# University of Alberta

Adolescent Emotion Regulation Questionnaire: Development and Validation of a Measure of Emotion Regulation for Adolescents

by

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A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Counselling Psychology

Department of Educational Psychology



Fall 2011
Edmonton, Alberta

# Dedication

I dedicate this dissertation to my supportive husband, Ian S. Cowie, and daughter, Adelina Noella Cowie, who graciously sacrificed quality time together throughout the many phases and years that it has taken to bring this project to fruition. My heart has carried your love and encouragement while being buried amongst scattered papers in the study. Now the papers are bound together to be viewed by others; just as our time to be reunited is soon at hand to enjoy, play, and experience life outside the infamous study.

Abstract

The development of the Adolescent Emotion Regulation Questionnaire (AERQ) involved the creation of instrument items that were designed to measure emotion regulation strategies in cognitive, behavioral, physiological, and social response domains; intensity or duration emotional features; and pleasant or unpleasant emotional valances. The AERQ underwent revisions following an expert analysis and pilot testing, which resulted in an 80 item instrument to administer to 364 adolescents between the ages of 12 – 17 years in the Greater Edmonton Area. Confirmatory factor analysis indicated that the hypothesized structure for the instrument (4 domains x 2 emotional features x 2 emotional valances) was not supported and therefore was abandoned. An exploratory factor analysis revealed a 4 factor model that clearly distinguished between pleasant and unpleasant emotional valances. The model also made a distinction between cognitive and physiological response domains within the unpleasant emotional valance, as well as a complex factor relating to the social response domain. A bivariate correlational matrix (N=354) portraying the strength and direction of relationships between the four AERQ factors and 15 scales that comprised the supplementary measures (i.e., Beck Youth Inventories-II, Cognitive Emotion Regulation Questionnaire, and WISC Symbol Search) demonstrated convergent and divergent validity support for the AERQ.

Acknowledgements

This long journey towards a completed dissertation is often supported by several people. Outside of my family support, there have been important individuals who have continued to 'ignite my spark' when my otherwise active cerebral cortex would cease to fire. So, I want to thank my endearing friends who have helped move the roadblocks whenever they were presented!

At the University of Alberta, I have been privileged to meet some wonderful people with amazing wisdom. My committee members, Dr. Derek Truscott, Dr. Christina Rinaldi, and Dr. Jacqueline Leighton, have welcomed my questions and directed me towards the answers I sought throughout this process. Sometimes these answers involved opening a completely new avenue of learning, which at times I may not have shown great enthusiasm. However, the directions to which I was nudged proved to be important and necessary. Please accept my thanks and deep appreciation for all of your support and dedication that has kept me on a worthy and viable path and has led me to completion!

Lastly, I cannot give enough thanks and praise to Dr. W. Todd Rogers, along with several students within the CRAME department at the University of Alberta, who supported my learning in all things "Factor Analysis" and made it possible for me to meet the challenges of developing a measurement instrument.

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Over the past two decades emotion regulation has become one of the most robust and critical constructs in understanding human development and functioning (Garnefski, Kraaij, & Spinhoven, 2001; Kovacs, 2000; Mayer, Caruso, & Salovey, 1999, 2000; Shore, 2003; Zeman, Cassano, Perry-Perish, & Stegall, 2006). Emotion regulatory functions begin to develop in infancy and lead to the ability to exert self-control and process emotional information about oneself and others to aid successful navigation of one's internal and external world (Barrett & Gross, 2001; Bonanno, 2001; Denham, 1998; Dodge & Garber, 1991; Lemerise & Arsenio, 2000; Mayer, Caruso, & Salovey, 2000; Saarni, 1999; Thomspon, Lewis, & Calkins, 2008). The ability to regulate emotions is a vital skill for adolescents who are faced with complex social interactions and decisions that bridge between childhood and adulthood. Despite its apparent developmental role in adolescence, few attempts have been made to measure emotion regulation strategies in this target population (Phillips & Power, 2007). To date, there have been no instruments developed that propose to measure the impact of emotion regulation strategies used by adolescents on the intensive and temporal features of both positive and negative emotions spanning across several human processes. The purpose of this study is to fill this gap by creating and validating an instrument for adolescents that includes regulation strategies from cognitive, behavioral, social, and physiological domains that focuses on the intensity and duration of positive and negative emotion.

Over the years, the role of emotional processes in human functioning has been investigated by several theorists across various fields (Strongman, 1996). Collectively, findings from these theorists have supported that emotional processes include the involvement of several human processes such as physiology, cognition, behavior, subjective experience, and social interaction; conscious and unconscious activation and management; temporal and intensive features; a full range of pleasant to unpleasant emotional experience; and an orientation towards serving personal goals. Models of emotion regulation have drawn from these findings to conceptualize the involvement of these processes in emotional regulatory functions (Barrett & Gross, 2001; Dodge, 1991; Dodge & Garber, 1991; Gross, 1998).

Emotion regulation has been described as a complex, multifaceted phenomenon which develops through the integration of several behavioral and biological processes (Thompson & Goodvin, 2007). It involves intrinsic and extrinsic processes that operate to monitor, evaluate and modify emotional reactions, especially intensive and temporal features, to accomplish one's goals (Thompson, 1994). Intrinsic and extrinsic processes can be thought of as physiological, cognitive, behavioral, and social human processes, that represent individual response domains within an individual or in connection to his/her environment (Garber & Dodge, 1991). Therefore, the terms processes and domains within the emotion regulation framework become interchangeable. During the inhibition or activation of an emotion, changes can occur to an individual’s emotion and/or to other response domains (Barrett & Gross, 2001;

Cole, Martin, & Dennis, 2004). Emotions are said to regulate other response domains, such as cognition or behavior, when changes occur in these systems due to the activation of an emotion. However, when changes to the intensity, duration, or valence of emotion occur, then emotions themselves are said to be regulated (Goldberg, 2000; Thompson, 1994). The intensive feature captures the changes in strength of emotional experience (i.e., how an emotion either feels stronger or weaker), the temporal feature refers to the length of time an emotion is experienced, and the emotional valence indicates whether the emotional experience is pleasant or unpleasant. Changes to emotions can involve initiating an emotion, inhibiting an emotion from occurring, maintaining an emotional experience, and increasing or decreasing the intensity of an emotional experience. The activation and implementation of regulation strategies within and between response domains function to regulate intensity and duration of positive and negative emotion.

The ability to regulate emotion is considered deficient when someone is overwhelmed with uncontrollable emotions, which then undermines that person's ability to function competently (Thompson & Goodvin, 2007). This deficiency is known as the dysregulation of emotions, meaning that the individual is unable to activate or implement regulation strategies that successfully alleviate the intensity or duration of his/her emotional experience. Dysregulation of emotion can restrict or limit personal and social functioning, and decrease overall life satisfaction (Gross & Munoz, 1995). Dysregulation of emotion may lead to psychopathological symptoms currently described in the criteria of several

internalizing (i.e., inhibition, social withdrawal, shyness, anxiety and depression) and externalizing (i.e., opposition, aggression, and destructive behavior) disorders (Cole, Michel, & O'Donnett Teti, 1994; Dodge, 1991; Kostiuk & Fouts, 2002; Kring & Werner, 2004 Thompson, 1994). Since emotion regulatory functions are linked to human development, failures of such functions could potentially increase the risk of long-standing psychopathological symptoms (Aronfreed, 1968; Cassidy 1994; Cassidy & Kobak, 1988; Cicchetti, Ganiban, & Barnett, 1991; Kobak, Cole, Ferenz-Gillies, & Fleming, 1987; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Kobak & Sceery, 1988; Sroufe & Waters, 1977). Therefore, developing a measure for adolescents that would indicate whether or not regulation strategies are successful across several response domains in regulating emotional intensity and duration of positive and negative emotions would be beneficial in the identification and treatment towards supporting healthy emotion regulation functioning in adulthood.

Existing measures of emotion regulation focus on the regulation of emotion in adults (e.g., Emotion Regulation Scale by Gross & John, 2003) or children (Emotion Regulation Checklist by Shields & Cicchetti, 1997). They collect limited information due to their restricted focus to a single human process or response domain (e.g., Cognitive Emotion Regulation Questionnaire by Garnefski, Kraaij, & Spinhoven, 2001); or focus on a certain emotional valence (e.g., Difficulties in Emotion Regulation Scale by Gratz & Roemer, 2004); or they do not include intensive and temporal features (Emotion Regulation Questionnaire, Phillips & Power, 2007). The narrow focus of these existing

measures leaves out vital information about how the various domains (i.e., cognitive, social, physiological, and behavioral), emotional valances (i.e., positive and negative) and emotional features (i.e., intensity and duration) are collectively involved in the regulation of emotion. The purpose of this study is to fill this gap by creating and validating an instrument for adolescents that includes emotion regulation strategies that focus on the intensity and duration of positive and negative emotion in cognitive, behavioral, social-interpersonal, and physiological domains.

**Emotion Theories**

The debate surrounding the importance of emotions to human functioning precedes the field of psychology with its origins actually stemming from the arguments of early philosophers (Strongman, 1996). Some early philosophers highlighted the notion of "reason" and disregarded the importance of emotions. For example, Plato argued that emotions only interrupt our ability to truly "know." As a result, he asserted that emotions interfere with our superior faculty of reason. Other early philosophers argued that our emotions are linked to our reasoning faculties. Aristotle attributed emotional experience to the rational views held about the world in which we live. As scholars continued to debate and develop an understanding of the complexities of human functioning, the field of psychology burgeoned as its own scientific practice. Since its conception, psychology has grappled with the arguments surrounding human emotion that were debated by early philosophers, which have in some fashion been woven into the fabric of existing psychological theories. In comparison, the history of emotional

regulation is in its infancy. An overview of emotional theories will be provided in order to understand how elements of emotional theory have informed the development of the construct of emotion regulation.

Emotions have been thought to affect various aspects of human functioning (Izard, 1977). Not surprisingly, these various human functions have been emphasized by different theorists in attempts to better understand the nature of human emotion. Izard (1977) claimed that despite the theoretical focus, a definition of emotion must consider a) the experience or conscious feeling of emotion, b) the brain and nervous system processes, and c) observable expressive patterns of emotion. Most emotional theories consider these elements from particular aspects of human functioning. Some theorists have focused on the affect that human neurophysiological systems have on our experience of emotion, such as electrical activity in cortex, autonomic nervous system, and central nervous system; whereas others have examined the relationship between cognitive processes and emotion, such as the perceptive experience of emotion and faulty cognitions. Learning theorists have studied the influence of emotion on human behavior and our ability to relate socially by examining emotional expressions and interpersonal relationships. From these various approaches, several theories emerged from respective areas of Physiological, Cognitive, Phenomenological, Behavioral, and Social Psychology. Emotional theories from these psychological areas will be reviewed to establish what human functions or systems are fundamental to the conceptualization of distinct response domains for emotion regulation.

**Physiological.** The role that physiology plays in our experience of emotion has long been under investigation. In fact, the first psychological theory of emotion, the James-Lang Theory, embraced physiology to explain emotional experience (Strongman, 1996). This theory was introduced in 1884 -1885 and emphasized the role of the viscera and voluntary muscles in experiencing emotion. James and Lang argued that once we had perceived something due to an existing fact or worldly situation we would experience bodily changes. They asserted that the feelings produced as these bodily changes occurred was the emotion we experience. Since the James-Lang Theory, several theorists have chosen to examine the connection between physiology and emotions. This focus has resulted in the generation of various physiologically based theories of emotion that draw upon biological knowledge to explain emotional phenomena.

The neurology of the brain has been the primary focus for the majority of earlier physiological theories, in which emotional arousal is specifically attributed to central nervous system functioning. More specifically, the limbic system and its various structures were identified as vital physiological components to emotional functioning. The first of these theories was the Cannon-Bard Theory which examined emotional arousal as a function of neurophysiological processes in the subcortex, with a particular focus on the thalamus (Strongman, 1996). He believed that if the thalamus was stimulated the muscles and viscera would be aroused to relay information to the cortex, which would produce an emotional experience. In contrast, Lindsley (1950, 1951, 1957, & 1970) acknowledged several neurological structures in his neurophysiological framework of emotion.

He regarded emotional arousal as a byproduct of interactions between the brain stem reticular formation, diencephalic and limbic systems through the reticular activating system. However, he did emphasize that the limbic system ultimately controlled emotional expression and motivational emotional behavior. On the other hand, Maclean (1970) argued that all the structures of the limbic system were to some degree involved with producing an integrated emotional experience, stating that the hypothalamus was an effector system for the emotional experience, whereas the hippocampus and the amygdala functioned to influence our subjective experience of emotion.

More recent physiological theories of emotion have extended their focus to include cognitive and behavioral aspects of emotion rather than relying purely on the neurobiological explanations of emotion generation. Over the years (1962 - 1993) Plutchik produced a multi-dimensional psychoevolutionary theory of emotion, which was based on the biological concept of homeostasis but also emphasized cognition and behavior (Strongman, 1996). Plutchik referred to emotion as short-lived physiological and expressive bodily patterns which are triggered by external events and rely on underlying adaptive processes. In his theory, Plutchik suggested that events are cognitively appraised with respect to their importance to well-being, followed by the experience of feelings and physiological changes, which eventually leads to overt action. The final action in this process affects the precipitating stimulus, which then feeds back into the organism's system in order to obtain homeostasis. For example, if someone values arriving to work early and there is an unexpected delay which conflicts with this

held value, the body will experience physiological changes (e.g., tension in the shoulders, and fluttering in the abdomen) that may elicit a change in overt behavior (e.g., a phone call to the office) that in turn settles the body to a neutral state (i.e., homeostasis).

Similarly, Rolls (1990) provided a theory of emotion with a neural basis (i.e., amygdala, orbitalfrontal cortex, and hypothalamus), but defined emotion in behavioral terms and highlighted the role of memory and cognition as reinforcers in producing emotional states. In his theory, emotions are defined as states that are produced by external reinforcing stimuli. He suggested that "remembered" external stimuli associated with reinforcers can also lead to emotional states. He indicated that cognitive processes determined whether or not external events were considered reinforcing. Therefore, his conclusion relayed that emotion consisted of a cognition that confirmed an external event as being reinforcing plus the resulting mood state.

Evidence provided by these theorists has pointed to several potential components of physiology that are involved in the experience of emotions. Earlier physiological theories emphasized elements of the central nervous system, such as the limbic system and its sub-structures, in the stimulation of viscera and muscles of the body to produce an emotional experience. Later theorists went beyond physiological structures to examine how physiological changes and bodily sensations are linked to cognitive appraisal and overt behavior, which has supported the inter-connection of these domains of human functioning.

**Cognitive.** The link between cognitive processes and emotion emerged from physiological studies. The first theorist to implicate associations between cognition and emotion was Maranon in 1924 in what was considered to be a simplistic adrenaline study. However, the imperative links between emotion and cognition only became instrumental when Schachter began developing his two-factor theory of emotion (Schachter, 1970). Schachter examined how cognition and physiological arousal impacted emotional states. He suggested that emotional states were primarily determined by cognitions that explained the experience of physiological arousal within any given situational context. He argued that emotional experience would not occur unless both physiological arousal and cognition were simultaneously functioning. This suggested that arousal would stimulate examination of external/internal cues that allow us to identify and label our emotions. Cognition alone was not sufficient as it would simply lead to an emotional description rather than an emotional experience. Schachter's theory indicated that the experience of emotion primarily depended upon the inter-relationship between physiological arousal and cognitive appraisal of the environmental context in which the arousal was stimulated.

Leventhal (1974) suggested that rather than cognitions functioning to appraise the situation, recognize arousal and label emotion, they may function to construe similar situational contexts due to the similar feelings that are generated. Leventhal proposed a two-phase model of emotion. The initial *perceptual/motor* phase involves cognitions that appraise the meaning of an event and promote the onset of emotional expressive reactions which then produces feedback to establish

a subjective emotional experience. Cognitive appraisal of meaning resulted in particular CNS (Central Nervous System) and physiological arousal that was integral to subjective experiencing of emotion. The second *action* phase involves the separation of the overactivity, autonomic and visceral activity, from the subjective feeling states, which ultimately can detract or enhance the feeling. Therefore, when similar feelings are experienced they are quickly linked to similar experienced events. Leventhal & Scherer (1987) later proposed a logical link between emotional states and cognition that deemed them to be of the same nature. They suggested that emotional states are a form of meaning, so that if cognition was meaning, then emotion is a form of cognition. Therefore, they argued that in order to understand the mechanisms underlying emotion and cognition it was necessary to study specific meanings that developed in the perceptual processing system.

Similarly, Lazarus (1991) emphasized cognitive appraisal in his emotional theory. He believed that humans relied heavily on cognitive facets to evaluate situational contexts for personal relevance and significance. He argued that emotion was incorporated as an integral part of cognitive activity, suggesting that every emotional reaction is a function of cognition. Lazarus also expanded his study to the role that cognitions play in physiological and behavioral change related to emotions by highlighting the process of emotional coping. He suggested that we have individual dispositions that search for and respond to particular stimuli, which shapes how an individual interacts with the environment. He believed that cognitive appraisal of these stimuli produced emotional responses.

Thoughts and actions towards stimuli alter because stimuli change as we learn to cope. However, he also acknowledged that our coping mechanisms are impacted by cultural perceptions, display rules, social relationships, and ritualized behavior.

Schachter, Leventhal, and Lazarus all highlight the involvement of physiology and cognition. However, the role of cognition in emotional experience for Schachter is quite different than for Leventhal and Lazarus. On one hand, cognition is the explanatory mechanism that labels physiological arousal as emotion, whereas on the other hand cognitive appraisal of innate emotional meanings results in subjective emotional experience and facilitates coping. All of these theories have to some extent included social aspects of emotional functioning by considering the situational context surrounding the emotional experience. However, Lazarus was more specific in how social and cultural aspects influence the role of cognition and emotion. Furthermore, Lazarus was the only cognitive theorist to also examine emotional action or behavior through his investigation of emotional coping. Overall, cognitive theorists have shown that cognitive functions are inextricably linked to emotional experience. They have provided the field of emotional study with foundational theories that demonstrate how cognitive appraisal or meaning making of emotional stimuli is linked to the production of subjective emotional experience and emotional responding.

**Phenomenological.** Generally, phenomenological theories devote their attention to consciousness and subjective experience because they are primarily interested in understanding the subjective experience of emotion or individuals' perceptions of emotion. According to this framework, individuals' perceptions of

emotion determine how one reacts or behaves in the world. Therefore, this perspective tends to deal with real world needs, problems, and motivations, which are placed in the here-and-now.

Early phenomenological theories were informed by introspective psychology and aligned more with current cognitive based theories of emotion. For example, Stumpf (1899) argued that cognitions were defining features of emotion (Strongman, 1996). In fact, he claimed that emotions were dependant on beliefs and desires. Beliefs caused evaluations and evaluations were directed towards the state of affairs to which the beliefs were premised. Emotions were only defined through judgments that were emotionally relevant. This earlier theory highlights the roles of cognition and motivation in subjective emotional experience.

In 1984, Denzin argued that emotions were considered a form of consciousness, which is lived and experienced within a social context. Denzin's Sociological Theory of the Phenomenology of Emotion explained emotionality as a form of dialogue between an individual and the world. Denzin defined emotion as self-feeling, which is temporarily embodied, and arising from emotional and cognitive social acts that people direct to self or have directed toward them by others. This definition accounts for individual (self) and social (other) involvement in the experience of emotions in that self-feelings are derived partly from how others appraise the self. In such, Denzin alluded to the dependency upon social relationships in order for subjective emotional experience to occur

and introduced the notion of emotional subjective experience as a form of individual and social consciousness.

Subjective emotional experience has also been considered to interact with physiology and cognition to produce emotional behavior (Stein, Trabasso, & Liwag, 1993). Stein and colleagues believed that subjective states and bodily reactions were monitored by a representational system, which is based upon a value system considered basic to emotional behavior. The main function of the hierarchal, sequential, and dynamic value system was to stimulate behavioral options associated with experiencing pleasure or pain. Personal goals were thought to be critical to understanding any emotion and therefore this system relied on tracking success or failure of achieving individual goals that varied in importance. Therefore, for Stein and his colleagues differences in subjective emotional experience were dependant on precipitating events that produced emotional arousal and plans or actions that determined the success or failure of achieving personal goals.

The primary focus of phenomenological theories of emotion is to highlight the subjective experience of emotion. In doing so, phenomenological theories to some extent have weaved physiological arousal, cognitive belief and value systems, conscious awareness, behavioral plans and actions, and social elements being appraised by others into aspects of subjective emotional experience. Furthermore, these theories recognize the importance of emotional valence by indicating the experience of pleasure or pain as a motivator for creating personal goals. In all, phenomenological theorists have contributed to our understanding of

how physiological, cognitive, social, and behavioral processes explain the vast idiosyncratic nature of experiencing emotions.

**Behavioral.** In general, behavioral scientists limit their interest of study to emotional behavior, typically behaviors that can be observed and measured. Emotions in this framework are referred to as the operations or behaviors necessary to elicit the emotion (Strongman, 1996). This is not to say that behaviorists would argue that emotional states do not exist, rather just that emotional states are not observable and therefore not testable. The foundation for the study of emotional behavior was laid when Watson (1929-1930) developed a behavioral framework for examining emotion (Strongman, 1996). Watson believed that emotional stimuli shocked the organism into chaos, disorganizing the organism. This disorganization was then believed to elicit emotions such as fear, rage, and love as basic survival responses. He argued that our understanding of emotion would be greater if the focus of study was on emotional behavior rather than our internal states or emotion itself.

Theorists who followed Watson developed theories of emotion based on behavioral conditioning models. Harlow and Stagner (1933) argued that emotions were based on unconditioned affective responses that were considered central physiological traits. These thalamically, innate, basic, and undifferentiated responses are experienced as feelings, which are differentiated from emotions. They argued that everyone was born with the capacity to feel, but emotions were learned through a conditioning process that involved being paired with unconditioned affective responses. In similar fashion, Hammond (1970) proposed

a classical conditioning model of emotion, where the learned stimulus acts as a signal to the unlearned stimulus in order to acquire similar properties. He regarded emotion as a central state of the organism that is elicited by learned and unlearned stimuli (i.e., presence/absence of punishment/reward).

In contrast, the most recent behavioral theory of emotion proposed by Staats and Eifert (1990) has attempted to consider past knowledge, biology, behavior and learning, subjective experience, and cognition in a multilevel framework. Although they define emotion as a central nervous system response that is localized in particular parts of the brain, their theory maintains a strong behavioral bent. They claim that central emotional responses mediate overt behaviors, yet they acknowledge that the emotion-behavior relationship contains innate and learned components. They argue that stimuli that serve as emotion elicitors in classical conditioning are also reinforcers in instrumental conditioning. Additionally, they have acknowledged that human emotional behavior and learning is mediated through language by classical conditioning. Thus, they have made cognitive connections to emotion by arguing that language-based emotion allows emotions to be aroused and acquired cognitively. These theorists have expanded from a pure behavioral tradition to include subjective experience, physiology, and cognition to understand the role of behavior in emotional arousal and learning.

Behavioral theories offer straightforward definitions and testable theories about discrete emotions; excluding other facets of emotional functioning. For example, interpersonal facets of emotion are rarely considered even though

emotion has been found to be predominately a social phenomenon (Strongman, 1996). Although, the majority of behavior theorists have focused on how emotional behavior is learned, more recent theories have considered cognitive and physiological aspects of emotional behavior to some extent. Behavioral theories have contributed to our understanding of emotional processes by providing information about how a) learning processes evolve physiological sensations to emotion, and b) emotions are innate and acquired through learning processes and emotional responses can function to mediate overt behaviors.

