotional support.

It is important to note several methodological limitations of the present study. First of all, the sample was relatively young and mainly female undergraduate students. For this reason, the generalization of findings needs replication with diverse samples. Second, the self report measures were mainly used for assessing psychological factors in the present study. As mentioned before, this type of measure may be vulnerable to the desire of protecting one's self-image in spite of anonymous testing conditions. Specifically, the psychological factors of dismissing avoidant people might not be correctly assessed by self-report measures because they are defensive and may have deceptive and overly positive self-views which lack inner coherence. I suspect that dismissing avoidant people, due to these deceptive overly positive self-views, reported high levels of using three adaptive strategies of emotion regulation, in a similar manner as secure people did. For this reason, it is suggested that future studies use implicit measures of psychological factors for attachment research. Implicit measures can recognize automatic or unconscious levels of psychological factors that are relatively free of contamination by self-presentational processes. Observational data collection reported from close friends, family members, or clinical interviews is also suggested to avoid the limitation of self-report measures. Another limitation of note was the low internal consistency for subscales of the two emotion regulation strategies: seeking pleasurable activities and depending on

substances. Future studies need to use more reliable methods of measuring these two strategies of emotion regulation.

Future studies should improve on the methodological limitations of the present study. They should also find potential mediators and examine their roles in the connection between attachment anxiety and the two types of emotion regulation strategies. These efforts enable researchers to more fully understand the process of emotion regulation. In relation to potential mediators, it has been contended that interpersonal relatedness and self-definition are important indicators for psychological adjustment (Blatt, 1995b; Blatt & Blass, 1996; Blatt & Shichman, 1983). Researchers also pointed out the relationships between the attachment system and these two psychological factors (Blatt & Homann, 1992; Zuroff & Fitzpatrick, 1995). Therefore, interpersonal relatedness and self-definition will account for the relationship between attachment anxiety and the two types of emotion regulation strategies.

The Depressive Experience Questionnaire (DEQ: Blatt, D'Afflitti, & Auinlan, 1976) measures three constructs which reflect the two psychological factors mentioned above. These constructs are dependency, self-criticism, and efficacy. Dependency assesses both adaptive and maladaptive interpersonal relatedness. Self criticism and efficacy assess self-definition. The data of adaptive and maladaptive interpersonal relatedness might provide important evidence to determine whether seeking others' emotional support is an adaptive or maladaptive strategy based on the analysis of correlations between them. In addition, the effect of adaptive interpersonal relatedness between attachment anxiety and adaptive strategies might help to clarify the different uses of adaptive strategies of emotion regulation among secure and dismissing avoidant people. From this point of view, it seems important to further explore the role of Blatt and colleague's tenets (Blatt, 1974; Blatt & Blass, 1996) in the connection between attachment anxiety and the two types of emotion regulation strategies.

## Conclusion

In the present research, a processing model of emotion regulation was proposed and tested with undergraduate students. The hypothesized framework of the model was supported by the results of the study. Overall, the present research provides additional evidence for the claim that the attachment system is an important framework for understanding individual differences in emotion regulation. It is also suggested that the interventions aimed at eliciting effective emotion regulation could be designed to enhance self-efficacy beliefs and decrease ruminative responses to negative thoughts aroused by stressful events. The PMER is just one of the conceptual models to explain emotion regulation. In order to develop a more complete emotion regulation model, future research needs to focus on finding potential mediators of the connection between adult attachment system and emotion regulation strategies.

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Appendix

Complete Study Materials

Participant Number: \_\_\_\_\_

## Personal Information Questionnaire

Please answer the following questions about yourself.

1. Sex: Female    Male

2. Age: \_\_\_\_\_ years.

3. Race: White    Black    Hispanic    Asian    Other

4. Marital Status: Married    Divorced    Never Married

5. Job Status: Full Time    Part Time    No Job

6. How much money do you make a month? \$\_\_\_\_\_

7. Living Arrangements: Living alone    Living with spouse    Living with other(s)

Living with partner

8. Self-rated stress level:      5            4            3            2            1  
     very high                    neutral                    very low

9. Your stress mainly comes from: (Circle all that apply):

School    Family    Working place    Romantic relationships    Interpersonal Relationships  
 Financial Problem    Weight Problem    Health Problem

If you have another reason, please explain it briefly:

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# Daily Strategies of Emotion Regulation

(Modified from Carver, Scheier, and Weintraub's (1989) The COPE scales)

## Instructions

We are interested in how you deal with your negative emotions when you are very upset for an obvious reason. For example:

- You fight with your significant other.
- You lose your job.
- You are insulted by your employer in the workplace.
- Your romantic partner is cheating on you.