**Social.** Emotion is considered a social phenomenon because as humans we interact with others in the world and these interpersonal interactions act as the stimuli for our emotional experiences (Strongman, 1996). Social psychologists have typically been interested in studying emotional expression and recognition because these tasks are relied upon heavily to communicate with others. That is, as we interact with others we experience and express our emotions to others. Simultaneously, we monitor and interpret the expressions of others. Therefore, emotional expressions have been focused on because they are believed to portray the perceived meaning being communicated to others in our social interactions.

Emotional expression has been studied as categories, dimensions, and hierarchies (Strongman, 1996). However, the most common conceptualization of emotional expression has been derived through a dimensional perspective. Frijda (1969) proposed six emotional expression dimensions: 1) pleasantness/unpleasantness, 2) activation or intensity, 3) interest, 4) social evaluation, 5) surprise, 6) simple/complicated. These dimensions are

acknowledged as outward expressions rather than just inner subjective experiences. These dimensions correspond to cognitive, behavioral, physiological, and social aspects involved in emotional expression.

Emotional expression has also been thought of as expressive behavior derived from other behaviors associated with frequent arousal (Eibl-Eibesfeldt, 1970). These frequent behaviors become ritualized into expressive movements that communicate to others in the social environment. Eibl-Eibesfeldt classified these expressive movements according to whether the movements are a) *signaled* to promote group cohesion, regulate interaction and attraction; communicate something about the external environment; signify threat; or b) *released* to engage in contact readiness or threat postures. This classification of emotional expression is based upon how the expression functions in the social environment from an evolutionary perspective.

More specific study of emotional expression has examined how facial changes influence emotional expression (Eckman, 1992). Eckman believed that cognition, facial expression, and autonomic nervous system activity were three distinct but interrelated systems of emotion. Cognition was responsible for mediating emotion, however, he argued that cognitive aspects alone could not sufficiently account for the mediation of emotional experience. He discovered that facial expression played a unique role in emotional experience. Patterns of change in facial expressions were found to alter an individual's subjective and physiological emotional experience. Therefore, changes in facial expression could

result in proprioceptive, cutaneous or vascular feedback that acts to alter emotional experience.

de Rivera and Grinkis (1986) moved away from examining emotional expression. These researchers were more interested in understanding the nature of emotion in the context of social relationships. According to de Rivera and Grinkis, emotions could not simply be accounted for by internal states because they always occurred in relation to others. Therefore, they proposed that emotions could be conceived as social relationships rather than internal states. They argued that it was necessary for an individual to be aware of their social situation in order to experience emotion. So, although an individual might experience physiological arousal associated with emotion or express him/herself behaviorally, the emotion is socially derived. Therefore, emotion is seen as a transaction between an individual and his or her environment rather than an internal response to the environment.

Social theories of emotion tend to highlight the role that the social environment plays in the subjective experience of emotion. To this end, these theories have contributed to our knowledge about the dimensions and function of emotional expression, significance of recognizing emotional facial changes, and the critical role of interpersonal relationships in emotional experiences. Although to varying degrees these theories consider cognitive, physiological, and behavioral aspects of emotion, how emotion communicates within and is affected by our social world has been the predominant focus of these theories.

In review, the fascination of human emotion has captured the interest of many theorists across various psychological fields of study. Emotions have been studied to understand their association to neurophysiological (e.g., ANS, CNS, viscera & muscular stimulation, physiological sensation), cognitive-experiential (e.g., perception, thoughts, memory, imagination, subjective experience, motivation), behavioral (e.g., innate and learned approach and withdrawal strategies), and social (e.g., emotional and facial expression, social interaction) domains of human functioning. Theories derived within these distinct schools of thought have contributed a great deal to our understanding of human emotion. Earlier attempts to understand emotions from these frameworks typically resulted in sequential or logical theories that emphasized the functioning of one human domain to the exclusion of others. For example, behavioral theorists would examine emotional behavior without consideration of cognition or physiological domains. However, as emotional investigations became more sophisticated, theorists began to incorporate several human domains into their emotional theories while still emphasizing a dominant system.

The review of emotional theories has provided evidence that several domains of human functioning are involved in emotional experience. The following review will examine how physiological, cognitive, behavioral and social domains of human functioning are rooted in emotion regulation theories. Concurrently, examination of other aspects of emotional theory such as the emotional features of intensity and duration; positive and negative emotional experiences; goal orientation; and levels of consciousness will clearly emerge

within various dynamic multi-system frameworks of emotion regulation (Frederickson & Branigan, 2001; Garber & Dodge, 1991; & Thompson, 1994; Wegner & Bargh, 1998).

**Emotion Regulation Theories**

An abundance of research investigating emotional processes over the past few decades has emphasized the critical role that emotions play in emotional well-being and daily functioning (Strongman, 1996). The shift of emotion research from defining and measuring emotions to examining multiple modes of emotional responding brought a resurgence of interest in regulatory aspects (Garber & Dodge, 1991). Consequently, there has been a growing interest to understand the role of emotional regulation in overall well-being (Dodge, 1991).

Emotion regulation has been described as a complex, multifaceted phenomenon which develops through the integration of several behavioral and biological processes (Thompson & Goodvin, 2007). It involves intrinsic and extrinsic processes that operate to monitor, evaluate and modify emotional reactions, especially intensive and temporal features, to accomplish one's goals (Thompson, 1994). Examining the intensive features of an emotional reaction involves inquiry into the strength of the emotion experienced; whereas examining the temporal features involves inquiry into the duration of the emotion experienced. Intrinsic and extrinsic processes can be thought of as physiological, cognitive, behavioral, and social human processes, that represent individual response domains within an individual or in connection to his/her environment (Garber & Dodge, 1991). During the inhibition or activation of an emotion,

changes can occur to an individual's emotion and/or to other response domains (Barrett & Gross, 2001; Cole, Martin, & Dennis, 2004). Emotions are said to regulate other response domains, such as cognition or behavior, when changes occur in these systems due to the activation of an emotion. However, when changes to the intensity, duration, or valence of emotion occur, then emotions themselves are said to be regulated (Goldberg, 2000; Thompson, 1994). Changes to emotions can involve initiating an emotion, inhibiting an emotion from occurring, maintaining an emotional experience over period of time, increasing or decreasing the intensity of an emotional experience, and shifting emotion from an aversive to pleasant experience or visa-versa. The activation and implementation of regulation strategies within and between response domains function to regulate intensity and duration of positive and negative emotion.

Emotion regulation has been considered in the broader contexts of self-regulation, emotional/social competence, and emotional intelligence. These theories have considered emotion regulation as an individual's general ability to control him/herself, and navigate his/her social world with sufficient emotional skills and abilities. Although these theories do not limit their focus to the regulation of emotion, they include several of the key aspects found across emotion regulation research that has supported the framework for this present research study.

**Self-Regulation.** Bonanno (2001) proposed a homeostatic model of self-regulation, in which emotional regulation was presented as one of the functions associated with an individual's general ability to regulate him/herself. He

proposed three types of self-regulatory processes (i.e., control, anticipatory, exploratory) that are sequentially activated in response to the immediate need for homeostasis (See Figure 1.1). This model contends that multiple processes (e.g., physiology, experience, behavior) interact with emotions to monitor homeostasis and regulate the intensity of positive or negative emotions when homeostatic goals are disrupted.

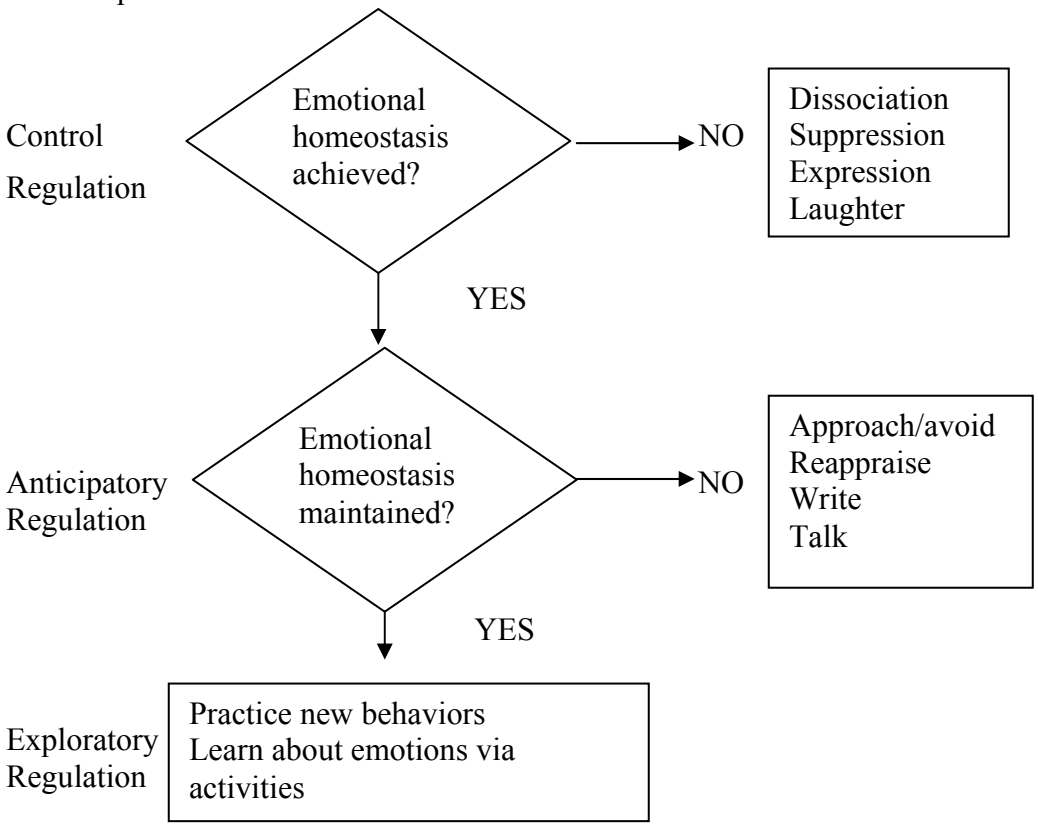


Figure 1.1 Self-regulation Flowchart proposed by Bonanno (2001). Bonanno, G. (2001). Emotion Self-Regulation. In T.J. Mayne & G. A. Bonanno (Eds.), *Emotions: Current issues and future directions* (pp.251-285). New York: Guilford Press.

Control regulation is the most basic regulation process and supersedes all other regulatory behavior. When disruption occurs, a chain of control regulation feedback loops are instigated to regain control. That is, automatic processes and instrumental behaviors are activated to immediately regulate psychological or

physiological states. Often this is referred to as self-control (e.g., delay gratification, anti-social behaviors). According to Bonanno, regulatory processes initiate to regain emotional homeostasis when a discrepancy exists between a reference value and internal/external functioning. A reference value is a specific goal/expectation that is monitored for progress. The activation of any particular goal depends upon the schemas that have been activated, which may be conscious and intentional or automatic through implicit perception or environmental cues (Wegner & Bargh, 1998).

The presence of a discrepancy indicates that the range of emotional intensity is no longer optimal and therefore homeostatic goals are disrupted. The intensity of positive or negative emotions may be reduced or inhibited by down-regulating emotions, such as decreasing anxiety before speaking in public (Isen, 1993; Isen, Daubman, & Nowicki, 1987). On the other hand, up-regulating emotions would stimulate or increase an already existing positive or negative emotion. Once the discrepancy disappears, the regulatory process has achieved control and therefore is complete.

Once control is achieved, the focus becomes directed towards whether or not the homeostasis can be maintained. Anticipatory regulation feedback loops are initiated to prepare for or circumvent the need for future control regulation. This level of regulation involves instrumental behaviors that anticipate future control needs, such as attending a support group. Once homeostatic maintenance is perceived, then exploratory regulation is initiated to foster future self-regulatory efforts. Exploratory regulation typically occurs when activities are engaged in

merely for pleasure, yet opportunities exist to observe and understand one's emotional behavior or learn new regulation skills.

Bonanno's model describes emotion regulation as an aspect of self-regulation based on the maintenance and disruption of emotional homeostasis. Maintenance of emotional homeostasis is considered vital to achieving greater self-regulatory goals, such as delay gratification. The model is hierarchal and sequential in nature, and involves the interaction between physiology, behavior, cognitive and emotional processes. This model suggests that automatic processes are the first line of activation when emotional homeostatic goals are disrupted. However, as the regulatory sequence continues, instrumental or learned behaviors become key factors in regulating emotional intensity and maintaining or preventing homeostasis disruption. This suggests that the most basic level of emotion regulation greatly depends on unconscious or automatic processes to regulate emotion, whereas the subsequent levels primarily use conscious processes.

**Emotional & Social Competence.** Emotional regulatory processes have also been considered an interactive skill component in the broader development of emotional and social competence (Crick & Dodge, 1994; Denham, 1998; Lemerise & Arsenio, 2000; Saarni, 1999). Emotional competence refers to the capacity to respond emotionally to accomplish adaptive goals while applying emotional knowledge strategically during social situations that provoke emotion (Saarni, 1999; Thompson, 1994). Saarni (1999) considers emotion regulation as one of eight skill components that was required to achieve desired outcomes when

engaged in emotion-eliciting social transactions. She suggested that these skills lead to the development and demonstration of emotional competence. In her theory, Saarni references the regulation of emotional features by indicating that regulation involved the amelioration of intensity and duration of distressing emotion.

On the other hand, Denham (1998) argues that the opportunity to develop emotional competence was created when skills for regulating emotion functioned in an integrated fashion with emotional expression and emotional understanding. Her model of emotion regulation (See Figure 1.2) refers to the regulation of emotion as coping with pleasant or aversive emotions within an emotion-eliciting situation. This model recognizes several human systems in its primary and secondary appraisal stages. The physiological system is represented in the primary appraisal of "Regulate Emotions," which refers to the emotional dimension responsive to soothing the physiological arousal associated with emotional experience. Cognitive systems are considered within the "Regulate Perception & Cognition" stage, which refers to the tasks of refocusing attention and problem-solving that occurs when emotions have been activated. The behavioral system is represented in "Regulate Behavior," referring to the organization of coordinated action involved in achieving emotional goals upon secondary appraisal. This coordinated action can involve multiple processes (e.g., behavior, cognition, physiology) and are often referred to as strategies used to regulate emotion and achieve regulation goals.

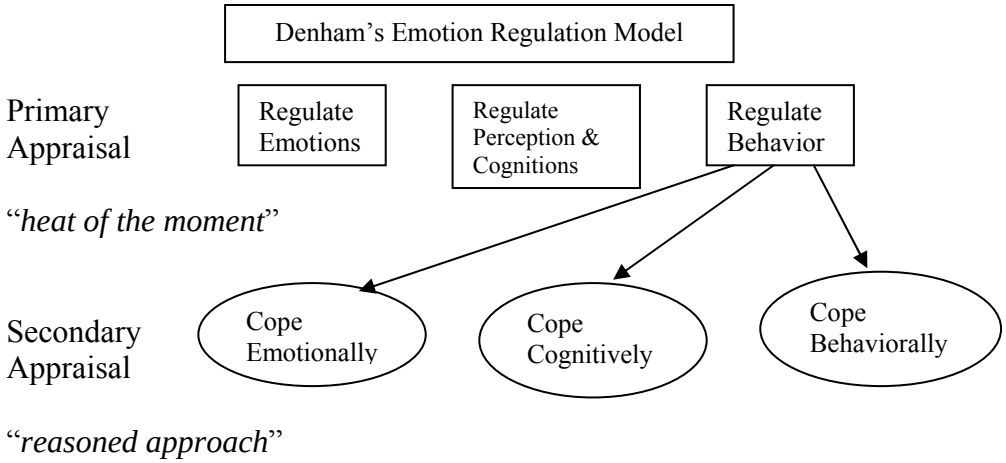


Figure 1.2 Denham's Model of Emotion Regulation (1998). Denham, S. (1998). *Emotional Development in Young Children,* (pp. 151). New York: Guildford.

In an attempt to obtain a greater understanding of the emotional aspects of social competence, Denham and her colleagues revised her earlier model shown in Figure 1.2 (Halberstadt, Denham, & Dunsmore, 2001). The revised Affective Social Competence model is broadly based on sending and receiving affective messages, as well as experiencing affect. It draws conceptually from Saarni's (1999) skill component model as it considers 4 progressive skills that are essential to successful social interactions, one of which is emotional management and regulation. They outline that affectively competent individuals will *notice* when they are experiencing an emotion, *identify* and *interpret* their emotional experience within the social context in which it emerges and *manage* their emotion appropriately. According to this theory, emotional management or regulation refers to an individual's ability to attenuate, retain, or enhance his/her emotional experiences. The model acknowledges the dynamic and interactive nature of the four progressive skills and that there are many things (e.g., temperament, past experiences, self-concept) that can impact the development and

use of them. The affective competency model has attempted to simplify the process of building successful emotional competency skills yet similar to her earlier theory, considers the complexity of the many dynamic human systems (e.g., cognitive, social, behavioral) involved.

Another group of theorists have described the importance and function of emotional processes in demonstrating social competence. Building upon Crick and Dodge's (1994) social-information processing model, Lemerise and Arsenio (2000) incorporate affective processes (e.g., affective cues, affective recognition, affective nature of relationship to others) throughout their six-step model. They argue that emotional processes distinctly serve motivational, communicative, and regulatory functions in developing social competence. Emotional processes are embedded within the concentric circles of their model and acknowledge emotion regulation functions along with emotionality or temperament, moods or background emotions that occur when processing social information.

Emotional and social competence theories propose emotion regulation as a key coping skill amongst other skills associated with developing the capacity to successfully navigate emotionality in social situations. These theories endorse the notion of several human systems that are intricately involved in the coordinated action of regulating emotional experience. The regulation of both pleasant and aversive emotions is equally considered. The amelioration of emotional features, such as intensity and duration of distressing emotions, are explained as part of the regulatory goals. According to these theorists, the ability to regulate emotion and

understand and express emotions, supports the successfully navigation of emotional information within oneself and ones social interactions.

**Emotional Intelligence.** Mayer and colleagues (1999, 2000) propose that the control and regulation of one's own emotions as well as the emotions of others is the highest level process contributing to a general factor of emotional intelligence within a greater emotionally intelligent system. They argue that emotional intelligence is a system comprised of mental abilities, skills, and capacities that operate and benefit from emotions to process emotional information. They argue that an emotionally intelligent system resembles core aspects of other established intelligence systems, such as having the capacity to input information, process information through symbol manipulation or reference knowledge. They developed four hierarchal branches 1) perception/identification, 2) thought facilitation, 3) understanding, and 4) management. The skills associated with each of these branches cumulate to result in a general factor of emotional intelligence. They argue that lower level (e.g., emotional perception) processes are less correlated with general factor of emotional intelligence than higher-level (e.g., emotion management) processes. Therefore, those who possess a greater emotional intelligence are expected to reflectively monitor and regulate positive (i.e., for broadening and building) and negative (i.e., for functionality) emotions to achieve desired outcomes in any given situation.

Barrett and Gross (2001) designed a fluid trajectory of emotional regulatory processes along five major intervention points of an emotion's course to describe how emotion regulation processes are the basis of emotional

intelligence. They labeled their five points of intervention 1) situation selection, 2) situation modification, 3) attentional deployment, 4) cognitive change, and 5) response modulation. These points of intervention provide flexibility in how a person can influence the course of an emotion's trajectory. In other words, these five points present opportunities to evaluate and modify emotions using internal/external emotional cues associated with behavioral, experiential, and physiological emotional response tendencies. Therefore, emotions can be thought of as having probable trajectories that can be modified when an emotional response does not match the circumstance. Evaluation along these five trajectory points enable an individual to engage in flexible, appropriate regulation strategies to maximize the degree of fit between emotions and the situation. Emotional intelligence, in regards to emotion generation and modulation, requires individuals to appreciate their methods of emotional responding and their ability to manipulate their emotional experience as it unfolds. The extent to which an individual is able to successfully regulate his/her emotions demonstrates and perpetuates emotionally intelligent behavior. Although the act of regulating emotion can occur without a conscious level of awareness, this theory purports that greater awareness of one's regulation strategies can lead to adaptive behavior as he or she progresses through the five intervention points.

According to emotional intelligence theories, understanding how emotions are regulated is of vital importance as these processes are considered to contribute largely to a general factor of emotional intelligence and to a great extent account for emotionally intelligent behavior. These theories acknowledge the role that

cognitive, behavioral, experiential, and physiological systems play in regulating emotions. However, there is less focus on level of awareness in regulating emotions except to mention that increased awareness can promote greater adaptability and choice in the strategies used to regulate emotion. The hierarchies and trajectories presented in these theories allude to the fluidity of emotional experience and dynamic interaction with several other skills/systems that evolve as both positive and negative emotions are regulated.

**Level of Consciousness.** The regulation of emotion examined by the broader contexts of self-regulation, social/emotional competence and emotional intelligence theories have provided a key construct element of emotion regulation that has been adopted in the framework for this study. These theories have described the regulation of emotion as a higher-level skill that can occur unconsciously or automatically, as well as within full conscious awareness through instrumental learning processes (Barrett & Gross, 2001; Bonnano, 2001). Unconscious level of awareness in emotion regulatory processes is similar to the automatic or survival responses that occur with certain emotions (e.g., fear) that function as life preservers (Strongman, 1996). For example, the emotion of shame may be regulated automatically through dissociation when someone is placed in a traumatic situation (Shore, 2003). Under those circumstances, the emotion of shame may be too overwhelming to regulate through conscious regulation strategies. Thus, the automatic strategy acts to preserve emotional well-being. However, greater awareness can also contribute to the learning and practicing of regulation strategies that regulate emotional experience and lead to adaptive

behavior (Barrett & Gross, 2001). Therefore, the level of conscious awareness when regulating emotion can limit or expand the repertoire of strategies in which to regulate emotion and support overall well-being. For that reason, when creating a measure of emotion regulation the level of conscious awareness is an important factor to consider.

**Response Domains.** In 1989 Dodge began to develop a theoretical construct specifically for emotion regulation that focused on how human processes regulate emotion. He used the term "response domains" to represent the several human processes involved in regulating emotions (i.e. neurophysiological, cognitive-experiential, motor-behavioral). Initially, he proposed that emotion regulation was the activation in one response domain that alters, titrates, or modulates activation in another response domain (See Figure 1.3). Although this conceptualization described dynamic interrelationships between processes, it failed to capture the complexity of emotion regulation functioning (Kopp, 1989).

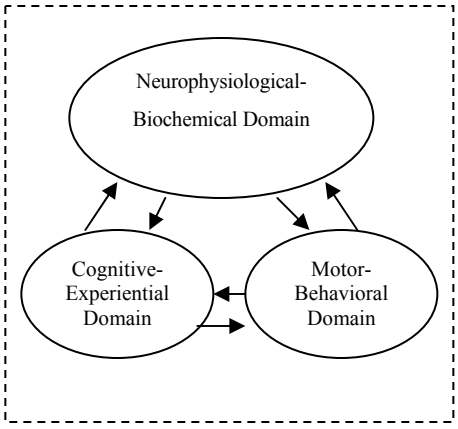


Figure 1.3 Emotion Regulation Response Domains

In 1991, Dodge and Garber further conceptualized the organization of emotion regulation as consisting of three domain forms: 1) interdomain, 2) intradomain, and 3) interpersonal domain (See Figure 1.4). According to this

expanded construct of emotion regulation, Dodge's earlier explanation only accounted for aspects of regulation in the interdomain form, in which various domains interrelate to regulate emotions. Added to this expanded conceptualization was the intradomain and interpersonal regulation domain forms. Intradomain regulation occurs when one aspect of responding in a certain domain is modulated or altered due to another aspect of responding in the same domain. For example, modulation occurs within the neurophysiological domain when heart rate is regulated through respiratory activity (Porges, 1991). The interpersonal domain reflects how emotions are regulated through the dynamic interaction between individuals and their environment. For example, this would be reflected in situations where children manipulate proximity to their caregiver to regulate "fear" in strange situations (Campos, Campos, & Barrett, 1989). The addition of the interpersonal domain in this revised model accounts for the social aspects of emotion regulation.

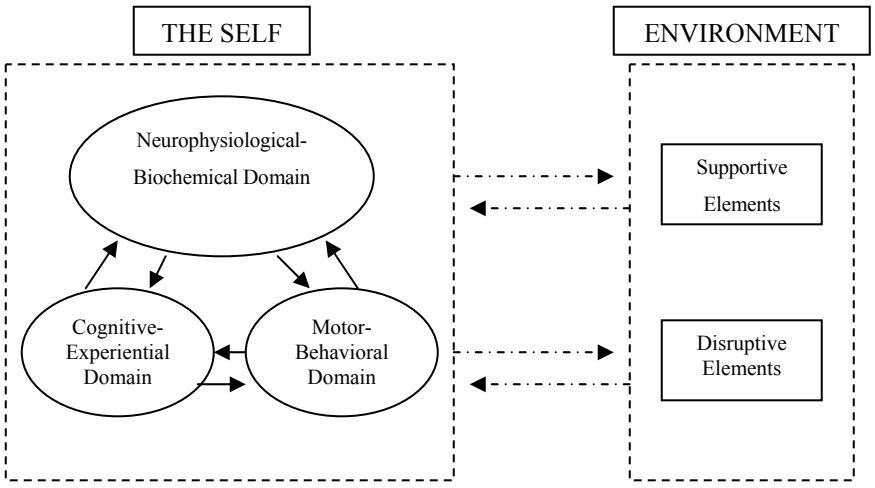


Figure 1.4 Organizational scheme of emotion regulation

Their later conceptualization accounts for the involvement of multiple response domains and demonstrates how these domains dynamically interrelate to regulate emotions. Specifically, it guides a way to understand the complexity of these inter-connected response domains. Each domain can be examined to determine a) the inner regulatory functions produced within its own system or b) its influence upon regulating emotion in conjunction with another response domain or c) how the response domains within an individual connect to the social environment to regulate emotion. This framework has aligned with other emotional theorists across theoretical perspectives in respect to the importance of providing a foundation for multiple response domains to be captured when studying emotion regulation processes. For example, Scherer (1993) proposed a component process theory of emotion. In this theory, emotion was defined as the result of synchrony that occurred between component subsystems (e.g., cognition, physiology, motor expression) of the organism's functioning in reaction to some important internal or external event. The subsystems are described as being highly interconnected to facilitate the continuous interrelating that occurs between the subsystems. The fact that these response domains would recur across theories indicates how fundamental they are to emotional regulatory processes. Therefore, the inclusion of multiple response domains needs to be a major consideration when developing a measure of emotion regulatory functions.

**Emotional Features.** Beyond the interconnectedness of response domains, emotion regulation theories have also highlighted the importance of certain emotional features established in many emotional theories (Goldberg,

2000; Isen 1993; Isen, Darbman, & Nowicki, 1987; Saarni, 1999). Thompson (1994) specifically drew attention to the intensive and temporal features involved in the regulation of emotion. Emotional intensity is regulated through initiating, inhibiting, maintaining, increasing, or decreasing, positive and negative emotion along a hedonic continuum (Young, 1961; Parrot, 1993). The dysregulation of emotion indicates the failure of regulation processes to modulate, modify, or alter intensity or duration of emotions being experienced toward achieving a regulatory goal (Thompson, 1994). When emotions are dysregulated emotional intensity remains higher/lower than normal for longer periods of time. These extended periods of (non)emotionality can result in restrictions or limitations in functioning. In fact, emotional dysregulation has been found to be characteristic of diagnostic criteria for several psychopathologies of an internalizing (e.g., anxiety, mood disorders) and externalizing (e.g., oppositional defiant disorder, conduct disorder) nature (Dodge, 1991; Kring & Werner, 2004). Therefore, emotional intensity and duration are key features to examine in the context of emotion regulation because the failure of regulating these emotional features can have deleterious effects on emotional well-being.

Emotional valance is another feature common to emotional theories that has been established in emotion regulatory processes. Emotional valance refers to a broad continuum of pleasant/unpleasant or positive/negative emotional experience. Pleasant or unpleasant emotional feelings become associated with events and/or behaviors and guide future decision-making when encountering similar situations (Aronfreed, 1968). Pleasant/unpleasant emotions are altered

through cognitive evaluations of everyday events that have been internalized from parents and function to develop emotion regulatory abilities. Generally, researchers have focused on the regulation of unpleasant or negative emotions. However, the role of pleasant or positive emotions has been gaining recognition in relation to regulatory processes.

Experiencing positive emotion produces patterns of thought that are flexible and receptive, and allows individuals to engage with their environments and partake in activities that are considered adaptive for the individual (Frederickson, & Branigan, 2001). Positive emotions tend to broaden a person's momentary thought-action repertoire. In contrast, negative emotions tend to narrow a person's momentary thought-action repertoire. Since positive and negative emotions are believed to be incompatible, experiencing positive emotions may counteract or even regulate negative emotion by broadening thought-action repertoires and establishing equilibrium to physiological changes associated with negative emotions. For example, the presence of joy and contentment has been found to regulate negative emotion and return cardiovascular activity to baseline rates (Frederickson & Levenson, 1998; Frederickson, Mancuso, Branigan, & Tugade, 2000).

The lack of expression of and attention to positive emotion may be particularly detrimental in developing successful regulatory strategies for negative emotions. Positive emotions (e.g., joy and amusement) are generally thought to facilitate approach behavior (Cacioppo, Priester, & Berntson, 1993; Davidson, 1993; Frijda, 1994) or continued action (Carver & Scheier, 1990; Clore, 1994).

Positive emotions generally occur when the context has been appraised as safe and familiar (Izard, 1977). For example, parental expressions of positive emotion were found to be positively correlated with children's positive emotional expressiveness (Garner, Robertson, & Smith, 1997). Therefore, ignoring or limiting attention to positive emotions and their expressions will likely reduce opportunities to learn regulation strategies that diminish negative affect and enhance positive affect. Although concerns often arise when negative emotions do not abate, studies have also emphasized the importance and advantages of positive emotion. Clearly, the consideration and inclusion of both pleasant and unpleasant spectrums of emotional valance are necessary when studying emotion regulatory processes.

**Goal Attainment.** Thompson (1994) clearly included motivational elements of regulating emotions by stating the purpose for regulating is to accomplish personal goals. The inclusion of personal goals as a function of regulating emotions is not surprising because the significance of goals in emotional processes has been well established in emotion theory (Oatley & Johnson-Laird, 1987; Stein, Trabasso, & Liwag, 1993). Goals have been viewed as symbolic representations of something in the environment that an individual is attempting to achieve. Plans transform these representations into sequences that link the environment to the goal. Emotions coordinate an individual's plans and establish mutual goals with others. For example, if a child feels hungry and wants to have something to eat but cannot reach any food in the kitchen, he may go over to his mother, get her attention and tell her that he is hungry to which she would respond by giving him some food. In this example, the young boy has a goal of

obtaining some food to eat. He initiates his plan which involves a sequence of events that connects his goal to the environment (kitchen & mother). His desire for food leads him to make a connection with his mother, which results in the establishment of a mutual goal that of the boy receiving food. There are distinctive and recurring junctures in plans when success is evaluated. At these points, emotions function to allow transition to new aspects of planned behavior. In this way, emotions organize plans of action for complex and unpredictable environments. Therefore, emotions can be considered catalysts for the regulation process, which functions to modulate or alter emotions to fit with personal goals in any given situation.

The evaluation of whether or not personal regulation goals have been met has created some debate in the literature. Some theorists have evaluated regulation strategies as maladaptive/not acceptable or adaptive/sanctioned. Regulation goals can be adaptive or maladaptive. However, the way to evaluate the effectiveness of a regulatory strategy is to determine whether or not the strategy has enabled goal attainment rather than determining whether a response is sanctioned (e.g., "correct" or "good") by society (Barrett & Gross, 2001). For example, a child may choose to get what she wants from her parent by having a tantrum. Although tantrums are not welcomed eagerly by parents, the child may have used her emotionality to fulfill her goal. Emotional dysregulation would indicate that emotions were not abated or inhibited or were not stimulated or maintained through regulatory strategies chosen to achieve personal goals, and therefore personal goals were not achieved. Emotional dysregulation is not to be confused

with maladaptive strategies to achieve personal goals. Maladaptive strategies (e.g., destructive behavior) may be implemented to achieve regulation goals although they may not be sanctioned by society. In developing a measure of emotion regulation, the framework of the measure needs to consider the effectiveness of regulation strategies by whether it has successfully reached personal regulation goals rather than whether the strategies are considered maladaptive or sanctioned by society.

**Emotion Regulation in Adolescence**

Emotion regulatory functions begin to develop during infancy and are influenced by individual temperament and endowment; as well as social factors such as caregiver-infant interactions and attachment (Aronfreed, 1968; Cassidy 1994; Cassidy & Kobak, 1988; Cicchetti, Ganiban, & Barnett, 1991; Kobak, Cole, Ferenz-Gillies, & Fleming, 1987; Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Kobak & Sceery, 1988; Sroufe & Waters, 1977). Emotion regulation abilities continue to increase as children develop through to adolescence. During adolescence the prefrontal cortex experiences tremendous growth, which stimulates development of hindsight and forethought (Barkley, 1997). These reflective skills allow adolescents to evaluate past and future events and support the development of more sophisticated plans. This advancement enables adolescents to understand the temporal elements involved in regulating emotions. Adolescents are able to regulate their emotions in the immediate or short-term time frame in order to attain long term goals (Demetriou, 2000). The evolving maturity during adolescence produces regulation skills that are

developed enough to manage the complexity of emotional experiences similar to adults. Adolescents can maintain awareness of their own and others emotions and engage in regulation strategies that incorporate moral character and personal philosophy while considering their own thoughts feelings, attention and behavior as well as the social context in order to plan and pursue personal goals (Moilanen, 2007; Saarni, 1999).

The increase in maturation occurs at a challenging developmental period. Adolescence signifies a shift towards adulthood with increased pressures and expectations, without yet having the capacity to be completely independent. Adolescents are usually required to demonstrate mature thought, emotion, and behavior. Their social networks begin to shift as their time and energy are spent pursuing personal interests and peer relationships while parental relationships and family goals are less emphasized. The focus on peer relationships creates a heightened sensitivity to the evaluation of others, which may increase the intensity of certain self-conscious emotions such as pride or shame (Elkind & Bower, 1979). They also have a heightened awareness of the interpersonal consequences of certain emotional displays, which influences decisions regarding when and to whom they express their emotions. (Fuchs & Thelen, 1988; Shipman, Zeman, & Stegall, 2001; Zeman & Shipman, 1996; Zeman & Shipman, 1998). For example, a decision to express emotion is more likely for adolescents when they anticipate a supportive reaction.

Adolescence is a time where increased maturation and the need to navigate complex social interactions with peers and potential romantic partners become

central developmental milestones. The ability to regulate emotions and manage emotional expression is important to establishing and maintaining relationships (Saarni, 1999; Sroufe, Schork, & Motti, 1984). Therefore, the ability to recognize, label, and regulate their own emotions as well as accurately identifying emotions of others and anticipating responses to emotional displays become key skills for successful development during this period and important preparation for transition into adulthood. A prominent use of and the maturation of adolescents' capability for regulating emotions makes adolescents a logical target population when developing a measure to understand the regulation strategies that are used to navigate emotions during a time period filled with transition and increased environmental demands.

**Existing Measures of Emotion Regulation**

Measures for regulating emotions in adolescence are scarce. Most existing measures of emotion regulation focus on the emotional regulation of adults (e.g., Emotion Regulation Questionnaire by Gross & John, 2003; & Difficulties in Emotion Regulation Scale by Gratz & Roemer, 2004) or children (e.g., Emotion Regulation Checklist by Shields & Cicchetti, 1997). The Emotion Regulation Questionnaire examines positive appraisal and suppression strategies. These two strategies in this questionnaire purport to measure adaptive and maladaptive emotion regulation strategies. Since this measure is geared towards an adult population and only examines a couple of strategies, it does not provide a suitable measure of emotion regulation for adolescents. The Difficulties in Emotion Regulation Scale is an adult based scale that examines more dysfunctional than

adaptive strategies. For example, aspects being measured in this scale include 'lack of emotional awareness'; 'non-acceptance of emotional responses', and 'limited access to emotion regulation strategies.' The focus on regulatory difficulties results in this scale providing more information on the negative emotional valence rather than a balanced view of both positive and negative valances. The Emotion Regulation Checklist is designed for adults to report on the extent to which a child is able to regulate his/her emotions. It has been shown to distinguish between well-regulated and dysregulated children, but its child-based strategies and its reporting method make it unsuitable as an adolescent self-report measure.

There are measures that are suitable for use with adolescents; however, they collect limited information due to their restricted focus to a single response domain or they are time consuming. The Cognitive Emotion Regulation Questionnaire developed by Garnefski, Kraaij, and Spinhoven (2001) was created for use with adults but has been used to examine cognitive emotion regulation strategies used by adolescents during stressful life events. Due to the focus on cognitive strategies, this measure does not capture how adolescents use behavioral, social or physiological strategies to regulate emotion. Therefore, it provides only limited information on adolescent emotion regulation. The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT-YV) offers a measure of "Emotional Management" as a part of their overall measure of Emotional Intelligence (Mayer, Caruso, & Salovey, 1999, 2000). This measure is specifically designed for adolescents; however it is limited in scope because it focuses only on

behavioral and social strategies for regulating emotions. Additionally, a major practical downfall of this measure lies in the administrative time it takes to complete the test. Since the emotional management component of the measure is not a stand- alone test, it cannot provide specific information about the regulation of emotions without measuring other aspects of emotional intelligence. In order to collect information about emotion regulation a complete emotional intelligence test is required, which is time consuming and not practical when a battery of tests is necessary. Another adolescent scale that has been developed by Kovacs (2000) is The Emotion Regulation Scale – Youth (ERS-Y). Similarly, this measure is limited in its scope as it purports to measure only behavior and cognitive emotion regulation strategies. Unfortunately, this measure is still under development and not yet available for use.

Recently, a new measure of emotion regulation has been developed for adolescents called "The Regulation of Emotions Questionnaire" by Phillips and Power (2007). This questionnaire purports to measure individual differences of emotion regulation in adolescents. They examined regulation strategies in four areas using the classification of internal or external, and functional or dysfunctional. The structure of this questionnaire was formed to align with functionalist view of emotion (see Power & Dalgleish, 1997) and attribution theory (see Weiner, 1986). Therefore, strategies in this questionnaire do include more response domains than other emotion regulation measures because it offers behavioral, cognitive, and social strategies; however, it still does not account for physiological aspects of emotion regulation. Furthermore, this structure also fails

to take into account the intensive and temporal features that are believed to be key elements to regulating emotion.

Existing measures have not succeeded in capturing the complexity of emotion regulation. The narrow focus of these existing measures leaves out vital information about how the various domains (i.e., cognitive, social, physiological, and behavioral), emotional valances (i.e., positive and negative) and emotional features (i.e., intensity and duration) are collectively involved in the regulation of emotion. The undeniable importance of emotional regulation on overall human functioning compels us to consider how to measure this construct to support individuals in practical clinical applications. Review of existing measures establishes the need for a measure of emotion regulation for adolescents that can capture the key elements of regulation to support clinical treatment and overall well-being.

**Present Study**

This study proposes to create and begin to validate an instrument for adolescents that measures the regulation of intensity and duration of positive and negative emotions by examining adolescent self-report use of emotion regulation strategies in cognitive, behavioral, social, and physiological response domains. It has involved two major steps 1) Instrument Development and 2) Construct and Scale Validation. The development of this new instrument, the Adolescent Emotion Regulation Questionnaire (AERQ), builds upon previous qualitative and quantitative research methods that obtained information about emotional regulation in adolescents (Kostiuk & Fouts, 2002; Kostiuk, 2004). The

development of the AERQ involved creation of instrument items that was informed by previous research and considered key elements established in emotion regulation theory, such as multiple response domains, temporal and durative features, and attention to both positive and negative emotional valences. The final step was to begin to develop a validity argument for the construct of emotion regulation captured by the AERQ, which involved examining its factor structure against other existing measures that have undergone validation (Kane, 2006).

# Method

## Operational Definitions

After review of the emotional literature, it is evident that the construct of emotion regulation is complex and multifaceted. Across theories key elements emerged and were considered fundamental to the development of a measure of emotion regulation for adolescents. These elements include multiple response domains, temporal and durative emotional features, pleasant and unpleasant emotional valances, goal orientation, and level of consciousness.

**Emotion Regulation.** The changes experienced in intensity and duration of positive and negative emotion once emotions have been activated.

***Regulation.*** Regulation will be indicated when positive emotions have been initiated and/or maintained.

***Dysregulation***. Dysregulation will be indicated when negative emotions are strengthened or endured over long periods of time.

**Response Domains.** A key part of the design for this study was to incorporate the main response domains referred to across theories. This study adopted the response domain structure from Garber and Dodge's (1991) conceptualization of emotion regulation to represent processes (e.g., cognition, behavior, physiological) within an individual and between an individual and his/her environment (e.g., social-interpersonal) that regulate emotion. According to this framework, the regulation of emotion depends upon the function and interrelation of one or more response domains. Therefore this study was designed to incorporate strategies for regulating emotions in the following four response

domains: 1) Cognitive-Experiential, 2) Behavioral, 3) Physiological, and 4) Social.

***Cognitive-Experiential Domain***. The cognitive domain refers to any mental activity used to regulate emotional intensity or duration. Mental activity can include beliefs, perceptions, imagination, and thoughts arising from personal or vicarious experiences in the past, present or future.

***Behavioral Domain.*** The behavioral domain refers to any action that is engaged in to regulate emotional intensity or duration that does not have a clear interactional or social component, such as reading, watching T.V., and listening to music.

***Physiological Domain.*** The physiological domain refers to any bodily sensations, feelings, responses or functions (e.g., breathing or sweating) that play a role in regulating emotional intensity or duration.

***Social Domain.*** The social domain refers to how an individual's interactions or responses with others regulate emotional intensity or duration. The focus for this domain is the interpersonal impact on the ability to regulate emotion. This could be reflected in thoughts or behaviors; however, they are placed in a social or interactive context.

**Emotional Features.** This study has focused on the changes in intensity and duration of positive and negative emotion within single response domains, rather than changes that occur due to interactions between response domains. The changes in intensity and duration (i.e., maintain, increase, decrease) will refer to

those occurring after as well as those occurring to prevent (i.e., inhibit) the activation of emotion.

***Intensity.*** Emotional intensity refers to the perceived strength of the emotional experience. Regulation of emotional strength involves perceived changes in emotions to be experienced as stronger or weaker, more or less, better or worse.

***Duration.*** Emotional duration refers to the perceived time period that emotion is experienced. Emotions can be experienced as quick/fleeting, long lasting, or continues to be maintained, inhibited or easily changed.

**Emotional Valances.** Due to the controversy in accurately defining and separating out discrete emotions, a broad continuum of pleasant/unpleasant or positive/negative emotional experience has been used for the purposes of this study.

***Pleasant.*** The overall experience of feeling good, pleasant or being in a good mood, which may involve a range of emotions singularly or simultaneously. Positive emotional valence indicates that a regulatory strategy has increased or maintained the intensity or duration of positive emotional experience.

***Unpleasant.*** The overall experience of feeling badly, unpleasant, or being in a bad mood, which may involve a range of emotions singularly or simultaneously. Negative emotional valence indicates that a strategy has increased or maintained the intensity or duration of negative emotional experience.

**Goal Orientation.** For the purposes of this study, goal attainment is not linked to the individuals' personal regulatory goals or societal sanctions but to the

actual achievement of regulating intensity or duration of emotions. That is, rather than examining whether an externalized expected outcome has been met through the regulation process, this questionnaire examines whether internalized goals of alteration, maintenance, or amelioration of emotional features are met through various regulation strategies.

**Level of Consciousness.** The AERQ required participants to provide information relating to emotion regulation strategies that have been brought into their awareness and therefore is limited to the conscious domain.

**Procedure**

The test construction process undertaken for this study is explained over the next two chapters. The first of these two chapters explains Instrument Development (Chapter 3). This chapter includes 1) Item Construction – generating items for the instrument; 2) Panel Review – assessing the relevancy and representativeness of the instrument items; and 3) Pilot Testing - pre-testing the instrument with a sub-sample of adolescents. The completion of these initial steps resulted in a fully constructed instrument ready for general administration. The second chapter explains Construct and Scale Validation (Chapter 4). This chapter involves 1) General Administration – describing the data collection and analysis of the instrument and 2) Scale Validation – process of validating the construct purported to be measured by the scale. Given the sequential nature of this study, the methods and results are provided in each progressive step.

## Instrument Development

### Item Construction

**Overview.** The first task of this research project was to generate an item pool. A specific measurement goal guides the generation of an item pool for a new instrument (DeVellis, 1991). That is, when generating items for an instrument, what the scale is intended to measure guides item selection. This instrument was proposed to measure the use of emotion regulation strategies across four response domains (physiological, cognitive, behavioral, and social) to regulate the intensity and duration of pleasant and unpleasant emotions.

**Methods.** The items were derived by considering a) my personal research program which examined emotion regulation in adolescent girls, b) regulation strategies that have been used in other measures corresponding to the four response domains, and c) pre-existing knowledge from emotional literature that pertained to emotional processes of each response domain. For example, when a person experiences fear, physiologically she may experience a rapid heartbeat, she may think that she is unsafe, she may examine her environment for an escape route, and behaviorally she may flee, fight, or freeze (Cantanzaro & Mearns, 1990; Carver, Scheirer, & Weintraub, 1989; Folkman & Lazarus, 1988; Garnefski, Kraaij, & Spinhoven, 1999; Kostiuk & Fouts, 2002; Kostiuk, 2004; Parkinson & Totterdell, 1999).

**Results.** A total of 84 instrument items were initially created within a proposed 16 factor structure consisting of four response domains, two emotional features (intensity and duration) and two emotional valances (pleasant and

unpleasant). The intent was to have all the items evaluated with the desire to end up with at least five items per factor. These items were then prepared to be reviewed by a panel of judges to determine content validity (Appendix 1).

Simultaneously, the item response format of the survey was considered. Considering the item format at this stage of scale development was necessary to ensure that the items were compatible with the response format (DeVellis, 1991). The range of response formats include a) agreeing or disagreeing with items that determine specific levels of phenomenon, b) indicating progressively higher levels of an attribute, or c) indicating strength of agreement through a series of response categories. The response format that is chosen influences how the item stems are written. Therefore, selecting and refining items without considering the response format may delay scale development. The response format chosen for the instrument consisted of a five-point Likert scale with the number 1 anchored by "Strongly Disagree" and the number 5 anchored by "Strongly Agree." A five-point scale allows for a good spread of scores while minimizing the chances of an extreme response set.