There are lots of ways to try to deal with negative emotions. This questionnaire asks you to indicate **what you generally do**, when you experience stressful events. Obviously, different events bring out somewhat different responses, **but think about what you usually do when you are under a lot of negative emotions.**

Read each of the following statements as if it referred to you. Then, please indicate your agreement or disagreement with the statement by writing a number in the space provided. The numbers correspond to the following responses:

- 1 = I usually don't do this at all.
- 2 = I usually do this a little bit.
- 3 = I usually do this a medium amount.
- 4 = I usually do this a lot.

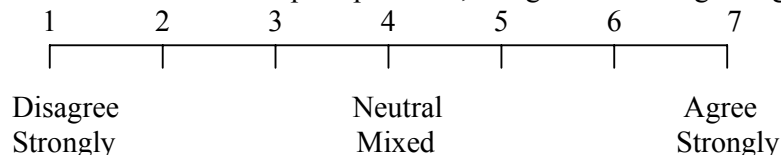
1. \_\_\_\_\_ I spend a lot of time in my bedroom.
2. \_\_\_\_\_ I sleep more than usual.
3. \_\_\_\_\_ I try to get emotional support from friends or relatives.
4. \_\_\_\_\_ I go to the gym.
5. \_\_\_\_\_ I discuss my feelings with someone.
6. \_\_\_\_\_ I watch TV or listen to music or surf the internet.
7. \_\_\_\_\_ I get sympathy and understanding from someone.
8. \_\_\_\_\_ I meet friends and spend time with them, but I do not talk about the  
negative event.
9. \_\_\_\_\_ I eat something (e.g. ice-cream, chocolate, pizza.).
10. \_\_\_\_\_ I look for something good in what is happening.
11. \_\_\_\_\_ I cry.

12. \_\_\_\_\_ I think hard about what step to take to avoid creating the same problem.
13. \_\_\_\_\_ I drink alcohol.
14. \_\_\_\_\_ I try to come up with a strategy about what to do.
15. \_\_\_\_\_ I take drugs.
16. \_\_\_\_\_ I try to see it in a different light, to make it seem more positive.
17. \_\_\_\_\_ I feel a lot of emotional distress and I find myself expressing those feelings  
a lot.
18. \_\_\_\_\_ I learn something from the experience.
19. \_\_\_\_\_ I go shopping, and buy something spontaneously.
20. \_\_\_\_\_ I make a plan of action to avoid repeating the same problem.
21. \_\_\_\_\_ I describe the negative event in detail in a journal.
22. \_\_\_\_\_ I try to grow as a person as a result of the experience.
23. \_\_\_\_\_ I talk to someone about how I feel.
24. \_\_\_\_\_ I think about how I might best handle the problem.

# Experiences in Close Relationships Inventory

(The ECR: Brennan, Clark, and Shaver, 1998)

The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Answer each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:



- \_\_\_\_\_ 1. I prefer not to show a partner how I feel deep down.
- \_\_\_\_\_ 2. I worry about being abandoned.
- \_\_\_\_\_ 3. I am very comfortable being close to a romantic partner.
- \_\_\_\_\_ 4. I worry a lot about my relationships.
- \_\_\_\_\_ 5. Just when my partner starts to get close to me I find myself pulling away.
- \_\_\_\_\_ 6. I worry that romantic partners won't care about me as much as I care about them.
- \_\_\_\_\_ 7. I get uncomfortable when a romantic partner wants to be very close.
- \_\_\_\_\_ 8. I worry a fair amount about losing my partner.
- \_\_\_\_\_ 9. I don't feel comfortable opening up to romantic partners.
- \_\_\_\_\_ 10. I often wish that my partner's feelings for me were as strong as my feelings for him/her.
- \_\_\_\_\_ 11. I want to get close to my partner, but I keep pulling back.
- \_\_\_\_\_ 12. I often want to merge completely with romantic partners, and this sometimes scares them away.
- \_\_\_\_\_ 13. I am nervous when partners get too close to me.
- \_\_\_\_\_ 14. I worry about being alone.
- \_\_\_\_\_ 15. I feel comfortable sharing my private thoughts and feelings with my partner.
- \_\_\_\_\_ 16. My desire to be very close sometimes scares people away.
- \_\_\_\_\_ 17. I try to avoid getting too close to my partner.
- \_\_\_\_\_ 18. I need a lot of reassurance that I am loved by my partner.
- \_\_\_\_\_ 19. I find it relatively easy to get close to my partner.
- \_\_\_\_\_ 20. Sometimes I feel that I force my partners to show more feeling, more commitment.
- \_\_\_\_\_ 21. I find it difficult to allow myself to depend on romantic partners.