**Panel Review**

**Overview.** Content validity refers to the extent that a specific set of items reflects a content domain (DeVellis, 1991). A content domain represents the total set of behaviors that could be potentially used to measure specific attributes or characteristics of individuals to be tested (Guion, 1977). When the content domain is well defined, evaluating the extent to which the items reflect the domain becomes easier. However, when the content domain is measuring psychological

constructs this task becomes more difficult because the range of items that could potentially be captured by a domain is more obscure and thus harder to determine whether or not items are representative of a construct.

Evidence of content validity is based on professional judgments about the relevance of the test content to the content of the domain of interest and the representativeness with which the test item covers that domain (DeVellis, 1991; Hambleton, 1980; Murphy & Davidshofer, 2001). Content relevancy refers to the degree to which the items fit the description of the domain of interest and content representativeness refers to the degree to which the items represent the universe of items for the construct.

**Methods.** A panel of six experts was assembled, three from Canada, two from United States, and one from New Zealand, to review items for relevance and representativeness of the construct being measured. The four female-two male panel was chosen according to their scholarly contributions that demonstrated an understanding for the construct of emotion regulation. They were initially contacted by phone or e-mail to establish their willingness and availability to participate. All agreed to participate in the study.

The highest degrees earned by the six judges were M.D.(1); Ph.D.(4)., and B.Sc. Physical Therapy(1). Their field of studies included developmental psychology, child and social psychology, psychology, psychiatry, psychometrics/stress and physical therapy. Each judge had special interests in the social-emotional development of child and/or adolescent populations and specific interests in emotion regulation. All judges had prior experience with reviewing

items for the purposes of instrument development and four were involved in the actual development of their own instruments. Five out of the six judges rated themselves to have expert knowledge in the area of adolescent emotional development and moderate to expert level of knowledge of emotion regulation.

An electronic package was sent to each participating judge. The package consisted of a) project overview, b) definitions of research domains, c) task instructions, d) demographics sheet, e) a list of the 84 instrument items along with sorting categories relating to the four response domains, two emotional features, and two emotional valances, and f) an area for additional comments (See Appendix 1). The judges were asked to sort each of the 84 items into one of the four domains (cognitive, behavioral, physiological, and social) and then identify which emotional feature (intensity or duration) and emotional valance (pleasant or unpleasant) the item represented within the domain. Two judges made limited judgments based on their disciplines of study. The one judge with a Physical Therapy specialization made judgments only to the items pertaining to the physiological domain of emotion regulation. The specialist in psychometrics and stress limited his responses to the items pertaining to the physiological and social domains of emotion regulation. The electronic packages were completed and returned within a six-week period.

**Results.** Once packages were returned, the placement of each item was examined to determine its level of agreement across the judges in relation to its original placement by the researcher. All of the item judgments and feedback collected from the six judges were considered when making the determinations

about the representativeness and relevancy of each item, and whether to keep, revise or discard the items for the final instrument.

Two pairs of items were identified by judges as duplicates, item numbers 45 & 68 and 36 & 59. Therefore a total of 82 items were sorted. Out of the four judges who sorted items across all four domains, two judges placed 100% of the items, and two judges placed 56% and 38% of the items into one of the sixteen categories provided. In the latter two cases, the judges provided feedback regarding the difficulties they experienced with items that they failed to place into a one of the sixteen categories. The two judges who sorted items only relating to the physiological and/or social domains placed 100% of the items into the categories corresponding to these domains. See Appendix 2 for the item placements among the sixteen categories by the judges.

An item that was placed by three or more judges in the same category as the researcher indicated that the item was in high agreement and therefore had relevance to that domain. The instrument item revisions following the panel review can be found in Appendix 3. Altogether, forty-six items were identified as relevant. Out of these items, thirty-seven items were selected for the final instrument. The items in each of the domains were representative of a set of behaviors that would be expected for that domain. Seventeen of these items were kept without revisions. The remaining twenty items were revised to make the item easier to read, change the emotional feature or valance, or to use clearer language to identify a regulation strategy.

Some items were only changed slightly to simplify and make them easier to read. As examples, items 3 and 20 had only one or two words that were altered in the revision process. The word "active" was removed from item number three, which resulted in the item to read "Feeling ~~active~~ butterflies in my stomach makes me feel worse." In item number 20 the words 'even better' were replaced with 'really good' resulting in the final item to read, "I feel really good when I do something nice for somebody." Revisions that simplified items and increased readability kept intact the emotional feature, valance and strategy that was written in the original items.

Some of the physiological items referred to being tense or calm and/or did not indicate a clear strategy or emotional feature (duration or intensity). Therefore, revisions to these items were made to ensure that they referred to a specific emotional valance and feature. For example, item 25 originally read "I am more tense when I begin to sweat." This item was revised to read, "I feel worse when I tense my muscles." This revision clarified the intent to capture the emotional feature of intensity by indicating a 'worse' feeling and the physiological strategy by indicating the 'tensing of muscles.' These changes made this item more representative of the physiological intensity unpleasant category.

Of the 9 items that were not selected, 4 of these were discarded because their stems were repeated in similar items of a different valance (pleasant vs. unpleasant) or emotional feature (intensity vs. duration). For example, the stem "hiding my feelings from others" had been used with both an intensity (makes me feel worse) and duration (keeps feeling badly for a long time) item. Three items

(11, 12, & 14) were not selected because they were thought to be less relevant to the concept of emotional regulation and more relevant to the general concept of self. These three items included stems that spoke to "believing in myself," "creating something from scratch," and "concentrating on positive aspects of myself." The remaining two discarded items were considered too broad to capture the defined concepts of emotion regulation or lacked a clear emotion regulation strategy. For example item 51, "My body continues to feel good all over when I am in a good mood" did not clearly indicate a strategy.

To increase the number of items, 36 items with low agreement were considered for inclusion. The judges reported having difficulty with placing these items because the language was less similar than the language in the other items, unclear, or too wordy. Of the 36 items, twenty five were selected. Of the 25 items, 16 items were revised so that the language was similar to the language of the previously selected items. The eleven items that were not selected received no agreements among the judges, used too broad of a strategy, or had similar item stems already being used in the instrument so were removed as duplicates. For example item number 17, "I have trouble maintaining a good feeling when I am doing something I enjoy" was retained, but a similar item number 26 "Part of me continues to feel bad when I am doing something I enjoy" was discarded.

Based on the judges' comments and as each item was being considered by the researcher for inclusion, the bi-polar nature of the emotional valance factors emerged more clearly. That is, it became apparent that if an item stem was used for one emotional valance item (e.g., pleasant item) then a lower score on that

item may also indicate a high score for a similar item in the opposite valance item (e.g., unpleasant item) and visa versa. Therefore, the original proposed factor structure was revised from 16 factors to 8 bi-polar factors (4 x 2 [domain x emotional feature] x 2 emotional valance). The emergence of a bi-polar factor structure and the desire to have 10 items per factor with an equal amount of items representing each valance polar led to reconsideration of where the item stems were being placed and consideration of new strategy stems for inclusion.

As the bi-polar nature of the factor structure emerged it also clarified the language that would identify whether an item was either considered to be on the Pleasant polar or Unpleasant polar of the emotional valance. Language in an item stem that indicated feeling good, better or not so badly now clearly represented the Pleasant polar of the factor structure; whereas language that indicated feeling badly or worse represented the Unpleasant polar. Clarification of the language related to each emotional valance polar led to several items being moved from one emotional valance polar to the other. That is, some items moved from Pleasant to Unpleasant; whereas others were moved from Unpleasant to Pleasant. For example, items 60, 80, & 81 were originally placed in Behavior Intensity Unpleasant category due to their strategies (i.e., denying food, crying, and screaming) indicating an unpleasant emotional experience. However, the language in the items relating to emotional valance described that these strategies would allow someone to 'feel better.' Therefore, these items were moved to Behavior Intensity – Pleasant polar with only one item being revised slightly.

In order to create balance in the factors, some item stems shifted from one emotional feature (intensity, duration) to another. That is, rather than the item describing how strongly an emotion was experienced it could describe the length of time an emotional experience lasted. For example, item number 72 originally was placed in Behavior Intensity Pleasant category and read, "I feel even better when I laugh out loud." This item was moved to the Behavior Duration – Pleasant polar and revised to read, "It doesn't take long to change how badly I feel when I laugh out loud." Three items, 70, 76, & 78, were moved to a completely different domain. Two of these items 76 & 78, were moved from the behavior to physiological domain because they received split agreements from judges who placed them either in the behavior (original) or the physiological (new) category. Item number 70 was moved from the social to the behavior domain because it received three agreements from the judges to be placed in the behavior category and only one agreement to be placed in the social category. Some duplicate item stems were removed and replaced with new items to expand the representativeness of the content domains. Overall, these changes resulted in 18 new items. The final instrument contained 80 items, with 20 items in each of the four domains (cognitive, physiological, behavioral, and social). Ten items were placed in each emotional feature (intensity and duration), and within those ten items, a set of five items represented each emotion valance (pleasant and unpleasant). With the finalization of the items, design and formatting, the instrument was ready for pilot testing. The items for the pilot testing are indicated in the B# column in Appendix 3.

## Pilot Testing

**Overview.** When a new instrument is undergoing development an important part of the process involves obtaining feedback from the population for which it is intended. Pilot testing provides feedback about the instrument before general administration. Collection of this information aids the process by evaluating the readability and comprehension of items and survey instructions, general ease or usability of the format, and determining the length of time to administer the instrument.

**Participants.** Five adolescents, who were 13 - 15 years of age, were randomly chosen from the larger participant pool. All participants were female, two from Grade 7 and 8, and one from Grade 9. The participants were recruited from schools within the Greater Edmonton Area participating in the research project. Inclusion criteria for participants included being between the ages of 13 and 17 years and presenting a signed consent/assent form from parents/adolescents to participate in the project. Participants and their parent(s)/guardian(s) were informed of their right to withdraw at any time without penalty and that the information that they provided would be confidentially protected. To ensure confidentiality, consent/assent forms were kept separate from the data to ensure that the primary investigator could not link the identification of the participants to their data. Further recruitment procedures are described in chapter four, Construct and Scale Validation, under the title of "Recruitment Procedures."

**Data Collection Procedures.** The revised Adolescent Emotion Regulation Questionnaire (AERQ) was administered to the five participants in the pilot study at their school during a time period that was least disruptive to their academic schedule. The selected participants were called out of their classrooms and completed the AERQ in a quiet location within their school (i.e., library or empty classroom). They were instructed to complete the instrument in order to evaluate the readability and comprehension of items, general ease or usability of the survey format, and administration length.

While they worked through the instrument, they were asked to identify words that they did not understand, and concepts or instructions that were confusing. After completing the instrument, the researcher asked informal questions regarding the instrument's readability and comprehensibility, as well as the ease of understanding the instructions and survey format such as item/response placement.

**Results.** The length of time required to administer the instrument ranged from 7 – 28 minutes. The feedback provided by the pilot test participants was used to revise the instructions, formatting, and some of the vocabulary used in the survey. The instructions of the survey were changed because some of the participants had attempted to re-write certain sentences to make them easier to understand. The original instructions are stated below:

> "The way in which we respond to our emotions can extend, shorten, strengthen, or weaken the emotions that are experienced. Indicate how responses to your emotions can change the emotions you experience. For

each statement, **Circle** a number from 1 – 5 to show the extent that you DISAGREE or AGREE."

The revised instructions are:

"The way in which we respond to our emotions can extend, shorten, strengthen, or weaken the emotions that are experienced. For each statement, **Circle** a number from 1 – 5 to show the extent that you DISAGREE or AGREE with how your emotions change by the way you respond to them."

Generally, the participants commented on the ease of the formatting. However, they did indicate that it would be easier to complete if the scale anchors were repeated on each of the pages rather than just on the first page. Therefore, the anchors "Strongly Disagree" and "Strongly Agree" were printed on every page of the questionnaire. Finally, there were a few words that the participants in Grades 7 and 8 indicated that they did not know the meaning of. This resulted in the following revisions: a) "venting" was changed to "talking"; b)"linger" was changed to "hang around"; c)"persist" was changed to "do not go away"; and d) "intensifies" was changed to "even stronger." Following these revisions, the AERQ indicated a reading grade level 7. The description of the items that underwent revision can be found in Appendix 4. Once these revisions were completed, the AERQ was prepared to be administered to the larger sample of participants in order to confirm the proposed bi-polar factor structure and determine its validity. The final version of the AERQ can be viewed in Appendix 5.

## Construct and Scale Validation

### General Administration

**Overview.** Developing new instruments in the field of psychology can sometimes involve creating scales that measure abstract and unobservable attributes. In other words, scales can be developed to measure constructs rather than readily observable phenomena. Constructs are considered to have two essential properties (Murphy & Davidshofer, 2001). First, they are abstract summaries of some phenomenon that occurs in the world. Second, these phenomena are connected to concrete, observable events that can be measured. Therefore, although constructs themselves are hypothetical abstractions, they are always related either directly or indirectly to real behavior or experience. To provide support that a new instrument validly measures a specific construct the instrument items need to have good behavioral indicators of the construct and its domains. The process of validation can involve several steps (or studies) and exists to evaluate the proposed interpretations or use of test scores of a measure (Kane, 2006). As an initial step towards a validity argument for the AERQ, a large sample of participants were asked to complete a package of surveys in order to a) confirm the AERQ's factor structure against the theoretical construct from which it was derived, and b) examine correlational relationships that exist between the AERQ and measures of three other constructs that were expected to be related or unrelated to the newly developed AERQ.

**Instruments.** The three surveys that were chosen to provide convergent and discriminant support for the new AERQ were: 1) Beck Youth Inventories-Second

Edition (BYI-II) (Beck, Beck, & Jolly, 2007), 2) Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski, Kraaij, & Spinhoven, 1999), and 3) WISC Symbol Search B (Wechsler, 2003). The Beck Youth Inventories were chosen because its five subscales measured well-established constructs related to emotional processes (self concept, anxiety, depression, anger, and disruptive behaviors). The Cognitive Emotion Regulation Questionnaire was chosen as an established scale measuring emotional regulation in the cognitive domain, which is one of the domains measured in the AERQ. Since emotional processes can have an effect on several aspects of functioning, the WISC-IV Symbol Search was chosen because processing speed was expected to have little to no relationship with emotional regulation processes, thus providing discriminant support for the AERQ.

***Beck Youth Inventories – Second Edition (BYI-II).*** The Beck Youth Inventories-II is comprised of five individual self-report scales measuring: 1) self-concept (BSCRS), 2) anxiety (BAIRS), 3) depression (BDIRS), 4) anger (BANRS), and 5) disruptive behavior (BDBIRS). These scales can be used separately or combined for children and adolescents between the ages of 7 – 18 years. Each of the five scales contains 20 statements about thoughts, feelings, or behaviors associated with emotional and social impairment. There are a total of one hundred items across all five scales. Items have been written at the grade two reading level. The item response ranges from 0 (Never) to 3 (Always). Scores are obtained for each scale individually with no overall score generated. The scales are easy to administer and only require 5 – 10 minutes to complete each scale.

The BYI-II scales have national norms that were obtained from samples of American youth stratified to match the U.S. census, clinical outpatient samples, and children qualified to receive special education (Beck, Beck, & Jolly, 2007). As shown in Table 4.1, internal consistencies of the five scale inventories are high for each age-gender combination, ranging from 0.86 to 0.96.

Table 4.1.

*Coefficient Alphas for the Standardized Samples by Age and Gender*

| Age & Gender | Depression | Anxiety | Anger | Disruptive Behavior | Self-Concept |
|---|---|---|---|---|---|
| 11 – 14 yrs | | | | | |
| Female | .91 | .89 | .91 | .86 | .91 |
| Male | .92 | .91 | .92 | .90 | .89 |
| 15-18 yrs | | | | | |
| Female | .95 | .92 | .95 | .91 | .92 |
| Male | .95 | .92 | .96 | .91 | .91 |

Note: Standard Deviations and Means were not reported in original data records.

***Cognitive Emotion Regulation Questionnaire (CERQ).*** The CERQ is a self-report instrument that consists of 36 items that measure the extent that cognitive strategies are used to regulate emotions after experiencing negative life events (Garnefski, Kraaij, & Spinhoven, 1999). The questionnaire includes nine conceptually distinct sub-scales: 1) self-blame, 2) acceptance, 3) rumination, 4) positive refocusing, 5) refocus on planning, 6) positive reappraisal, 7) putting into perspective, 8) catastrophizing, and 9) blaming others. Each sub-scale contains 4 items referring to what an individual thinks following a threatening or stressful life event. For each item, the possible responses range from 1 [(almost) never] to 5

[(almost) always]. Scores obtained for each of the sub-scales range from 4 - 20. In addition, sub-scale scores can be combined to create total positive and negative strategy scale score, ranging from 20 – 100 and 16 - 80.

The psychometric characteristics of the CERQ determined from testing 487 secondary school children are reported in Table 4.2 (Garnefski, Kraaij, & Spinhoven, 1999). The internal consistencies of the scales range from 0.72 (Catastrophizing) to 0.83 (Rumination). The internal consistencies of the aggregate positive, negative, and cognitive total scales are higher, 0.91, 0.87, and 0.93 respectively.

Table 4.2

*Scale Properties of the CERQ: Cronbach's Alpha Reliabilities, Means, and Standard Deviations*

| Scale Numbers | CERQ Scale Names | α Reliabilities | M | SD |
|---|---|---|---|---|
| 1 | Self-blame | .81 | 7.27 | 2.87 |
| 2 | Acceptance | .80 | 9.01 | 3.36 |
| 3 | Rumination | .83 | 8.18 | 3.37 |
| 4 | Positive Refocusing | .81 | 9.25 | 3.40 |
| 5 | Refocus on Planning | .81 | 9.74 | 3.44 |
| 6 | Positive Reappraisal | .72 | 8.63 | 2.98 |
| 7 | Putting into Perspective | .79 | 9.29 | 3.38 |
| 8 | Catastrophizing | .72 | 5.83 | 2.29 |
| 9 | Blaming Others | .68 | 5.99 | 2.06 |
| 2,4,5,6,7 | Total Positive Scale | .91 | 45.65 | 12.24 |
| 1,3,8,9 | Total Negative Scale | .87 | 27.11 | 8.01 |
| | Total Cognitive | .93 | 72.74 | 18.38 |

***Wechsler Intelligence Scale for Children – Fourth Edition (WISC IV): Symbol Search B.*** The Symbol Search subtest on the Wechsler Intelligence Scale for Children – Fourth Edition is a timed test that measures core processing speed (Wechsler, 2003). This subtest requires an individual to scan a search group of symbols and indicate whether a target symbol matches any of the symbols in the search group. This subtest involves the use of short-term visual memory, visual-motor coordination, cognitive flexibility, visual discrimination and concentration. Symbol Search B is intended for children and adolescents between the ages of 8 – 16 years. There are 60 possible items to complete within the 120 second time limit. Items are scored as either correct or incorrect. The raw score is calculated by totaling the number of correct responses and subtracting the number of incorrect responses. A maximum of 60 points can be obtained.

The test-retest reliability coefficient for the Symbol Search was obtained from a sub-sample of the full normative sample for the WISC-IV who agreed to participate in a test-retest method. The test-retest reliability coefficient was reported as 0.78 across the age span of 12 – 16 years (Allen & Yen, 1979; Magnusson, 1967).

***Demographic Information Sheet.*** Additional to the AERQ, BYI-II, CERQ, and WISC-IV Symbol Search B surveys, participants completed a demographic information sheet to obtain information about their current age, gender, and ethnic background. This information was used to provide a description of the sample.

**Recruitment Procedures.** A total of six schools participated from the Greater St. Albert Catholic and Battle River School Divisions. Each school was approached with a proposal describing the study and outlining what would be required from their participation in the study. A meeting was arranged by the primary researcher with the principals of each of the schools to coordinate the data collection details (i.e., day of week, time of day, contact person). The primary researcher attended several classes in each of the six schools to introduce the research project to adolescents who fit the following criteria: being between the ages of 13 – 17 years or turning 13 during the current school year.

After the introduction of the project, the researcher supplied the potential participants with assent forms to sign that were collected at the end of the introduction session. Those who indicated their interest by completing the assent forms were then given consent forms to be taken home to obtain authorization signatures from their parent(s). An information sheet describing the purpose and procedures of the study accompanied the parental consent forms. This information sheet included contact information for the primary researcher and the researcher's supervisor from the Department of Educational Psychology. The students were asked to return the parent consent forms within two weeks. In the meantime, the researcher was given permission to attend certain school functions to create awareness for students and parents (e.g., parent-teacher interviews). After the two weeks, the primary investigator was given permission make follow-up phone calls to the homes of those students who had not yet handed in the parental consent forms. In these cases, parents were given the option to drop off the forms in

person, mail, or fax consent forms to the schools prior to the data collection date established for that school. Students who had given assent to participate but for who there was no completed parental consent form by the data collection date set for their school, were not permitted to participate.

**Participants.** Three hundred and sixty four adolescents out of the 981 solicited were involved in the study, resulting in a participation rate of 37%. One hundred and forty-three males and two hundred and twenty-one females were recruited from six different schools within Greater Edmonton Area. Participants were included in the study if they were between the ages of 13 – 17 years and if they provided the researcher with parental consent and personal assent to participate. Participants who were twelve years of age were eligible to participate if they were turning thirteen years of age during the same school year of the study. Due to this inclusionary discretion, the participants' ages ranged from 12 – 17 years. Younger adolescents aged 12 – 14 years accounted for 78.3% and those aged 15 – 17 years accounted for 21.7% of the sample. The sample was primarily Caucasian (335), with the remaining participants ethnicity self-identified as Asian (9), Native/Metis (7), Hispanic (3), Italian (3), African (2), East Indian (2), Arabian (1), Portuguese (1), and Malato (1).

**Data Collection Procedures.** Data collection dates were set for each school so that data collection was staggered over a six month period. Staggering the dates allowed the researcher time to return to schools for secondary data collection in cases where participants were absent for the primary data collection. The primary data collection ranged from one day to two weeks depending upon the number of

participants at the scheduled school. When needed, the primary researcher re-visited the schools on several occasions to collect data from any participants who had been absent during the primary data collection.

On the scheduled data collection dates, participants were gathered into one location (i.e., classroom, library, or cafeteria) designated for the research study within their school. Their participation occurred over one class period. They were organized to attend by class and grade usually with a break in between groups to allow for the occasional participant who needed an extra 5-10 minutes to complete the task. Participants were given a package identified by a number for analysis purposes. The number was in no way able to identify the participants. The packages were ordered to include the a) WISC-IV Symbol Search – B, b) Demographic Sheet, c) Adolescent Emotion Regulation Questionnaire (AERQ), d) Beck Youth Inventories-II, and e) Cognitive Emotion Regulation Questionnaire. The researcher initially introduced herself to the participants and explained the instructions for the research project. The Symbol Search – B was the first to be administered because it was a timed test. Following the timed test, the researcher instructed the participants to a) open the package with the remaining four surveys, b) read all of the instructions carefully for each of the surveys, c) answer the questions as it best fits them personally because there were no right or wrong answers, and d) work at their own pace. The participants were also told to raise their hand during the task if they had questions and the primary investigator would go to them on an individual basis. Once the participants

finished the task they returned their completed package to the researcher and returned to their regular classroom.

**Data Analyses, Results & Discussion**

Several sequentially ordered analyses were completed using the responses of the 364 students who participated in the study. These analyses, in order, included a confirmatory factor analysis followed by exploratory factor analysis, and then and multi-trait multi-method analysis. Each is described below together with their results and some discussion.

Prior to conducting the analyses for the AERQ all of the collected data were reviewed to examine whether or not there were any data entry errors or non-random/random missing data. Initially, the entire data set was scanned for any numbers that were out of range for the scores expected for the administered instruments. That is, it was checked for any double digit numbers (except for the WISC-IV Symbol Search B), numbers greater than 3 for the Beck Inventories or greater than 5 for the Emotion Regulation and Cognitive Emotion Regulation Questionnaires. Any suspect data were fully reviewed against its original data source for confirmation and any errors were corrected. Following the data scanning procedure, six percent or 20 data packages were randomly selected from the sample and fully reviewed for any errors. No errors were found and confidence in the data entry was established.

One participant was removed due to data that was missing not at random (MNAR) in the Adolescent Emotion Regulation Questionnaire, six participants in the Beck Youth Inventories-II, and three participants in the Cognitive Emotion

Regulation Questionnaire. This resulted in 364 complete responses for the factor analyses and 354 complete responses for the multi-trait multi-method analysis. Missing not at random (NMAR) data occurs when large portions of items have not been responded to in an instrument. For example, missing data would be considered NMAR if a participant failed to complete one whole page of questions. These errors can occur for a number of reasons. For example, if a participant a) does not detect a page because they are stuck together, b) does not pay attention to page numbers, or c) decides to pre-maturely quit the task before completing all of the questions. Generally NMAR data are removed from the analysis (Howell, 2008).

Missing at random (MAR) data occurs when only a few items have not been responded to and those missing data are not adjacent to each other but rather spread out throughout the entire data set. Data are considered MAR when their missingness does not depend on the other variables in the analysis. Estimation of the MAR values can be calculated to provide a full data set for analysis. A regression procedure is typically used for MAR data that occurs between 1 – 20 % of the overall data set to minimize the impact on estimation parameters, such as the mean and standard of error (Gorsuch, 1983). However if MAR data occurs less frequently, the impact on the estimation parameters are negligible and therefore the mean can be used to replace missing data. In this research study, the MAR data were replaced with the mean for the Adolescent Emotion Regulation Questionnaire and the Beck Youth Inventory-II as the occurrence was only found in .22% and .18% of the cases respectively. The Cognitive Emotion Regulation

Questionnaire manual outlined specific methods for dealing with MAR data. If data were missing in the CERQ it was replaced by the mean of the scores for the sub-scale to which the item belonged. If there were two or more missing data in a sub-scale, the scale was considered invalid and excluded from the data set. As mentioned above, there were three instances for the CERQ where sub-scales were considered invalid and therefore were treated as NMAR data. There were no missing data for the WISC-IV Symbol Search B.

**Confirmatory Factor Analyses.** Confirmatory factor analyses are most commonly used to confirm or support hypotheses that are grounded in existing theory (Kline, 2000). This type of analysis would be applicable for the newly developed instrument because the instrument items were specifically designed to capture how emotional intensity and duration are regulated within four theoretically identified domains (cognition, behavior, social, and physiological) with the valance (positive or negative emotional experience) behaving with a bi-polar nature. The confirmatory factor analysis was expected to provide support for an 8 bi-polar factor structure.

The confirmatory factor analysis was performed on the AERQ using the LISEREL 8.14 program. An eight factor target matrix reflected whether the placement of the items in each domain and the polarity of the items in the domain were a fit. The residuals were set to be uncorrelated, and the factors were allowed to be correlated. The criteria used to judge the fit of the solution were:

1. The significance of the factor loadings had to conform with the target factor loadings
2. The Chi-Square statistic would indicate a $p = 0.50$ or greater

3. The Root Mean Square Error of Approximation (RMSEA) would be less 0.05
4. The Root Mean Square Residual (RMSR) would indicate a good fit if the calculated value was .05 or less, a reasonable fit if the calculated value was between .05 - .08, a poor fit if the calculated value was greater than .08, and

5. The Goodness of Fit index (GFI) and the Adjusted Goodness of Fit Index (AGFI) both exceed 0.90

Difficulties were encountered in completing the analysis. The Phi matrix was found not to be positive definite. This finding indicates that the matrix was considered unacceptable because it had no inverse matrix, a rank less than *n*, and a determinant of zero (Hayduk, 1987). In other words it was found to have an eigenvalue of zero. This can occur due to any of the following circumstances: a) finding a variance estimate that is negative, b) finding a large covariance, or c) that one row in the matrix is entirely zeros or acting as a linear function of another row. Therefore, although a final solution and fit statistics are provided, they cannot be confidently interpreted.

Inspection of the zero order correlations reported in Table 4.3 reveals that the eight subscales are moderately to highly correlated, leading to conditions approaching singularity. Singularity is a problem in a confirmatory factor analysis. Singularity conditions occur when subscales that are meant to measure independent aspects of a construct begin to demonstrate high inter-correlations. High inter-correlations indicate that the subscales may in fact be measuring a single construct rather than different aspects of a construct.

The factor solution reported was not interpretable. Further, the fit statistics, reported in Table 4.4, suggest that the data did not fit the hypothesized 8 bi-polar

factor model. The consideration of these findings consequently led to abandoning the eight bi-polar factor structure.

Table 4.3

*Confirmatory Factor Analysis: Correlations among 8 Factors*

| Factor | CI | CD | BI | BD | PI | PD | SI | SD |
|---|---|---|---|---|---|---|---|---|
| CI | 1.00 | | | | | | | |
| CD | .99 | 1.00 | | | | | | |
| BI | .87 | .79 | 1.00 | | | | | |
| BD | .79 | .81 | .84 | 1.00 | | | | |
| PI | .71 | .61 | .72 | .69 | 1.00 | | | |
| PD | .71 | .73 | .63 | .74 | .75 | 1.00 | | |
| SI | .80 | .78 | .77 | .73 | .45 | .61 | 1.00 | |
| SD | .87 | .84 | .80 | .73 | .54 | .64 | .91 | 1.00 |

Legend. C-Cognitive, B-Behavior, P-Physiological, S-Social, I-Intensity, D-Duration (e.g., CI=Cognitive Intensity)

Table 4.4.

*CFA Goodness of Fit Statistics: 8 Factor Solution*

| Type of Statistic | Result |
|---|---|
| Chi-Square with 3052 degrees of freedom | 8295.64 (p=0.0) |
| Root Mean Square Error of Approximation (RMSEA) | 0.069 |
| Root Mean Square Residual (RMSR) | 0.082 |
| Goodness of Fit Index (GFI) | 0.57 |
| Adjusted Goodness of Fit Index (AGFI) | 0.54 |

The emotional regulation literature speaks clearly of the four regulatory domains and the emotional features associated with each domain assessed by the AERQ. Therefore, it was hypothesized that the difficulties encountered when fitting the 8 bi-polar factor model might have been due to the inclusion of the emotional features and valence as explicit dimensions. Hence, the data were organized to fit a four factor model that collapsed the intensity and duration emotional features and a second confirmatory analysis was completed.

Table 4.5

*Confirmatory Factor Analysis: Correlations among 4 Factors*

| Factor | COG | BEH | PHYS | SOC |
|---|---|---|---|---|
| COG | 1.00 | | | |
| BEH | .84 | 1.00 | | |
| PHYS | .73 | .79 | 1.00 | |
| SOC | .84 | .80 | .59 | 1.00 |

Table 4.5 outlines the correlation matrix among the four factors. The correlations are moderately high correlations between most of the factors with correlations ranging from .73 - .84. These high correlations suggest these factors are approaching conditions of singularity. However, there appears to be an exception between the Physiological and Social domains with a lower correlation of .59.

Table 4.6

*CFA Goodness of Fit Statistics: 4 Factor Solution*

| Type of Statistic | Result |
|---|---|
| Chi-Square with 3052 degrees of freedom | 8347.51 (p=0.0) |
| Root Mean Square Error of Approximation (RMSEA) | 0.07 |
| Root Mean Square Residual (RMSR) | 0.08 |
| Goodness of Fit Index (GFI) | 0.57 |
| Adjusted Goodness of Fit Index (AGFI) | 0.54 |

Although the model had never been statistically tested, emotional regulation literature speaks clearly of these four regulatory domains and emotional features. Therefore, the results of both the eight bi-polar & four factor solution confirmatory analyses were surprising. Clearly separating the emotional features out into distinct factors is uncalled for as the statistical evidence does not capture these features as distinct concepts within the emotion regulation framework. There is more support for the regulatory domains as the model with four factors was found to have a positive Phi matrix and was able to complete its process, which resulted in factor loadings that were a decent size (See Appendix 6). However, there was still no evidence that model was fitting. While the difficulties encountered in the first analysis were not repeated in the second confirmatory factor analysis with four factors, the goodness of fit statistics were again not satisfactory (see Table 4.6). These results indicated that further investigation was warranted to understand how these concepts are organized. Therefore, the confirmatory approach was abandoned in favor of an exploratory approach.

**Exploratory Factor Analysis.** A Principal Components Factor Analysis was initially conducted to determine the possible number of factors in the data set. The Kaiser-Guttman rule, which states that eigen-values greater than or equal to one are possible factors, suggested that there were 22 factors (Kaiser, 1958). The Scree test (Cattell, 1966) suggested three factors. Image factoring followed by varimax rotation of all factors revealed three to six factors. Principal Axis Factor extraction was then completed for the possible three to six factor structures for males and females separately and combined. Since the factors were expected to be correlated, Direct Oblimin transformation with $\delta = 0$ was used to transform each of the unrotated matrices. Items with complexity greater than one (e.g., double loadings) or items that did not load on any factor were removed until simple structure was obtained. Taken together, the results from these analyses suggested a four factor correlated solution that included both females and males. The three factor patterns were not interpretable whereas the factor patterns with larger than four factors did not reflect simple structure across females, males or the combined analysis. The combined female and male four factor solution was able to both hold meaning for each of its factors and reflect simple structure.

***Results.*** Forty–eight of the original 80 items were retained in the four factor structure, with 21, 8, 9, and 10 items in each factor respectively. Together the four factors accounted for 37.77% of the variance. Only factors with eigenvalues greater than 1.0 and items that had factor loadings greater than .30 were retained. The eigenvalues for each of the four factors were 10.44, 3.56, 2.30, and 1.83 which explained 21.8%, 7.4%, 4.8%, 3.8% of the respective variance.

The final factor pattern is shown in Table 4.7 and the correlations among the factors are reported in Table 4.8. The psychometric properties of the factors are provided in Table 4.9, which shows that the internal consistency reliabilities for the four factors were satisfactory, with Cronbach Alpha values ranging from 0.70 - 0.89.

Table 4.7

*Exploratory Factory Analysis: Factor Pattern for 4 Factor Solution*

| | | Pattern Coefficients | | | |
|---|---|---|---|---|---|
| Item No. | Item Description | F1 | F2 | F3 | F4 |
| AERQ75 | I immediately feel better once I relax the muscles in my body | .66 | | | |
| AERQ43 | Taking deep breaths continues to keep my body calm for a long time | .64 | | | |
| AERQ27 | I feel really good when I relax the muscles in my body | .61 | | | |
| AERQ73 | My bad feelings are short-lived when I tell myself that things won't always be bad | .61 | | | |
| AERQ31 | When I breathe slowly and easy I feel good for quite a while | .52 | | | |
| AERQ69 | I feel better when I remind myself about how I felt better in the past | .52 | | | |
| AERQ38 | It doesn't take long to change how badly I feel when I laugh out loud | .52 | | | |
| AERQ57 | My good mood is easily maintained when I think about future activities | .48 | | | |
| AERQ3 | I can stay feeling positive for a long time when my body is at rest | .47 | | | |
| AERQ49 | Imagining silly things can make me feel good for a long time | .46 | | | |
| AERQ25 | Telling myself positive things enhances my mood | .43 | | | |
| AERQ29 | Remembering good times prolongs my good mood | .42 | | | |

| | | | | |
|---|---|---|---|---|
| AERQ1 | Thinking about something fun makes my good mood even stronger | .40 | | |
| AERQ20 | Being around my friends keeps me in a positive mood | .39 | | |
| AERQ62 | I don't feel so badly after I have slept | .38 | | |
| AERQ9 | I continue to feel good when I visualize a peaceful place in my mind | .37 | | |
| AERQ8 | Providing comfort to those I care about sustains good feelings for a long period of time | .37 | | |
| AERQ14 | Going for a walk extends how long I feel good | .36 | | |
| AERQ12 | Feeling my body's warmth makes me feel really good | .35 | | |
| AERQ64 | I feel really good when I do something nice for somebody | .34 | | |
| AERQ60 | I feel good for a long time when I listen to a friend in need | .34 | | |
| AERQ15 | I feel badly for a long time when the butterflies in my stomach are active | | .59 | |
| AERQ7 | Feeling butterflies in my stomach makes me feel worse | | .48 | |
| AERQ54 | I deny myself food to help me feel better | | .47 | |
| AERQ67 | I have trouble feeling good when my heart is pounding hard and fast | | .41 | |
| AERQ46 | I have trouble maintaining a good feeling when I am doing something I enjoy | | .39 | |
| AERQ47 | I feel better when my body feels numb | | .33 | |
| AERQ19 | I feel worse when I tense my muscles | | .31 | |
| AERQ39 | I feel worse when my breathing is fast and shallow | | .31 | |
| AERQ11 | Hiding my feelings from others keeps me feeling badly for a long time | | | -.68 |
| AERQ24 | I don't feel as good when I hide my feelings from others | | | -.68 |
| AERQ36 | I feel better when I talk to someone | | | -.58 |
| AERQ52 | Expressing my feelings to others makes me feel better | | | -.56 |

| | | | |
|---|---|---|---|
| AERQ30 | Doing nothing about how badly I feel actually makes me feel worse | -.54 | |
| AERQ37 | Ignoring how badly I feel makes me feel worse | -.53 | |
| AERQ28 | I continue to feel bad when I isolate myself from others | -.42 | |
| AERQ72 | I feel worse when I don't ask for any help | -.38 | |
| AERQ44 | I feel badly for a long time when I shut out my friends | -.34 | |
| AERQ33 | Remembering unpleasant feelings from the past continues to make me feel bad | | -.64 |
| AERQ53 | Playing unhappy images over and over in my mind make me feel bad for a long period of time | | -.62 |
| AERQ65 | I continue to feel bad when I think that my life will never change for the better | | -.59 |
| AERQ61 | I feel worse when I think about how unlucky I am | | -.56 |
| AERQ80 | Focusing on other times I have felt badly makes me feel even worse | | -.55 |
| AERQ41 | I have bad feelings for a long time when I focus on something that upsets me | | -.51 |
| AERQ17 | Thinking about unpleasant events makes me feel badly for a long time | | -.44 |
| AERQ13 | I feel worse when I dwell upon how badly I feel | | -.42 |
| AERQ76 | My bad feelings hang around for a long time when I have been hurtful towards others | | -.41 |
| AERQ21 | Thinking everything is my fault makes me feel worse | | -.32 |

*Factor One - POSERS.* The first factor, Positive Emotion Regulation Strategies, had the largest number of items (21) loading onto the factor. The original concept of emotional valance is demonstrated in this factor as all of the items in this factor relate to strategies that support someone to enhance or maintain positive emotional experience. There is no differentiation between the emotional features of intensity or duration nor does there appear to be any

differentiation between the four regulatory domains (i.e., social, physiological, cognitive, and behavioral).

*Factor Two – NEG BODY.* The second factor had eight items and was given the name Negative Body to indicate that the items in this factor were related to body experiences or strategies that created or maintained negative emotional experiences. Similar to the first factor, the second does not distinguish between emotional intensity and duration. However, the nature of the items suggests that it has distinguished between domains and emotional valance. The items are clearly related to the physiological domain and negative emotional experiences. There were two items (i.e., AERQ54, AERQ46) that were originally placed in the behavioral domain and loaded into this body related factor. Upon reflection of the items there does seem to be a logical connection as to their placement in this factor.

The act of denying oneself food was the reason that the AERQ54 item was originally placed in the behavioral domain. Perhaps the reason this item has loaded with other physiological items is because denying oneself food has been understood by the youth in this study as something that is done to one's body. The other anomaly with this item is that it appears to be indicating "feeling better" rather than a negative emotional experience. At first glance this may then seem to be in opposition to the other items in this factor. However, the strategy of "denying myself food" that is listed to create this better feeling may be understood as a "negative" strategy.

The second behavioral item that loaded on this factor was AERQ46. This item does reflect a negative emotional experience similar to the other items in this factor. Perhaps the reason that this item has loaded with other physiological items may be due to the generality of the item. The item refers to a strategy of "doing something I enjoy," which is quite broad. This broad behavior of "doing something" paired with a general relation to having "trouble maintaining a good feeling" may have interpreted by participants as feeling experienced in the body.

*Factor Three – CONNECTION.* The third factor, Social Connection, contained 9 items that relate to the importance of social connection in maintaining and enhancing our positive emotional experiences. As with the first two factors, the third factor did not distinguish between emotional features of intensity and duration. The items in this factor are distinguished from the others by regulatory domain as they relate particularly to the social domain. There are items that represent both positive and negative emotional valances. That is, some items refer to feeling better and others refer to feeling worse. Having both emotional valances represented in this factor would seem to be contradictory; however, as the complexity of the factor is understood, the factor begins to make more sense.

The existence of this factor was initially confusing because the first factor had already captured some regulation strategies from the social domain that functioned to regulate positive emotions (e.g., AERQ 20, AERQ 8, AERQ 64). Therefore, it was believed that this factor was measuring the strategies in the social domain that focused on the regulation of negative emotional experiences. Yet there were items that reflected both positive and negative emotional

experiences. In time, the complexity of the factor emerged. Rather than the items themselves reflecting the emotion regulation strategy, it appears as if the items as a collective reflect the strategy. That is, all of the items in this factor focus on a very specific social phenomenon of reaching out and connecting to others to feel better. In the other factors, the response given for any item reflects a particular strategy and the impact of that strategy on an emotional experience. In this factor, it seems as the individual items only support evidence as to whether or not social connection is used as a strategy to support the regulation of emotions. Therefore, the name title chosen for this factor was Social Connection.

*Factor Four – NEG COG.* The fourth factor consisted of 10 items and was given the name "Negative Cognition" to indicate that these items related to cognitive strategies that created or maintained negative emotions. There was no distinction between the emotional features of intensity and duration. However, the factor clearly relates to the cognitive domain and negative emotional valance. All except one of the items in this factor were originally placed in the cognitive domain. The item AERQ76 was originally placed in the social domain so it was interesting that it loaded on this cognitive factor. It appears that this item was initially categorized differently than how it was eventually interpreted by the participants. Perhaps the idea of being "hurtful to others" was understood by participants to be something that is thought of for a long time afterwards and therefore contributes to "bad feelings hanging around for a long time." It may be necessary to examine the wording of this item in future research so that it is clearly identified as a cognitive strategy. For example, revising the item to "My

bad feelings hang around for a long time when I think about how I have been hurtful towards others" would clearly demonstrate the cognitive strategy that appears to have been implied in this item.

***Discussion.*** Although the expected 8-bipolar factor solution was disconfirmed, the four factor solution found through exploratory analysis did align with some aspects of emotion regulation theory. Emotion regulation theory highlights specific regulatory domains (i.e., cognitive, behavioral, social, physiological), which were considered in the development of the initial factor structure. Although theoretically logical, these domains were not confirmed in the analysis. However, the exploratory analysis indicated some differentiation between cognitive, social, and physiological domains. The interesting finding was how the domains were differentiated. In theory, it was expected that all items belonging to one domain would load together and then load according to the emotional feature and valance being captured. Thus, indicating that the domain itself was the primary organizer and the emotional features and valances were secondary organizers. Yet, this was not the case. The first factor, POSERS, was distinctly organized by pleasant emotional valance; whereas factors NEG BODY and NEG COG specifically related to unpleasant emotional valance for the physiological and cognitive domains. Therefore strategies indicating the regulation of positive or negative emotional experience were emerging as distinct factors. Furthermore, negative emotional valance differentiated between the physiological and cognitive regulatory domains. This suggests that the regulatory domain may not be the primary organizing structure for the regulation strategies,

but that emotional valance determines whether or not the regulatory domain is distinct.

The emotional valance was not expected to be a main determinant for how emotional regulatory strategies were structured. In the literature, the valance is typically spoken of as a secondary feature of emotional regulation. In fact, most writings focus on the regulation of just negative emotional experiences and therefore the full spectrum of positive and negative emotional experiences have not been explored. The findings of this research indicate that the emotional valence is important to understanding how emotions are regulated. In the factors that emerged there was distinction between regulating positive and negative emotions. The first factor clearly separated itself as a factor that was related to regulating positive emotional experiences and factors two and four were related more to strategies that regulate negative emotional experiences. This provides evidence that emotion regulation strategies may be organized by the emotional valence being regulated.

The emotional features of intensity and duration failed to show any differentiation among the strategies as expected. The literature includes the importance of these features in one's ability to recover from negative emotional experiences. For example, Bonanno (2001) refers to how the up-regulating or down-regulating of emotional intensity functions to remove a homeostatic disruption to regain regulatory control. Other theorists have indicated how the amelioration of intensity and duration of distressing emotions is an important aspect to regulatory success (Lemerise & Arsenio 2000; Saarni, 1999; Thompson,

1994). Therefore, it was quite surprising that this feature was virtually non-existent in the results. The four factors that did emerge did not show any differentiation between the intensity of emotional experience nor between the duration of emotional experience, regardless of the regulatory domain or the emotional valence.

So if these emotional features are core aspects of regulatory processes, where are they? Is it possible that these features are not germane to the actual regulatory process? Or perhaps these features are responded to on a more visceral level and are not attended to with conscious awareness as the regulatory process unfolds. It may be possible that adolescents are less likely to differentiate between their emotional experience growing in intensity or enduring for a period of time. Perhaps this level of distinction is more detectable for adults than adolescents. Or could this be a function of a perceptive barrier? In 1977, Navon reported evidence that all things being equal and under normal circumstances, most normal individuals show an attention bias towards global verses detail stimuli. Perhaps emotional features of intensity and duration were not attended to while answering the items (detail) whereas emotional valence (global) was detected.

The third factor is more complex than the other three factors and warrants further discussion. The third factor clearly highlights the social regulatory domain, which aligns with the domain theory (Dodge & Garber, 1991). However, it did not follow the same pattern as the other distinct domains that emerged. The physiological and cognitive domains were related to negative emotional experience, yet the social domain appeared to have items that captured both

positive and negative emotional valence. As the items were examined more closely, the theme of connection/disconnection became evident as the comprising nature of the factor. Therefore, the social domain did not emerge due to an emotional feature (intensity or duration) or valence (positive or negative). Instead, it appears that it emerged as a unique aspect of the social domain that measures the importance of connection with others, which in turn functions to regulate emotions.

The CONNECTION factor includes a collection of items that describe strategies of social connectivity by either expressing to or hiding and isolating from others. This may support the notion that emotional expression is a social phenomenon, which occurs only in connection to one's external environment (de Rivera & Grinkis, 1986). In this way, the external connection to others would be a prime consideration to the regulation of one's emotion. This factor does emphasize the importance of connecting and expressing to others vs. disconnecting and isolating from others as a way to regulate emotional experience. Therefore, alluding to the involvement of the social domain as being a base motivation to approach or withdraw from external environment and/or others in order to regulate emotion. Due to the complexity of this factor, more investigation is warranted to fully understand the functions of social connection and the regulation of emotion.