- \_\_\_\_\_ 22. I do not often worry about being abandoned.
- \_\_\_\_\_ 23. I prefer not to be too close to romantic partners.
- \_\_\_\_\_ 24. If I can't get my partner to show interest in me, I get upset or angry.
- \_\_\_\_\_ 25. I tell my partner just about everything.
- \_\_\_\_\_ 26. I find that my partner(s) don't want to get as close as I would like.
- \_\_\_\_\_ 27. I usually discuss my problems and concerns with my partner.
- \_\_\_\_\_ 28. When I'm not involved in a relationship, I feel somewhat anxious and insecure.
- \_\_\_\_\_ 29. I feel comfortable depending on romantic partners.
- \_\_\_\_\_ 30. I get frustrated when my partner is not around as much as I would like.
- \_\_\_\_\_ 31. I don't mind asking romantic partners for comfort, advice, or help.
- \_\_\_\_\_ 32. I get frustrated if romantic partners are not available when I need them.
- \_\_\_\_\_ 33. It helps to turn to my romantic partner in times of need.
- \_\_\_\_\_ 34. When romantic partners disapprove of me, I feel really bad about myself.
- \_\_\_\_\_ 35. I turn to my partner for many things, including comfort and reassurance.
- \_\_\_\_\_ 36. I resent it when my partner spends time away from me.

## An Imagination Task

(Keltner, Ellsworth, and Edwards, 1993)

Please read the following stories according to experimenter's guidance.

When you read the following stories, please use your ability to visualize and concentrate and try to imagine the events as vividly as possible, by imagining how you would feel.

You will have two minutes for reading and thinking about this story.

You are enrolled in a course that is a prerequisite for your intended major. In general you are finding the course quite interesting and enjoyable, and you feel that you've chosen the right major. However you don't get along with your T.A., who is consistently seen by you and the other students as strict and rude. In your discussion session you often disagree with what he says, and he is highly critical of and frequently laughs at your comments. Recently you wrote a big paper for the class that your T.A. graded. You were really interested in the paper topic, and you wanted to show that you knew what you were talking about. So, you researched the topic very carefully, and put a lot of effort into writing what you believe is one the best papers you'd ever written. Today at the end of your discussion session the T.A. hands the papers back, and you see that he has given you a "C".



You will have two minutes for reading and thinking about this story.

After the session you seek out your T.A. to find out why you got such a bad grade, and to see if he would consider. The T.A. says that you received the grade you did because the research was done carelessly, and the paper was poorly written and thought out. Further, he says he took special care in grading your paper the first time and will not look at it again.

You will have two minutes for reading and thinking about this story.

During the next discussion session, the T.A. says that he received a number of questions about what he was looking for in the papers. Therefore, to clarify things, he passes out copies of two of the papers, one good and one bad, and proceeds to critique them in detail. Your paper is handed out as the “bad” example, and the T.A. has nothing good to say about it. Although you aren’t mentioned by name, it’s obvious by his frequent looking at you who wrote the paper, and you feel like everyone is staring at you.

You will have two minutes for reading and thinking about this story.

You can't believe that the T.A. has done this to you. You don't think that there's any reason for the T.A. to single you or your paper out like this. You don't believe that your paper was anywhere near the worst one in the class. At one point during the session you ask what exactly was wrong with a certain passage, and the T.A. says that he will gladly discuss that with you after class, as if the question wasn't worth spending class time on it.

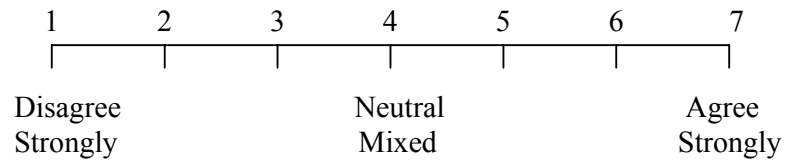
You will have two minutes for reading and thinking about this story.

You decide to drop the class, despite knowing that it is offered once a year and will throw your fulfilling of your major's requirements somewhat out of sequence.

Participant Number: \_\_\_\_\_

**Question.** When reading this story, **what thoughts** automatically come to your mind?  
(You will have 5 minutes for this writing).

Please indicate how much you agree with each of the following statements, using the scale below:



When I read the story...

- \_\_\_\_\_ 1. I thought the TA was very unfair.
- \_\_\_\_\_ 2. I thought the TA has some personality problems.
- \_\_\_\_\_ 3. I thought the school should punish the TA.
- \_\_\_\_\_ 4. I thought the student should complain about this TA through official channels and get the proper grade.
- \_\_\_\_\_ 5. I thought the official committee should investigate this case, and make an objective decision.

Participant Number: \_\_\_\_\_

## Cognitive Sensitivity Open-Ended Questionnaire (The CSOEQ: Hwang and Perilla, 2005)

Please wait for the experimenter's directions to begin. **Do not begin answering the questions** until you are directed to do so.