***Factor Correlations.*** The research purports that the regulatory domains are dynamical inter-related in a way that a response in one domain creates or elicits a response in another domain and this continues throughout the regulatory

process. Therefore, strategies that purport to measure the regulation of emotions in various domains were thought to be inter-correlated.

Table 4.8

*Exploratory Factor Analysis: Correlations Among 4 Factors*

| Factor | POSERS | NEG BODY | CONNECTION | NEG COGNITION |
|---|---|---|---|---|
| POSERS | 1.00 | .19** | .59** | .43** |
| NEG BODY | | 1.00 | .26** | .42** |
| CONNECTION | | | 1.00 | .56** |
| NEG COGNITION | | | | 1.00 |

Note: ** denotes that correlations are significant at the .01 level (2-tailed).
Legend: POSERS – Regulation strategies that regulate positive emotional experience; NEG BODY – Body/Physiological strategies that regulate negative emotional experience; CONNECTION – Social Connection strategies that regulate positive emotional experience; NEG COGNITION – Cognitive strategies that regulate negative emotional experience

Table 4.8 shows significant correlations between all four factors. POSERS, CONNECTION, and NEG COGNITION demonstrate moderate to strong correlations ranging from .42 - .59. In comparison, NEG BODY correlated moderately with NEG COGNITION (.42) but lower with POSERS and CONNECTION (.19 and .26). Although these latter correlations were reported as significantly different than zero ($p<.01$), they account for only 3.6% and 6.7% of the variance. Therefore, these relationships were considered to be weak (Glass & Hopkins, 1996). The moderate to strong correlations among the other three factors POSERS, CONNECTION, and NEG COGNITION do provide evidence of the inter-connection of regulatory domains when we are regulating our

emotions. The POSERS factor contains strategies from all four domains, whereas CONNECTION and NEG COGNITION are more specific to social and cognitive domains. Therefore, all four domains are represented within these three factors.

***Psychometric Properties.*** The four AERQ scales demonstrated acceptable internal reliabilities with alpha coefficients ranging from 0.70 - 0.89.

Table 4.9

*Exploratory Factor Analysis: Psychometric Properties of 4 AERQ Scales*

| Psychometric Properties | POSERS (Items =21) | NEG BODY (Items = 8) | CONNECTION (Items = 9) | NEG COGNITION (Items = 10) |
|---|---|---|---|---|
| Cronbach's Alpha α | .89 | .70 | .84 | .83 |
| Mean | 74.62 | 20.93 | 29.84 | 35.58 |
| Variance | 151.94 | 29.10 | 51.47 | 58.02 |
| Standard Deviation | 12.33 | 5.39 | 7.17 | 7.62 |
| Standard Error of Measurement | 4.27 | 2.95 | 2.87 | 3.14 |

The POSERS scale had the greatest number of items and yielded the highest reliability coefficient (.89) of the four factors. SOCIAL CONNECTION and NEG COGNITION scales demonstrated high reliability coefficients of 0.84 and 0.83 respectively. Although, the NEG BODY scale had a decent reliability coefficient (.70), it was the lowest reliability of all four scales. This lower

reliability could be explainable by the number of items in the scale (8) or due to the content of the scale itself. The physiological items might have been harder to answer. Perhaps connecting into the physiological aspects of our experiences (i.e., bodily sensations) is less often explored and therefore more difficult to reflect upon. Whereas, how we think or behave may be more familiar concepts that can generally be brought into our awareness in order to reflect upon their impact in our daily life.

**Scale Validation**

The next step was to determine whether the four factors extracted from the exploratory factor analysis could be validated by the other measures included in this study. The scale scores for the new instrument were correlated with the scores from Beck Youth Inventories – Second edition, Cognitive Emotion Regulation Questionnaire, and the WISC-IV: Symbol Search B. The Multi-trait multi-method devised by Campbell and Fiske (1959) was used to determine the strength and direction of the relationships. The extent to which the newly developed instrument relates with other behaviors in a way that reflects the theoretical construct provides evidulary support for the instrument and the construct under investigation (Loevinger, 1957). The multi-trait multi-method approach involves looking at relationships that converge and diverge. That is, the newly developed instrument would be expected to correlate highly with instruments that are measuring similar constructs and lowly with instruments that are measuring different constructs. I expected that the supplementary measures included in this study would provide both convergent and discriminant validity evidence. The

multi-trait multi-method includes a bivariate correlational matrix (N=354) to determine the strength and direction of the relationships between the four newly developed factors in the AERQ and the 15 scales that comprised the supplementary measures used in this study. The complete bivariate correlation matrix is shown in Table 4.14. The following paragraphs will compare and discuss the relationships hypothesized and found among the four AERQ scales and the fifteen supplementary measure scales.

**Beck Youth Inventories-II Scales.** The hypothesized relationships between AERQ and the BYI-II are presented in Table 4.10. The Beck Youth Inventories-II is comprised of the following five individual sub-scales: self-concept (BSCRS), anxiety (BAIRS), depression (BDIRS), anger (BANRS), and disruptive behavior (BDBIRS). POSERS and CONNECTION were expected to correlate positively to Beck's self-concept scale and negatively correlate to Beck's anxiety, depression, anger, and disruptive behavior scales. In contrast, NEG BODY and NEG COGNITION were expected to be correlated negatively with Beck's self-concept scale and positively correlated with Beck's anxiety, depression, anger, and disruptive behavior scales.

***Results.*** As shown in Table 4.11, the hypothesized directions for these relationships were confirmed with two exceptions, which have been shaded for easy detection. POSERS and CONNECTION were both found to be positively related to Beck's self-concept and negatively related to Beck's depression, anger, and disruptive behavior scales as expected. Although POSERS correlated negatively with Beck's anxiety scale as expected, CONNECTION unexpectedly

correlated positively. NEG BODY and NEG COGNITION, with one exception, also behaved as expected correlating negatively with Beck's self-concept scale and positively with the remaining scales. The one exception occurred between NEG COGNITION and Beck's disruptive behavior scale, as it was found to have a negative relationship rather than the expected positive one.

Table 4.10

*Hypothesized Correlation Directions between AERQ and Beck Youth Inventories-II*

| Scales | BSCRS | BAIRS | BDIRS | BANRS | BDBIRS |
|---|---|---|---|---|---|
| POSERS | + | - | - | - | - |
| NEG BODY | - | + | + | + | + |
| CONNECTION | + | - | - | - | - |
| NEG COGNITION | - | + | + | + | + |

Table 4.11

*Actual Correlations between AERQ and Beck Youth Inventories-II*

| Scales | BSCRS | BAIRS | BDIRS | BANRS | BDBIRS |
|---|---|---|---|---|---|
| POSERS | .53** | -.20** | -.38** | -.32** | -.36** |
| NEG BODY | -.13* | .33** | .29** | .31** | .10 |
| CONNECTION | .23** | .02 | -.08 | -.03 | -.21** |
| NEG COGNITION | -.03 | .25** | .15** | .19** | -.09 |

Note: ** p< .01, two-tailed. *p< .05, two-tailed. Listwise N=354

***Discussion.*** Examining the strength of the relationships, POSERS was significantly correlated with all of the five sub-scales. It had a moderate to strong

relationship with Beck's self-concept, depression, anger, and disruptive behavior scale; whereas it was weaker with Beck's anxiety scale. The strongest relationship existed between POSERS and Beck's self-concept scale. The strength of this relationship may be a function of positivism. That is, if a person is able to engage in strategies that support the creation, maintenance, or enhancement of positive emotional experience this may offer more opportunities to actively interact in the world with positive outcomes. The ability to approach, engage, and experience success or achievement can result in positive feelings about the self (e.g., inner-strength, efficacy to handle situations). Therefore, a stronger sense of self indicates a perception of capability of producing positive personal experiences and therefore offers a wider range of available strategies to support the continuation of positive emotional experience. This finding supports literature that speaks to how positive emotion can increase cognitive flexibility and behavioral adaptability (Frederickson & Branigan, 2001). On the flip side, if someone is capable of producing or maintaining positive emotional experience that could buffer or prepare someone to have less impact when negative emotional experience does occur. Therefore one would be less likely demonstrate emotional difficulties, which has been supported by the significant negative correlations between depression, anger, anxiety disruptive behavior and POSERS. These findings are also supported by Frederickson et al. 1998, & 2000 who have found the existence of positive emotional states to regulate negative emotional experiences. The weakest relationship existed between POSERS and Beck's anxiety scale. Although it was found to be significantly different than zero

($p>.001$), the amount of variance accounted for was only 4.2% and therefore considered weak.

There were significantly positive moderate relationships found between NEG BODY and Beck's anxiety, depression, and anger scales, each accounting for 10.8%, 8.6%, and 9.8% of the variance. NEGBODY indicates strategies or experiences in the body that are associated with negative emotional experience. Physiological distress is often associated with emotional distress. For example, when experiencing anxiety one would also typically experience increased heart rate, trembling and upset stomach. These findings support that the experiences we have in our body are related to negative emotional distress. The relationship between NEG BODY and Beck's self-concept scale was weak and was found to be not significant with the disruptive behavior scale. This suggests that the experiences felt in the body when experiencing negative emotion does not have a strong impact on the beliefs held about our self-concept or decisions made to engage in disruptive behaviors.

The importance of social CONNECTION in regulating emotions to feel better was found have significant relationships with Beck's self-concept and disruptive behavior scales. Although they were significantly different than zero ($p<.001$) they only accounted for 5.2% and 4.2% of the variance and therefore were considered to be weak. Even though these relationships were weak, they were moving in the expected directions. Therefore, the importance to connect was positively correlated with self concept and negatively correlated with disruptive behavior. This does suggest that when we connect with others to feel better it

supports a stronger development of our sense of "self" and we are less likely to engage in disruptive behaviors. A recent study has demonstrated that attachment positively impacts adolescents' self-image (Cetin, Tuzun, Pehlivanturk, Unal, & Gokler, 2010). This recognizes that the ability to connect to others plays an important role on how we think about ourselves. Additional support for this finding is evidenced in clinical experience, which has demonstrated that individuals who seek out support when feeling negative emotional experiences report a decrease in these feelings after making connections.

There were no relationships found between CONNECTION and Beck's anxiety, depression, and anger, scales. The direction of correlations were accurate for depression and anger (i.e., negative) but not for anxiety (i.e., positive). If these relationships had been significant, the directionality of them may suggest that connecting with others when experiencing anxiety may actually cause more distress; whereas the connection to others would support the regulation of depression and anger. The null relationship finding was surprising because it would make sense that the importance of connecting to others to alleviate negative emotional experience would be significant with factors measuring emotional distress. Perhaps this finding would be different if a clinical population was tested. It may be that the emotional distress in the normative population participating in the study was not strong enough for these relationships to be found as significant.

Significant relationships were found between NEG COGNITION and Beck's anxiety, depression and anger scales and no relationship was found with

Beck's self-concept and disruptive behavior scales. The significant relationships were all moving in the expected positive direction. NEG COGNITION indicates that focusing on unpleasant thoughts supports negative emotional experiences. Therefore, these findings suggest that when our thoughts are negative we are likely going to continue experiencing emotional distress. These findings need to be tempered with the fact that although these relationships were significant, they would be considered weak as they accounted for 6.2% or less of the variance. The lack of relationship between NEG COGNITION and Beck's self-concept scale may be due to the content of the items in the scales. Beck's scale focused on personal strengths, such as "I work hard" or "I feel strong;" whereas the items in NEG COGNITION focused on cognitive strategies such as, "focusing on something upsetting" or "thinking about unpleasant events." The lack of relationship between these two scales suggests that someone can maintain a strong self concept even though they negative thoughts about things in life.

Another non-existent relationship occurred between NEG COGNITION and Beck's disruptive behavior scale. Additionally, this relationship demonstrated a direction that was opposite of the relationship that had been expected between these two scales. It was expected that when someone was having negative thoughts they may be more likely to act out behaviorally. Yet, the negative relationship indicates that this is not the case. Although, it is possible that focusing on negative thoughts may have an impact on how an individual feels and behaves, it may not urge someone to act out in disruptive ways. The items in the disruptive behavior scale refer to some extreme behaviors, such as hurting others

and animals. These types of disruptive behaviors have been associated with behavioral disorders, such as oppositional defiant disorder and conduct disorder, found in the DSM-IV manual. It appears these extreme behaviors do not have a relationship with general negative thoughts that maintain negative emotional experience. Perhaps a relationship would occur if the items referred to negative thoughts about oneself or the disruptive behavior items were not implying such extreme behaviors.

**Cognitive Emotion Regulation Questionnaire (CERQ).** The Cognitive Emotion Regulation Questionnaire (CERQ) consisted of nine sub-scales which grouped together into Positive Cognitions (Acceptance, + Refocusing, Refocus on Planning, + Reappraisal, and Putting into Perspective) or Negative Cognitions (Self Blame, Rumination, Catastrophizing, Blaming Others). The hypothesized relationship directions between the AERQ scales and nine sub-scales of the CERQ are shown in Table 4.12. Since the nine sub-scales were either measuring cognitions that supported positive or negative emotional experiences, the four AERQ scales were predicted to relate according to these directions. Therefore, POSERS and CONNECTION were expected to relate positively with any of the sub-scales that were grouped into the Positive Cognitions and negatively with any of the subscales grouped into the Negative Cognitions. Conversely, NEG BODY and NEG COGNITION were expected to relate negatively with those sub-scales in Positive Cognitions and positively with those sub-scales grouped in Negative Cognitions.

***Results.*** Table 4.13 displays the actual correlations between the AERQ factors and the nine CERQ subscales. The shaded cells in the table indicate that the hypothesized direction between an AERQ factor and a CERQ subscale was not found. As shown, the correlational directions between POSERS and the CERQ subscales met 7 of the 9 expected directions. The remaining two subscales were expected to be negatively correlated, yet they were found to be positively related. NEG BODY also confirmed directional hypotheses for 7 of the 9 CERQ subscales. Acceptance and Positive Refocus subscales were unexpectedly found to be positively correlated with NEG BODY. The hypotheses for the final two AERQ scales, CONNECTION and NEG COG, were not as successful only confirming respectively 5 and 4 of the expected directions with the 9 CERQ subscales. As shown in Table 4.12, CONNECTION and NEG COGNITION were expected to have negative relationships with 4 and 5 of the CERQ subscales respectively. However, all of the relationships between these two AERQ scales and CERQ subscales were found to be positive.

Table 4.12

*Hypothesized Correlation Directions between AERQ Scales and CERQ Subscales*

| Scales | Self Blame | Accept | Rumin | + Refocus | Refocus Plan | + Reappraisal | Perspective | Catast | Blame Other |
|---|---|---|---|---|---|---|---|---|---|
| POSERS | - | + | - | + | + | + | + | - | - |
| NEG BODY | + | - | + | - | - | - | - | + | + |
| CONNECTION | - | + | - | + | + | + | + | - | - |
| NEG COG | + | - | + | - | - | - | - | + | + |

Table 4.13

*Actual Correlations between AERQ Scales & CERQ Subscales*

| Scales | Self Blame | Accept | Rumin | + Refocus | Refocus Plan | + Reappraisal | Perspective | Catast | Blame Other |
|---|---|---|---|---|---|---|---|---|---|
| POSERS | -.05 | .19** | .19** | .46** | .48** | .37** | .31** | -.08 | .01 |
| NEG BODY | .21** | .05 | .29** | .09 | -.03 | -.12* | -.11* | .28** | .15** |
| CONNECTION | .06 | .10 | .34** | .30** | .33** | .21** | .11* | .11* | .10 |
| NEG COG | .15** | .12* | .33** | .22** | .15** | .01 | .01 | .21** | .04 |

Note: **p< .01, two-tailed. *p< .05, two-tailed. Listwise N=354

***Discussion.*** Of the seven confirmed directions between POSERS and CERQ, two subscales were found to have no relationship with POSERS (i.e., Self-Blame, and Catastrophizing) and five subscales (i.e., Acceptance, + Refocusing, Refocus Planning, + Reappraisal, and Perspective) were found to have a relationship with POSERS that was significantly different than zero. These findings suggest that engaging in various strategies that support the continuation or creation of positive emotional experience have an impact on positive thought processes when experiencing negative events. These findings do align with research on the impact of positive emotional experiences. According to Frederickson and Branigan (2001, 2005), experiencing positive emotions provides opportunities to develop adaptive and flexible approaches towards one's environment and can function to reduce the impact of negative emotional experiences. In fact, they are thought to build personal resources that on a cognitive level could include increasing knowledge, intellectual complexity, and executive control, which is evident in the cognitive tasks of acceptance, positive refocusing, planning, reappraisal and obtaining perspective.

Unexpectedly, Rumination was found to have a positive significant relationship with POSERS. The direction for this relationship is quite conflicting with my original expectation. Rumination refers to thinking about the negative aspects of the event; whereas POSERS refers to engaging in strategies to maintain or engender positive emotion. The expectation was that these two scales would move in opposite directions because it was thought that it would be incompatible for an individual to be constantly thinking of negative events while also engaging in positive emotion regulation strategies. However, this finding has offered information that forges a new perspective. This finding suggests that negative thoughts about an event are present simultaneously with thoughts, actions, and physiological responses that occur to regulate towards a more positive emotional experience.

The co-existence of these opposing emotional experiences may actually provide some insight to the regulatory process. Perhaps the existence and strength of negative thoughts about an event stimulates the need to take care of oneself, which is done by drawing upon and engaging in various regulation strategies in order to re-organize and re-formulate the negative thoughts into something more positive. This may provide evidence for the broaden-and-build theory that indicates that the personal resources built from positive emotional experiences function as reserves to be drawn upon at a later time of need (Frederickson & Branigan, 2005). Although both Rumination and Acceptance were found to have significant relationships with POSERS ($p<.001$), they were considered weak because they accounted for only 3.6% and 3.7% of the variance. The strength of

these relationships must be considered while attempting to understand these findings. Blaming Others had no relationship with POSERS.

NEG BODY was found to have significant positive relationships ($p<.01$) with Self-Blame, Rumination, Catastrophizing, and Blaming Others and negative significant relationships ($p<.05$) with +Reappraisal and Perspective. Although these relationships were all found to be significant, they would all be considered weak because they account for such a small amount of variance (1.32% - 8.6%). The three stronger relationships existed between POSERS and Rumination, Catastrophizing, and Self-Blame accounting for 8.6%, 7.9% and 4.5% of the variance respectively. These relationships suggest that re-thinking negative thoughts of an event in a way that deems the events worse than the actual experience itself and attributing blame about the event to oneself is connected to ongoing negative emotional experiences that are also felt in the body. This finding provides further evidence for the inter-connection between the physiological and cognitive regulatory domains in accordance to Dodge and Garber (1991) regulatory domain theory. However, this finding indicates that these domain distinctions pertain only to negative emotional experience, which aligns with the results from the exploratory factor analysis for this study. No relationship was found between NEG BODY and Acceptance, + Refocus, and Refocus Planning.

The relationships between CONNECT and Rumination, +Refocus, Refocus Planning, + Reappraisal, Perspective, and Catastrophizing were all found to be significant positive relationships. Rumination, + Refocus, and Refocus Planning are all considered to be moderate relationships accounting for 11.8%,

9.2%, 11% of the variance; whereas + Reappraisal, Perspective and Catastrophizing were considered to be weak relationships only accounting for 4.5% or less of the variance. These former moderate relationships suggest that the importance of making connections to others occur when negative thoughts about an event are being refocused into more positive thoughts and action plans. Interestingly, unexpected positive relationships between CONNECT and the Rumination and Catastrophizing subscales were found. These findings indicate that connecting to others is sought when individuals are 'stuck' re-cycling their negative thoughts about negative life events. This may be evidence of the old adage of 'misery loves company.' However, it could also indicate that when someone is 'stuck' in negative thought patterns, connecting to others may expand his/her perspective of a negative event, which in turn may support the regulation of negative emotions towards a more positive emotional experience. The negative thought cycling and ever growing negative thoughts about events has been consistently found to be present with positive emotional regulation strategies, thereby strengthening earlier arguments that emotion regulation strategies are drawn upon to regulate negative emotional experience. There was no relationship found between CONNECT and Self-Blame, Acceptance, and Other Blame.

Table 4.13 shows significant relationships ($p<.01$) found between NEG COGNITION and Self-Blame, Rumination, +Refocus, Refocus Planning, Catastrophizing and a significant relationship ($p<.05$) with Acceptance. Among these, the strongest relationship found was a positive one between NEG COGNITION and Rumination accounting for 10.6% of the variance. This finding

provides evidence that thinking about negative events does relate to the continuation of negative emotional experience. The remainder of the significant relationships would be considered weak as they account for 4.8% or less of the variance. However, it is interesting that NEG COGNITION was positively correlated to +Refocus and Refocus Planning. This unexpected direction suggests that the experience of negative thoughts occurs along with thoughts about pleasant experiences and plans on how to deal with negative events. This provides additional evidence that although negative thoughts maintain negative emotional experience, it may also stimulate other regulation strategies that reduce and support moving beyond the negative emotional experience. There was no relationship found between NEG COGNITION and + Reappraisal, Perspective, and Blame Other.

In review, the correlation results for the four newly developed factors and the sub-scales of the CERQ for the most part demonstrated the directions expected for the relationships. However, there were some unexpected directions that sparked curiosity about the nature of the emotional valence in regulating emotions. The literature does purport that accessing positive regulation strategies can contribute to less negative emotion disruption (Frederickson & Bangian, 1998, 2001, 2005). That is, if one is capable of creating positive experiences for oneself than when negative emotions do arise they are less likely to become overwhelming over longer durations. Although there are references made to emotional valance in the regulation process, other instruments failed to examine

Table 4.14
*Convergent & Divergent Correlation Matrix*

| | | POSERS | NEGBODY | CONNECT | NEGCOG | BSCRS | BAIRS | BD1RS | BANRS | BDBIRS | Self Blame | Accept | Ruminate | + Refocus | Refocus Plan | Reappraise | Perspective | Catastrophize | Blame Other | WISC-SS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mean** | | **74.7** | **20.98** | **29.89** | **35.5** | **38.8** | **18.91** | **14.77** | **17.11** | **8.97** | **10.21** | **12.67** | **11.49** | **11.66** | **12.4** | **12.49** | **12.92** | **9.87** | **8.79** | **29.69** |
| **S.D.** | | **12.18** | **5.4** | **7.19** | **7.6** | **8.45** | **9.72** | **9.76** | **9.5** | **6.94** | **3.14** | **3.17** | **3.29** | **3.65** | **3.43** | **3.63** | **3.49** | **3.77** | **2.96** | **6.97** |
| **POSERS** | **Pearson Correlation** | $\alpha_1$ 0.88 | -0.19** | 0.59** | -0.43** | 0.53** | -0.20** | -0.38** | -0.32** | -0.36** | -0.05 | 0.19** | 0.19** | 0.46** | 0.48** | 0.37** | 0.31** | -0.08 | 0.01 | -0.03 |
| **NEGBODY** | **Pearson Correlation** | | $\alpha_2$ .70 | -0.26** | 0.42** | -0.13* | 0.33** | 0.29** | 0.31** | 0.10 | 0.21** | 0.05 | 0.29** | 0.09 | -0.03 | -0.12* | -0.11* | 0.28** | 0.15** | -0.02 |
| **CONNECT** | **Pearson Correlation** | | | $\alpha_3$ .84 | -0.56** | 0.23** | 0.02 | -0.08 | -0.03 | -0.21** | 0.06 | 0.10 | 0.34** | 0.30** | 0.33** | 0.21** | 0.11* | 0.11* | 0.10 | -0.07 |
| **NEGCOG** | **Pearson Correlation** | | | | $\alpha_4$ .83 | -0.03 | 0.25** | 0.15** | 0.19** | -.09 | 0.15** | 0.12* | 0.33** | 0.22** | 0.15** | 0.01 | 0.01 | 0.21** | 0.04 | -0.01 |
| **BSCRS** | **Pearson Correlation** | | | | | $\alpha_5$ .88 | -0.55** | -0.66** | -0.55** | -0.40** | -0.23** | 0.14* | -0.02 | 0.33** | 0.44** | 0.45** | 0.34** | -0.28** | -0.09 | -0.00 |
| **BAIRS** | **Pearson Correlation** | | | | | | $\alpha_6$ .90 | 0.78** | 0.71** | 0.33** | 0.42** | 0.10 | 0.30** | -0.08 | -0.15** | -0.21** | -0.13** | 0.39** | 0.13* | 0.01 |
| **BD1RS** | **Pearson Correlation** | | | | | | | $\alpha_7$ .94 | 0.83** | 0.53** | 0.45** | 0.09 | 0.25** | -0.19** | -0.28** | -0.34** | -0.25** | 0.46** | 0.17** | 0.02 |
| **BANRS** | **Pearson Correlation** | | | | | | | | $\alpha_8$ .93 | 0.61** | 0.43** | 0.08 | 0.28** | -0.14** | -0.20** | -0.29** | -0.25** | 0.47** | 0.26** | -0.01 |
| **BDBIRS** | **Pearson Correlation** | | | | | | | | | $\alpha_9$ .91 | 0.20** | 0.05 | 0.07 | -0.18** | -0.20** | -0.26** | -0.22** | 0.29** | 0.29** | 0.02 |
| **Self Blame** | **Pearson Correlation** | | | | | | | | | | $\alpha_{10}$ .70 | 0.31** | 0.44** | 0.05 | 0.11* | 0.05 | 0.10 | 0.45** | 0.23** | -0.06 |
| **Acceptance** | **Pearson Correlation** | | | | | | | | | | | $\alpha_{11}$ .64 | 0.46** | 0.25** | 0.36** | 0.33** | 0.39** | 0.18** | 0.16** | -0.05 |
| **Rumination** | **Pearson Correlation** | | | | | | | | | | | | $\alpha_{12}$ .69 | 0.39** | 0.41** | 0.22** | 0.23** | 0.44** | 0.29** | -0.05 |
| **+ Refocus** | **Pearson Correlation** | | | | | | | | | | | | | $\alpha_{13}$ .76 | 0.66** | 0.53** | 0.46** | 0.07 | 0.15** | -0.08 |
| **Refocus Planning** | **Pearson Correlation** | | | | | | | | | | | | | | $\alpha_{14}$ .74 | 0.69** | 0.54** | -0.04 | 0.18** | -0.07 |
| **+ Reappraisal** | **Pearson Correlation** | | | | | | | | | | | | | | | $\alpha_{15}$ .77 | 0.62** | -0.11* | 0.04 | -0.03 |
| **Perspective** | **Pearson Correlation** | | | | | | | | | | | | | | | | $\alpha_{16}$ .71 | -0.11* | 0.07 | 0.020 |
| **Catastrophize** | **Pearson Correlation** | | | | | | | | | | | | | | | | | $\alpha_{17}$ .75 | 0.42** | -0.12* |
| **Blame Other** | **Pearson Correlation** | | | | | | | | | | | | | | | | | | $\alpha_{18}$ .70 | -0.09 |
| **WISC-SS** | **Pearson Correlation** | | | | | | | | | | | | | | | | | | | 1 |

**p<.01, two-tailed. *p<.05, two-tailed. Listwise N=354

both sides. Therefore, this instrument was designed to capture the regulation of both positive and negative emotional experience.

In this study, the emotional valance was designed to operate with a bi-polar nature with the understanding that having access to one side (positive) would lessen the impact of the other (negative). However, the unexpected directions found in these correlations demonstrate a different nature altogether. Positive relationships between POSERS and Rumination; CONNECTION and Rumination and Catatrophizing; NEG COGNITION and + Refocus and Refocus Planning indicate that the process of regulating emotions involves the experience of positive and negative emotion simultaneously rather than a bi-directional nature. Thus, revealing an inter-dynamic connection not only to the regulatory domains but also to the emotional valence (positive and negative) involved when regulating emotional experiences. So, perhaps it is the extent to which someone feels this positive/negative blend that accounts for feeling emotional distress over long durations rather than the mere access to positive strategies to support regulation to a more positive emotional experience. That is, the extent to which positive regulation strategies exist simultaneously with negative emotion being experienced that supports the regulation of negative emotions.

**Wechsler Intelligence Scale for Children – Fourth Edition (WISC IV): Symbol Search B.** The WISC-IV Symbol Search was given to demonstrate divergent validity for the four AERQ scales. The Convergent & Divergent Correlation Matrix Table 4.14 indicates no relationships between the WISC-IV Symbol Search and the four new factors. Therefore, confirming the divergence of

these constructs. In other words, this finding supports that processing speed and emotion regulation are inherently different constructs.

## Conclusion

The development and validation of the Adolescent Emotion Regulation Questionnaire (AERQ) was the focus of this research study. The AERQ was developed following a framework of pre-existing theoretical concepts of emotional regulation and included emotional features (i.e., intensity and duration) and valences (positive and negative) that other measures excluded despite their relevance to regulatory functions. Towards its development, the 80 item questionnaire underwent several methodological steps (i.e., item construction, panel review, pilot testing, general administration, and construct validation with convergent and divergent measures) to preliminarily address the validity of the construct.

Confirmatory analyses did not support the AERQ matrix structure based on existing emotion regulation theory. Therefore, an exploratory factor analysis was completed to reveal a four factor model named in respective factor order: Positive Emotion Regulation Strategies, Negative Body, Connection, and Negative Cognition. The four factors demonstrated some characteristic qualities from the original proposed theory, such as the emergence of cognitive, physiological and social domains and the existence of positive and negative emotional valances. The factor structure that emerged also indicated some unexpected results such as: 1) non-existence of emotional features- intensity and duration, 2) predominance of emotional valence over domain, 3) collapsing of the domains within the positive valence 4) emergence of a complex social factor and 5) non-existence of a unitary behavioral domain.

The results from this study serve as an important contribution to understanding the regulatory domains, emotional features and valances in relation to emotion regulation. The theoretical attributions that were considered to be foundational to the development of the AERQ were found not to exist as expected. In fact, these results indicate that existing emotion regulation theory requires some refinement. Finding results that do not align with existing theory postulates that what can be deduced thoughtfully and conceptually may not exist in practical applications in the real world. For example, theory speaks of the intensive and durative features involved in the regulation of emotion, yet they are not practically evident. This begs the question whether these features are even accessible qualities for measurement purposes. Perhaps instead they are elusive constructs that are so embedded into our emotional experience that they cannot be disentangled. Or could it be that certain other factors would mediate their capture, such as the age, self or emotional awareness, or pubescent onset. The complete absence of the intensive and durative features warrants attention and reconsideration by researchers studying emotion regulation to either finding alternative approaches to discover these features and/or provide further evidence of their elusive nature. In either case, a long standing definition of emotion regulation inclusive of these features may need reconsideration and revision.

The regulatory domains and emotional valences were also aspects of emotion regulation theory that acted in unpredictable ways. It was expected that the emotional domains would provide the over-arching factor structure for the emotion regulation strategies, whereas the emotional features and valances would

be secondary to the regulatory domains. However, results demonstrate that the regulatory domains were secondary to emotional valance, which was shown to be the over-arching factor. There was a clear distinction between the emotion regulation strategies that created and supported positive versus negative emotional experience. The first factor that contained emotion regulation strategies to maintain positive emotional experience carried no distinctions between regulatory domains or emotional features. A complex social factor emerged independently of emotional valance or features; whereas a behavioral regulatory domain did not emerge at all. However, cognitive and physiological regulatory domains did emerge in two factors in which the emotion regulation strategies created or enhanced negative emotional experience.

These findings indicate that not only does emotional valance have an over-arching structure over regulatory domain, but that regulatory domains are only distinguishable when negative emotions are being experienced. So perhaps when someone is feeling good, the strategies used to maintain those good feelings are indistinguishable. As if no further thought or investigation is needed to understand the emotional experience, “I feel good” is accepted at face value. However, when someone is feeling poorly, there is more investigation or attention to the experience and therefore a distinction is made between cognitive and physiological emotion regulation strategies that function to maintain negative emotional experience. These findings necessitate a new organizational structure for emotional regulation theory, where positive and negative valance are established in higher order to regulatory domains. Additionally, these results may

indicate that more attention may be needed towards helping individuals differentiate among the domains of regulation strategies for positive emotions in order to support continued access to these positive emotion evoking strategies as future resources.

Clearly, this study has shed light on various aspects of emotion regulation theory that may have gone unquestioned as conceptually foundational to the nature and function of emotion regulation. Results found in this study pose important considerations and implications for future research in the field of emotion regulation that may involve abandoning some familiar ways of knowing to build practical understanding.

**Limitations & Future Research**

Although this research study was comprehensive, it was preliminary in the larger scope of validating a psychological construct in the measurement field. There are a number of future studies that could occur for the purposes of strengthening a validity argument for the AERQ. In this study, there were 364 participants from a normative sample. Indeed the size of this sample was large enough to provide information about the instruments factor structure and ensure power in the results. Ideally, it would have been beneficial to have enough participants to cross-section the data and run two independent sets of analyses to cross-validate the results and provide stronger validity evidence. An important future step would involve testing the shorter version of this instrument (i.e., using only the forty-eight items that loaded on the emerged factors) with an N of 500 adolescents or greater in order to use a cross-validation methodology, which

would provide additional validity evidence for the four newly developed AERQ scales. Furthermore, as emotion regulation becomes more understood there are more attempts made to create an instrument to capture the construct in a measureable form. Therefore, in future studies there may be access to more measures that purport to measure emotional regulatory functions. The inclusion of these various types of instruments while collecting data to refine the AERQ would provide another way to collect validity evidence on a continuous basis.

An additional step to this research could include broadening the sample to examine several populations and obtaining greater representation for all age categories. One of the limitations to this study was that the adolescent age range was not fully represented. For the most part, gender was equally represented, but there were more younger adolescents aged between 12-15 years than there were older adolescents aged between 15-17 years. This may impact how the factors emerged as there may be some domains that are harder to grasp (e.g., physiological) than others (i.e., cognitive). Another possibility that could result from having greater representation of older adolescents is the emergence of the distinction between emotional features of duration and intensity that was not found in this study.

This study focused on a normative population, but clinical samples of adolescents who show emotional distress could be examined. The examination of clinical samples would be important to determine whether differences occur in the factor structure for those adolescents whom have known emotional difficulties (i.e., anxiety, depression, anger, behavioral disorders) compared to those who do

not struggle. Sampling various populations could also highlight differences in how emotions are regulated, and thus provide some key indicators to notifying clinicians to difficulties in regulating emotions. That is, if certain items are responded to in a certain way by a clinical sample that is consistently different than a normative sample that item could become an indicator of difficulty with regulating emotion.

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Appendix 1

**Adolescent Emotion Regulation Questionnaire**
**Content Validity Task**

## Project Overview

The ability to regulate emotion has been associated with a general ability to exert self-control and process emotional information within oneself and others in order to successfully navigate social interactions (Barrett & Gross, 2001; Denham, 1998; Saarni, 1999). Regulating the intensity and duration of emotion depends upon the function and interrelation of physiological, cognitive, behavioral and social response domains (Dodge, 1991; Garber & Dodge, 1994). Personal and social functioning is limited or restricted in one or several of these domains when emotions are dysregulated. Dysregulation of emotion may lead to psychopathological symptoms currently described in the criteria of several psychological disorders (Dodge, 1991; Thompson, 1994; Keenan, 2000; Kring & Werner, 2004). Few attempts have been made to measure emotion regulation despite its clinical relevance to typical and atypical functioning. The purpose of my doctoral research is to create and validate an instrument for adolescents (13-17 yrs), which measures the use of emotion regulation strategies in cognitive, behavioral, social, and physiological domains to regulate the intensity and duration of emotion across emotional valances.

The newly developed instrument contains 84 items in 16 proposed factor constructs that have been developed through the combination of four response domains (cognitive, behavioral, physiological, and social), two emotional features (intensity, duration), and two emotional valances (pleasant, unpleasant). The questionnaire's response format consists of a five-point scale with 1 anchored by "Strongly Disagree" and 5 anchored by "Strongly Agree." The operational definition of emotion regulation, as well as descriptions for the response domains, emotional features and valances are provided below to guide you during the content validity task.

**Definition of Emotion Regulation:**
The changes experienced in intensity and duration of positive and negative emotion once emotions have been activated. Regulation will be considered to have occurred when positive emotion has been initiated or maintained and negative emotions have been reduced or inhibited.

**Domains:**
*Cognitive*

The cognitive domain refers to any mental activity used to regulate emotional intensity or duration. Mental activity can include beliefs, perceptions, imagination, and thoughts arising from personal or vicarious experiences in past, present or future.

*Behavioral*

The behavioral domain refers to any action that is engaged in to regulate emotional intensity or duration that does not have a clear interactional or social component, such as, reading, watching T.V., and listening to music.

*Physiological*

The physiological domain refers to any bodily sensations, feelings, responses or functions (e.g., breathing or sweating) that play a role in regulating emotional intensity or duration.

*Social*

The social domain refers to how an individual's interactions or responses with others regulate emotional intensity or duration. The focus for this domain is the interpersonal impact on the ability to regulate emotion. This could be reflected in thoughts or behaviors, however they are placed in a social or interactive context.

**Emotional Features:**
*Intensity*

Emotional intensity refers to the perceived strength of the emotional experience. Regulation of emotional strength involves changes to be stronger or weaker, more or less, better or worse.

*Duration*

Emotional duration refers to the perceived time period that emotion is experienced. Emotions can be experienced to be quick/fleeting, long lasting, or continued to be maintained, inhibited or easily changed.

**Emotional Valances:**

Due to the controversy in accurately defining and separating out discrete emotions, a broad continuum of pleasant/unpleasant or positive/negative emotional experience is used for the purposes of this study.

*Pleasant*

The overall experience of feeling good, pleasant or being in a good mood, which may involve a range of emotions singularly or simultaneously. Placing an item in the pleasant construct indicates that the strategy creates or increases intensity or

duration of positive emotions. For example, engaging in a strategy that elicits feeling great or continuing to feel good.

*Unpleasant*

The overall experience of feeling badly, unpleasant, or being in a bad mood, which may involve a range of emotions singularly or simultaneously. Placing an item in the unpleasant construct indicates that the strategy inhibits or decreases intensity or duration of negative emotions. For example, engaging in a strategy that elicits someone to feel better or limits negative feelings to be experienced.

*Note: Some items are written reversed, which can make it difficult to place the item along the pleasant/unpleasant continuum.*

**TASK INSTRUCTIONS**

A. There are some demographic questions to complete before you begin the task.

B. Look at each of the items that are listed below 1 – 84. According to the descriptions provided above, determine for each item whether the item is pertaining to

a. cognitive, behavioral, physiological, or social domain
b. emotional intensity or duration
c. pleasant or unpleasant emotional valance

Once you have identified where you believe an item fits for each of these three areas, then **highlight** the item using your cursor, **cut** the item along with its item number and **paste** it into the location with the heading that matches your selection (e.g., Cognitive – Pleasant – Intensity).

The placement of items in one of the 16 factor constructs will indicate that you believe that a particular item is relevant and representative of the content for the factor construct chosen according to the descriptions provided. If you leave an item in the list, this will indicate that you did not believe that it was relevant or representative of any of the 16 proposed factors. If this occurs, please indicate the reason for not placing an item in a factor construct and offer any feedback you feel is relevant.

C. The last page of this document invites you to make any additional comments or remarks about the task, the items (e.g., wording, readability, ease of comprehension).
D. Once you have completed the entire task **SAVE** the document with your information and attach the document within an e-mail to be mailed to me at lmk@telusplanet.net.

**I want to THANK YOU for your participation and aide in the development of this Emotion Regulation Questionnaire.**

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### *Demographic Information*

Name: Gender:

Education Level – Highest Degree Earned: Place of Residence:

Place of Current Occupation: Title or Position:

Discipline/Field of Study: Number of years in Discipline:

Specialty Areas of Interest: Population Focus:

****Please answer the following questions:**

Have you ever been involved in instrument development before?

Have you examined items for other developing instruments in the past?

(Answer at End) How long did it take to complete this task?

Using the descriptors of "**No Knowledge, Poor, Moderate, Substantial, Expert**" how would you rate your knowledge level for the following areas:

Instrument Development _____

Adolescent Development _____

Adolescent Emotional Development _____

Emotion Regulation _____

**Instrument Items**

1. Thinking about something fun intensifies my good mood
2. I feel great when I am doing something I enjoy
3. Feeling active butterflies in my stomach makes me feel worse
4. Hiding my feelings from others makes me feel worse
5. Hiding my feelings from others keeps me feeling badly for a long time
6. Being around my friends keeps me in a positive mood
7. Hurting my body only distracts me from how badly I feel for a short time
8. I can do something to quickly change how badly I feel in an unpleasant situation
9. Thinking about unpleasant events makes me feel badly for a long time
10. Thinking about something pleasant keeps me happy for a long time
11. Believing in myself makes my good mood feel stronger
12. Creating something from scratch builds excitement within me
13. Remembering unpleasant feelings from the past continues to make me feel bad
14. Concentrating on positive aspects of myself boosts my mood
15. Physical activity continues to make me feel good for a long time
16. Receiving affection from others quickly eases the pain that I feel
17. I have trouble maintaining a good feeling when I am doing something I enjoy
18. Thinking about something nice diminishes any unpleasant feelings I am having
19. I continue to feel hyper when I take short, quick breaths
20. I feel even better when I do something nice for somebody
21. I continue to feel good when I visualize a peaceful place in my mind
22. Shouting and yelling at others makes me feel worse
23. Breathing slow and easy allows me to feel calm
24. Going out with my friends quickly erases any bad feelings I have
25. I am more tense when I begin to sweat
26. Part of me continues to feel bad when I am doing something I enjoy
27. I feel worse when I dwell upon how badly I feel

28. Remembering good times prolongs my good mood
29. I can make myself feel better when I remind myself about how I felt better in the past
30. Physical activity improves my mood for a long period of time
31. Relaxing muscles in my body makes me less tense
32. I continue to feel good when I care for my pet
33. I feel great when I can help others
34. Watching TV only postpones my negative feelings for a short time
35. Feeling numb or unresponsive helps me to feel better
36. Providing comfort to those I care about sustains good feelings for a long period of time
37. I eat and eat to help myself feel better
38. Concentrating on positive aspects of an event limits the negative feelings I experience
39. Listening to music enhances my positive mood
40. I continue to feel bad when I isolate myself from others
41. Listening to a friend in need boosts my good mood
42. Ignoring how badly I feel actually makes me feel worse
43. Zoning out reduces how badly I feel
44. Smiling makes me feel good
45. Doing nothing makes me feel worse
46. Tingles felt in my body fade away as I become more calm
47. Butterflies in my stomach remain active for a long period of time when I feel bad
48. Expressing my feelings to others makes me feel better
49. Feeling my body's warmth makes me feel really good
50. I feel better when I talk to others
51. My body continues to feel good all over when I am in a good mood
52. Imagining silly things makes me feel good for a long time
53. My good mood ends quickly when I am doing something I dislike
54. I can easily stay feeling positive when my body is at rest

55. Doing something fun prolongs my positive mood
56. Telling myself positive things enhances my good mood
57. Relaxing muscles in my body makes me feel good
58. I engage in activities (music, sports) to make myself feel better
59. Providing comfort to those I care about sustains good feelings for a long period of time
60. I deny myself food to help me feel better
61. I cannot seem to relax when my breathing is quick and short
62. Getting a hug from someone instantly makes me feel good inside
63. Positive feelings are easy to maintain when I think about future activities
64. Going for a walk extends how long I feel good
65. Breathing quickly makes me feel energized
66. Being affectionate towards others or a pet makes me feel really good inside
67. Thinking that everything is my fault makes me feel worse
68. Doing nothing makes me feel worse
69. Feeling tingles down my spine keeps me alert and on guard in my environment
70. Running away from home only makes me feel worse
71. Daydreaming about the things that I want makes me feel really good
72. I feel even better when I laugh out loud
73. Taking deep breaths continues to keep me calm for a long time
74. Knowing that things won't always be bad makes my bad feelings short-lived
75. Venting to my friends immediately makes me feel better
76. I hurt myself physically to feel better
77. My heart continues to pound hard when I am feeling tense
78. I use pills, drugs, or alcohol to take away my bad feelings
79. Throwing and smashing things around only feels better for a short time
80. I feel better and better when I cry
81. Screaming makes me feel better
82. Moping around continues to make me feel bad
83. Doing things around the house keeps me feeling good

84. Watching T.V. distracts me from how badly I feel

## Sorting Items into 16 Proposed Constructs

### Cognitive Domain

Cognitive – Pleasant – Intensity
Cognitive – Pleasant – Duration
Cognitive – Unpleasant – Intensity
Cognitive – Unpleasant – Duration

### Behavioral Domain

Behavioral – Pleasant – Intensity
Behavioral – Pleasant – Duration
Behavioral – Unpleasant – Intensity
Behavioral – Unpleasant – Duration

### Physiological Domain

Physiological – Pleasant – Intensity
Physiological – Pleasant – Duration
Physiological – Unpleasant – Intensity
Physiological – Unpleasant – Duration

### Social Domain

Social – Pleasant – Intensity
Social – Pleasant – Duration
Social – Unpleasant – Intensity
Social – Unpleasant – Duration