**Instruction:** Your answers will be used only to produce generalizable knowledge of human behaviors. **Therefore, please answer the next questions as accurately and honestly as possible.**

Participant Number: \_\_\_\_\_

1. Describe a situation that occurred during the past 6 months that still makes you upset when you think about it (You will have 7 minutes for this writing).

Please think about the above situation as accurately as possible until the experimenter's next direction.



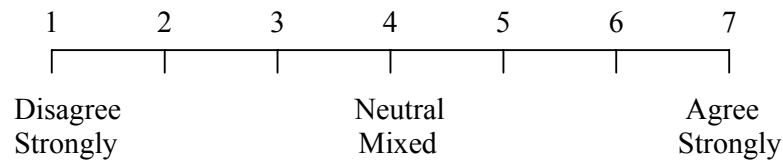
Participant Number: \_\_\_\_\_

2. When describing the above situation, **what negative thoughts** automatically come to your mind? (You will have 7 minutes for this writing)

## The General Self-Efficacy Scale

(Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs, and Rogers, 1982)

Introduction: We are interested in your self-efficacy beliefs. Respond to each statement by indicating how much you agree or disagree with it. Write the number in the space provided, using the following rating scale:



- \_\_\_\_\_ 1. When I make plans, I am certain I can make them work.
- \_\_\_\_\_ 2. One of my problems is that I cannot get down to work when I should.
- \_\_\_\_\_ 3. If I can't do a job the first time, I keep trying until I can.
- \_\_\_\_\_ 4. When I set important goals for myself, I rarely achieve them.
- \_\_\_\_\_ 5. I give up on things before completing them.
- \_\_\_\_\_ 6. I avoid facing difficulties.
- \_\_\_\_\_ 7. If something looks too complicated, I will not even bother to try it.
- \_\_\_\_\_ 8. When I have something unpleasant to do, I stick to it until I finish it.
- \_\_\_\_\_ 9. When I decide to do something, I go right to work on it.
- \_\_\_\_\_ 10. When trying to learn something new, I soon give up if I am not initially successful.
- \_\_\_\_\_ 11. When unexpected problems occur, I don't handle them well.
- \_\_\_\_\_ 12. I avoid trying to learn new things when they look too difficult for me.
- \_\_\_\_\_ 13. Failure just makes me try harder.
- \_\_\_\_\_ 14. I feel insecure about my ability to do things.
- \_\_\_\_\_ 15. I am a self-reliant person.
- \_\_\_\_\_ 16. I give up easily.
- \_\_\_\_\_ 17. I do not seem capable of dealing with most problems that come up in life.

# The Response Styles Questionnaire

(The RSQ; Nolen-Hoeksema, 1994)

**Instructions** : People think and do many different things when they feel sad, blue, or depressed. You are going to read a list of possibilities. This questionnaire asks you to indicate **what you generally do**, not what you think you should do.

Read each of the following statements as if it referred to you. Then, please indicate your agreement or disagreement with the statement by writing a number in the space provided. The numbers correspond to the following responses:

- 1 = I usually don't do this at all.
- 2 = I usually do this a little bit.
- 3 = I usually do this a medium amount.
- 4 = I usually do this a lot.

1. \_\_\_\_\_ I think about how alone I am.
2. \_\_\_\_\_ I tell myself "I won't be able to do my job if I don't snap out of this."
3. \_\_\_\_\_ I think about how fatigued and achy I feel.
4. \_\_\_\_\_ I think about how hard it is to concentrate.
5. \_\_\_\_\_ I ask myself "What am I doing to deserve this?"
6. \_\_\_\_\_ I think about how passive and unmotivated I am.
7. \_\_\_\_\_ I analyze recent events to try to understand why I am depressed.
8. \_\_\_\_\_ I think about how I don't seem to feel anything anymore.
9. \_\_\_\_\_ I ask myself "Why can't I get going?"
10. \_\_\_\_\_ I ask myself "Why do I always react this way?"
11. \_\_\_\_\_ I go away by myself and think about why I feel this way.
12. \_\_\_\_\_ I write down what I am thinking and analyze it.
13. \_\_\_\_\_ I think about a recent situation, wishing it had gone better.
14. \_\_\_\_\_ I tell myself "I won't be able to concentrate if I keep feeling this way."
15. \_\_\_\_\_ I ask myself "Why do I have problems other people don't have?"
16. \_\_\_\_\_ I ask myself "Why can't I handle things better?"

17. \_\_\_\_\_ I think about how sad I am.
18. \_\_\_\_\_ I think about all my shortcomings, failings, faults, and mistakes.
19. \_\_\_\_\_ I think about how I don't feel up to doing anything.
20. \_\_\_\_\_ I analyze my personality to try to understand why I am depressed.
21. \_\_\_\_\_ I go someplace alone to think about my feelings.
22. \_\_\_\_\_ I think about how angry I am with myself.