## Additional Comments or Remarks

Appendix 2

Panel Review: Item Placement by Judges

Cognitive Domain

| | Pleasant | | Unplesant | |
|---|---|---|---|---|
| Judges | Intensity | Duration | Intensity | Duration |
| 1 | 1, 11, 14, 29, 56, 71 | 10, 21, 28, 52, 63 | 18, 27, 38, 42, 43, 67, 84 | 8, 9, 13, 34, 74 |
| 2 | 1, 11, 14, 56, 71 | 10, 21, 28, 52, 55, 63 | 18, 27, 29, 35, 38, 42, 43, 67 | 9, 13, 74 |
| 3 | 1, 11, 14, 56, 71 | 10, 21, 28, 52, 63 | 18, 29, 38, 43, 74 | |
| 4 | 1, 56, 63, 71, 83 | 52, 64 | 43, 67, 74 | |
| 5 | | | | |
| 6 | | | | |
| Researcher Original Category Placements | 1, 11, 14, 56, 71 | 10, 21, 28, 52, 63 | 18, 27, 29, 42, 43, 67 | 9, 13, 38, 74 |
| | | | | |
| High Agreement Items | 1, 11, 14, 56, 71 | 10, 21, 28, 52, 63 | 18, 43, 67 | |
| | | | | |
| Low Agreement Items | | | 27, 29, 42 | 9, 13, 38, 74 |

| | Behavioral Domain | | | |
|---|---|---|---|---|
| | Pleasant | | Unpleasant | |
| Judges | Intensity | Duration | Intensity | Duration |
| 1 | 2, 12, 37, 39, 44, 58, 72, 80 | 17, 53, 54, 55, 64, 83 | 22, 45, 60, 70, 81 | 26, 79, 82 |
| 2 | 2, 12, 39, 58 | 15, 30, 53, 64, 83 | 26, 37, 45, 60, 70, 78, 80, 81, 84 | 7, 8, 17, 34, 79, 82 |
| 3 | 2, 12, 37, 39, 44, 65, 72, 83 | 15, 30, 55, 64 | 8, 60, 76, 78, 80, 81, 84 | 73, 79 |
| 4 | 55, 57, 58, 72 | 73, 79 | 45, 60, 70, 80, 81, 84 | 82 |
| 5 | | | | |
| 6 | | | | |
| Researcher Original Category Placements | 2, 12, 39, 44, 72 | 15, 53, 55, 64, 83 | 37, 45, 58, 60, 76, 78, 80, 81, 84 | 7, 8, 17, 26, 30, 34, 79, 82 |
| | | | | |
| High Agreement Items | 2, 12, 39, 72 | 64 | 45, 60, 80, 81, 84 | 79, 82 |
| | | | | |
| Low Agreement Items | 44 | 15, 53, 55, 83 | 37, 58, 76, 78 | 7, 8, 17, 26, 30, 34 |

| | Physiological Domain | | | |
|---|---|---|---|---|
| | Pleasant | | Unpleasant | |
| Judges | Intensity | Duration | Intensity | Duration |
| 1 | 23, 49, 57, 65 | 15, 30, 46, 51, 73 | 3, 25, 31, 35, 61, 69, 76, 77, 78 | 7, 19, 47 |
| 2 | 23, 49, 57, 72 | 51, 54, 65, 69, 73 | 3, 25, 31, 46, 47, 76 | 19, 61, 77 |
| 3 | 49, 57, 69 | 51 | | |
| 4 | 49, 65, 76, 77 | 69 | 61, 78 | |
| 5 | 49, 57, 65 | 46, 51, 54, 73 | 3, 23, 25, 31, 35, 61, 69 | 19, 47, 77 |
| 6 | 35, 49, 65 | 23, 51, 54, 57, 69, 73 | 3, 25, 31, 46 | 19, 47, 61, 77 |
| Researcher Original Category Placements | 23, 49, 57, 65 | 19, 51, 54, 73 | 3, 25, 31, 35, 46 | 47, 61, 69, 77 |
| | | | | |
| High Agreement Items | 49, 57, 65 | 51, 54, 73 | 3, 25, 31 | 47, 77 |
| | | | | |
| Low Agreement Items | 23 | 19 | 35, 46 | 61, 69 |

| | Social Domain | | | | |
|---|---|---|---|---|---|
| | Pleasant | | Unplesant | | |
| Judges | Intensity | Duration | Intensity | Duration | Percentage of Items Placed |
| 1 | 20, 33, 41, 48, 50, 66, 75 | 6, 32, 36, 62 | 4 | 5, 16, 24, 40 | 100% |
| 2 | 20, 33, 41, 44, 48, 66 | 6, 32, 36, 62 | 4, 22, 50 | 5, 16, 24, 40, 75 | 100% |
| 3 | 6, 33, 41, 48, 50, 62 | 36 | 16, 24, 75 | | 56% |
| 4 | 48, 50, 62, 66 | 24, 36 | 75 | | 38 % |
| 5 | 16, 20, 33, 48, 50, 62, 66, 75 | 6, 32, 36, 41 | 4, 22, 70 | 5, 40 | 100 % ( Social & Physio) |
| 6 | | | | | 100 % (Physio) |
| Researcher Original Category Placements | 20, 33, 41, 66 | 6, 32, 36, 62 | 4, 22, 48, 50, 70 | 5, 16, 24, 40, 75 | |
| | | | | | |
| High Agreement Items | 20, 33, 41, 66 | 6, 32, 36 | 4 | 5, 40 | |
| | | | | | |
| Low Agreement Items | | 62 | 22, 48, 50, 70 | 16, 24, 75 | |

Appendix 3

Panel Review Feedback: Instrument Item Revisions

A total of 80 instrument items formed the Adolescent Emotion Regulation Questionnaire after considering the panel review feedback. The items are listed below in 8 bipolar factors with 20 items/domain, 10 items/emotional feature, and 5 items/emotional valance. The list indicates the item number that was originally assigned in the content validity task, the level of agreement from the judges, the revision that occurred with the item and the number that the item was assigned in the final questionnaire. There were 26 original items that were kept without revisions, 36 original items kept with revisions, 18 newly developed items and 20 items that were discarded.

A# - Indicates the item number assigned to the item for the content validity task
B# - Indicates the item number assigned to the item for the pilot and final instrument

AC – Indicates the Agreement Code for the item: H – high agreement or L – low agreement

RC - Indicates the Revision Code for the item:
K – item was kept without revisions R - item was kept with revisions
N – item was newly developed D – item was discarded
KM or RM – additional to being Kept and/or Revised the item was also Moved from a different category
MO - moved item number in its original category with a description of where the item was moved

Cognitive Intensity

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 1 | H | K | 1 | Thinking about something fun intensifies my good mood |
| 11 | H | D | | Believing in myself makes my good mood feel stronger |
| 14 | H | D | | Concentrating on positive aspects of myself boosts my mood |
| 56 | H | K | 25 | Telling myself positive things enhances my mood |
| 71 | H | K | 45 | Daydreaming about things that I want makes me feel really good |
| 43 | H | KM | 77 | Zoning out reduces how badly I feel |
| 29 | L | RM | 69 | I feel better when I remind myself about how I felt better in the past |

| | | | | |
|---|---|---|---|---|
| 18 | H | D | | Thinking about something nice diminishes any unpleasant feelings I am having |
| *43* | | *MO* | | *Moved to Cognitive Intensity Pleasant* |
| 67 | H | K | 21 | Thinking everything is my fault makes me feel worse |
| 27 | L | K | 13 | I feel worse when I dwell upon how badly I feel |
| *29* | | *MO* | | *Moved to Cognitive Intensity Pleasant* |
| 42 | L | R | 37 | Ignoring how badly I feel makes me feel worse |
| | | N | 61 | I feel worse when I think about how unlucky I am |
| | | N | 80 | Focusing on other times I have felt badly makes me feel even worse |

Cognitive Duration

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 10 | H | D | | Thinking about something pleasant keeps me happy for a long time |
| 21 | H | K | 9 | I continue to feel good when I visualize a peaceful place in my mind |
| 28 | H | K | 29 | Remembering good times prolongs my good mood |
| 52 | H | K | 49 | Imagining silly things can make me feel good for a long time |
| 63 | H | R | 57 | My good mood is easily maintained when I think about future activities |
| 74 | L | RM | 73 | My bad feelings are short-lived when I tell myself that things won't always be bad |

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| | | | | |
|---|---|---|---|---|
| 9 | L | K | 17 | Thinking about unpleasant events makes me feel badly for a long time |
| 13 | L | K | 33 | Remembering unpleasant feelings from the past continues to make me feel bad |
| 38 | L | D | | Concentrating on positive aspects of an event limits the negative feelings I experience |
| *74* | | *MO* | | *Moved to Cognitive Duration Pleasant* |
| | | N | 41 | I have bad feelings for a long time when I focus on something that upsets me |
| | | N | 53 | Playing unhappy images over and over in my mind make me feel bad for a long period of time |
| | | N | 65 | I continue to feel bad when I think that my life will never change for the better |

Behavior Intensity

| A# | AC | RC | B# | Item |
|---|---|---|---|---|
| 2 | H | D | | I feel great when I am doing something I enjoy |
| 12 | H | D | | Creating something from scratch builds excitement within me |
| *39* | | *MO* | | *Moved to Behavior Intensity Unpleasant* |
| *72* | | *MO* | | *Moved to Behavior Duration Pleasant* |
| 44 | L | D | | Smiling makes me feel good |
| 60 | H | KM | 54 | I deny myself food to help me feel better |
| 80 | H | RM | 6 | I feel better after I cry |
| 81 | H | KM | 34 | Screaming makes me feel better |
| 34 | L | RM | 18 | I don't feel so bad when I watch a television show that I like |
| 37 | L | RM | 2 | I eat and eat to feel better |
| | | N | 62 | I don't feel so badly after I have slept |

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| | | | | |
|---|---|---|---|---|
| 45 | H | R | 30 | Doing nothing about how badly I feel actually makes me feel worse |
| *60* | | *MO* | | *Moved to Behavior Intensity Pleasant* |
| *80* | | *MO* | | *Moved to Behavior Intensity Pleasant* |
| *81* | | *MO* | | *Moved to Behavior Intensity Pleasant* |
| 84 | H | D | | Watching T.V. distracts me from how badly I feel |
| *37* | | *MO* | | *Moved to Behavior Intensity Pleasant* |
| 58 | L | D | | I engage in activities (music, sports) to make myself feel better |
| *76* | | *MO* | | *Moved to Physiological Intensity Pleasant* |
| *78* | | *MO* | | *Moved to Physiological Duration Pleasant* |
| 39 | H | RM | 58 | I feel even worse when I listen to sad music |
| 70 | L | KM | 50 | Running away from home only makes me feel worse |
| | | N | 74 | Pouting makes me feel even more badly |

Behavioral Duration

| A# | AC | RC | B# | Item |
|---|---|---|---|---|
| 64 | H | K | 14 | Going for a walk extends how long I feel good |
| 15 | L | D | | Physical activity continues to make me feel good for a long time |
| 53 | L | D | | My good mood ends quickly when I am doing something I dislike |
| 55 | L | D | | Doing something fun prolongs my positive mood |
| 83 | L | R | 22 | I continue to feel good when I do things around the house |

| | | | | |
|---|---|---|---|---|
| 72 | H | RM | 38 | It doesn't take long to change how badly I feel when I laugh out loud |
| | | N | 42 | I can continue to feel good for a long time when I read my favorite book |
| | | N | 66 | Writing in my journal keeps me feeling good for a long time |
| 79 | H | R | 26 | I feel badly for a long time when I throw and smash things around |
| 82 | H | R | 10 | I continue to feel bad when I mope around |
| 7 | L | R | 70 | Hurting myself only takes away my bad feelings for a short time |
| 8 | L | D | | I can do something to quickly change how badly I feel in an unpleasant situation |
| 17 | L | K | 46 | I have trouble maintaining a good feeling when I am doing something I enjoy |
| 26 | L | D | | Part of me continues to feel bad when I am doing something I enjoy |
| 30 | L | D | | Physical activity improves my mood for a long period of time |
| *34* | | *MO* | | *Moved to Behavior Intensity Pleasant* |
| | | N | 78 | I continue to feel bad when I frown |

Physiological Intensity

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 49 | H | K | 12 | Feeling my body's warmth makes me feel really good |
| 57 | H | R | 27 | I feel really good when I relax the muscles in my body |
| *65* | | *MO* | | *Moved to Physiological Intensity Unpleasant* |
| *23* | | *MO* | | *Moved to Physiological Duration Pleasant* |
| 35 | L | RM | 47 | I feel better when my body feels numb |
| 46 | L | RM | 71 | I feel better when I feel the tingling sensations in my body fading away |
| 76 | L | RM | 59 | Hurting myself physically takes away my bad feelings |
| 3 | H | R | 7 | Feeling butterflies in my stomach makes me feel worse |
| 25 | H | R | 19 | I feel worse when I tense my muscles |
| *31* | | *MO* | | *Moved to Physiological Duration Pleasant* |
| *35* | | *MO* | | *Moved to Physiological Intensity Pleasant* |

| | | | | |
|---|---|---|---|---|
| *46* | | *MO* | | *Moved to Physiological Intensity Pleasant* |
| 65 | H | RM | 39 | I feel worse when my breathing is fast and shallow |
| 77 | H | RM | 67 | I have trouble feeling good when my heart is pounding hard and fast |
| | | N | 63 | I don't feel as good when my body feels cold |

Physiological Duration

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 51 | H | D | | My body continues to feel good all over when I am in a good mood |
| 54 | H | R | 3 | I can stay feeling positive for a long time when my body is at rest |
| 73 | H | R | 43 | Taking deep breaths continues to keep my body calm for a long time |
| *19* | | *MO* | | *Moved to Physiological Duration Unpleasant* |
| 31 | H | RM | 75 | I immediately feel better once I relax the muscles in my body |
| 23 | L | RM | 31 | When I breathe slowly and easy I feel good for quite a while |
| 78 | L | RM | 51 | Pills, drugs, or alcohol quickly take away any bad feelings |

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| | | | | |
|---|---|---|---|---|
| 47 | H | R | 15 | I feel badly for a long time when the butterflies in my stomach are active |
| *77* | | *MO* | | *Moved to Physiological Intensity Unpleasant* |
| 61 | L | R | 35 | My body stays tense for a long time when my breathing is quick and short |
| 69 | L | R | 79 | I keep feeling badly when I get tingles down my spine |
| 19 | L | KM | 23 | I continue to feel hyper when I take short, quick breaths |
| | | N | 55 | My bad feelings do not go away when my heart is pounding hard and fast |

Social Intensity

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 20 | H | R | 64 | I feel really good when I do something nice for somebody |
| 33 | H | K | 5 | I feel great when I can help others |
| *41* | | *MO* | | *Moved to Social Duration Pleasant* |
| 66 | H | R | 16 | Being affectionate towards others makes me feel really good inside |
| 48 | L | KM | 52 | Expressing my feelings to others makes me feel better |

| | | | | |
|---|---|---|---|---|
| 50 | L | RM | 36 | I feel better when I talk to someone |

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| | | | | |
|---|---|---|---|---|
| 4 | H | R | 24 | I don't feel as good when I hide my feelings from others |
| 22 | L | R | 48 | I feel really bad when I shout and yell at others |
| *48* | | *MO* | | *Moved to Social Intensity Pleasant* |
| *50* | | *MO* | | *Moved to Social Intensity Pleasant* |
| *70* | | *MO* | | *Moved to Behavior Intensity Unpleasant* |
| | | N | 32 | I have trouble feeling good when I pretend that everything is okay |
| | | N | 4 | Fighting with others only makes me feel worse |
| | | N | 72 | I feel worse when I don't ask for any help |

Social Duration

| **A#** | **AC** | **RC** | **B#** | **Item** |
|---|---|---|---|---|
| 6 | H | K | 20 | Being around my friends keeps me in a positive mood |
| 32 | H | D | | I continue to feel good when I care for my pet |
| 36 | H | K | 8 | Providing comfort to those I care about sustains good feelings for a long period of time |
| 62 | L | K | 40 | Getting a hug from someone instantly makes me feel good inside |
| 41 | H | RM | 60 | I feel good for a long time when I listen to a friend in need |
| 75 | L | KM | 56 | Venting to my friends immediately makes me feel better |

---

| | | | | |
|---|---|---|---|---|
| 5 | H | K | 11 | Hiding my feelings from others keeps me feeling badly for a long time |
| 40 | H | K | 28 | I continue to feel bad when I isolate myself from others |
| 16 | L | D | | Receiving affection from others quickly eases the pain that I feel |
| 24 | L | D | | Going out with my friends quickly erases any bad feelings I have |
| *75* | | *MO* | | *Moved to Social Duration Pleasant* |
| | | N | 44 | I feel badly for a long time when I shut out my friends |
| | | N | 68 | Rejecting the affection of my friends or family maintains the bad feelings I have |
| | | N | 76 | My bad feelings hang around for a long time when I have been hurtful towards others |

# Appendix 4

## Pilot Testing Feedback: Vocabulary Changes

The *italicized* words were changed after receiving feedback from pilot participants that they were uncertain as to the meaning of these words.

| Item # | Original wording | New wording |
|---|---|---|
| 1 | Thinking about something fun *intensifies* my good mood | Thinking about something fun makes my good mood *even stronger* |
| 55 | My bad feelings *persist* when my heart is pounding hard and fast | My bad feelings *do not go away* when my heart is pounding hard and fast |
| 56 | *Venting* to my friends immediately makes me feel better | *Talking* to my friends immediately makes me feel better |
| 76 | My bad feelings *linger* for a long time when I have been hurtful towards others | My bad feelings *hang around* for a long time when I have been hurtful towards others |

# Appendix 5

**Adolescent Emotion Regulation Questionnaire**

The way in which we respond to our emotions can extend, shorten, strengthen or weaken the emotions that are experienced. For each statement, **Circle** a number from 1 to 5 to show the extent that you **DISAGREE or AGREE** with how your emotions change by the way you respond to them.

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| 1. Thinking about something fun makes my good mood even stronger | 1 | 2 | 3 | 4 | 5 |
| 2. I eat and eat to feel better | 1 | 2 | 3 | 4 | 5 |
| 3. I can stay feeling positive for a long time when my body is at rest | 1 | 2 | 3 | 4 | 5 |
| 4. Fighting with others only makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 5. I feel great when I can help others | 1 | 2 | 3 | 4 | 5 |
| 6. I feel better after I cry | 1 | 2 | 3 | 4 | 5 |
| 7. Feeling butterflies in my stomach makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 8. Providing comfort to those I care about sustains good feelings for a long period of time | 1 | 2 | 3 | 4 | 5 |
| 9. I continue to feel good when I visualize a peaceful place in my mind | 1 | 2 | 3 | 4 | 5 |
| 10. I continue to feel bad when I mope around | 1 | 2 | 3 | 4 | 5 |
| 11. Hiding my feelings from others keeps me feeling badly for a long time | 1 | 2 | 3 | 4 | 5 |
| 12. Feeling my body's warmth makes me feel really good | 1 | 2 | 3 | 4 | 5 |
| 13. I feel worse when I dwell upon how badly I feel | 1 | 2 | 3 | 4 | 5 |
| 14. Going for a walk extends how long I feel good | 1 | 2 | 3 | 4 | 5 |
| 15. I feel badly for a long time when the butterflies in my stomach are active | 1 | 2 | 3 | 4 | 5 |
| 16. Being affectionate towards others makes me feel really good inside | 1 | 2 | 3 | 4 | 5 |
| 17. Thinking about unpleasant events makes me feel badly for a long time | 1 | 2 | 3 | 4 | 5 |
| 18. I don't feel so bad when I watch a television show that I like | 1 | 2 | 3 | 4 | 5 |
| 19. I feel worse when I tense my muscles | 1 | 2 | 3 | 4 | 5 |
| 20. Being around my friends keeps me in a positive mood | 1 | 2 | 3 | 4 | 5 |
| 21. Thinking everything is my fault makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 22. I continue to feel good when I do things around the house | 1 | 2 | 3 | 4 | 5 |
| 23. I continue to feel hyper when I take short, quick breaths | 1 | 2 | 3 | 4 | 5 |
| 24. I don't feel as good when I hide my feelings from others | 1 | 2 | 3 | 4 | 5 |
| 25. Telling myself positive things enhances my mood | 1 | 2 | 3 | 4 | 5 |
| 26. I feel badly for a long time when I throw and smash things around | 1 | 2 | 3 | 4 | 5 |
| 27. I feel really good when I relax the muscles in my body | 1 | 2 | 3 | 4 | 5 |
| 28. I continue to feel bad when I isolate myself from others | 1 | 2 | 3 | 4 | 5 |
| 29. Remembering good times prolongs my good mood | 1 | 2 | 3 | 4 | 5 |
| 30. Doing nothing about how badly I feel actually makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 31. When I breathe slowly and easy I feel good for quite a while | 1 | 2 | 3 | 4 | 5 |
| 32. I have trouble feeling good when I pretend that everything is okay | 1 | 2 | 3 | 4 | 5 |
| 33. Remembering unpleasant feelings from the past continues to make me feel bad | 1 | 2 | 3 | 4 | 5 |

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| 34. Screaming makes me feel better | 1 | 2 | 3 | 4 | 5 |
| 35. My body stays tense for a long time when my breathing is quick and short | 1 | 2 | 3 | 4 | 5 |
| 36. I feel better when I talk to someone | 1 | 2 | 3 | 4 | 5 |
| 37. Ignoring how badly I feel makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 38. It doesn't take long to change how badly I feel when I laugh out loud | 1 | 2 | 3 | 4 | 5 |
| 39. I feel worse when my breathing is fast and shallow | 1 | 2 | 3 | 4 | 5 |
| 40. Getting a hug from someone instantly makes me feel good inside | 1 | 2 | 3 | 4 | 5 |
| 41. I have bad feelings for a long time when I focus on something that upsets me | 1 | 2 | 3 | 4 | 5 |
| 42. I can continue to feel good for a long time when I read my favorite book | 1 | 2 | 3 | 4 | 5 |
| 43. Taking deep breaths continues to keep my body calm for a long time | 1 | 2 | 3 | 4 | 5 |
| 44. I feel badly for a long time when I shut out my friends | 1 | 2 | 3 | 4 | 5 |
| 45. Daydreaming about things that I want makes me feel really good | 1 | 2 | 3 | 4 | 5 |
| 46. I have trouble maintaining a good feeling when I am doing something I enjoy | 1 | 2 | 3 | 4 | 5 |
| 47. I feel better when my body feels numb | 1 | 2 | 3 | 4 | 5 |
| 48. I feel really bad when I shout and yell at others | 1 | 2 | 3 | 4 | 5 |
| 49. Imagining silly things can make me feel good for a long time | 1 | 2 | 3 | 4 | 5 |
| 50. Running away from home only makes me feel worse | 1 | 2 | 3 | 4 | 5 |
| 51. Pills, drugs, or alcohol quickly take away any bad feelings | 1 | 2 | 3 | 4 | 5 |
| 52. Expressing my feelings to others makes me feel better | 1 | 2 | 3 | 4 | 5 |
| 53. Playing unhappy images over and over in my mind make me feel bad for a long period of time | 1 | 2 | 3 | 4 | 5 |
| 54. I deny myself food to help me feel better | 1 | 2 | 3 | 4 | 5 |
| 55. My bad feelings do not go away when my heart is pounding hard and fast | 1 | 2 | 3 | 4 | 5 |
| 56. Talking to my friends immediately makes me feel better | 1 | 2 | 3 | 4 | 5 |
| 57. My good mood is easily maintained when I think about future activities | 1 | 2 | 3 | 4 | 5 |
| 58. I feel even worse when I listen to sad music | 1 | 2 | 3 | 4 | 5 |
| 59. Hurting myself physically takes away my bad feelings | 1 | 2 | 3 | 4 | 5 |
| 60. I feel good for a long time when I listen to a friend in need | 1 | 2 | 3 | 4 | 5 |
| 61. I feel worse when I think about how unlucky I am | 1 | 2 | 3 | 4 | 5 |
| 62. I don't feel so badly after I have slept | 1 | 2 | 3 | 4 | 5 |
| 63. I don't feel as good when my body feels cold | 1 | 2 | 3 | 4 | 5 |
| 64. I feel really good when I do something nice for somebody | 1 | 2 | 3 | 4 | 5 |
| 65. I continue to feel bad when I think that my life will never change for the better | 1 | 2 | 3 | 4 | 5 |
| 66. Writing in my journal keeps me feeling good for a long time | 1 | 2 | 3 | 4 | 5 |
| 67. I have trouble feeling good when my heart is pounding hard and fast | 1 | 2 | 3 | 4 | 5 |
| 68. Rejecting the affection of my friends or family maintains the bad feelings I have | 1 | 2 | 3 | 4 | 5 |

| | Strongly Disagree | | | | Strongly Agree |
|---|---|---|---|---|---|
| 69. I feel better when I remind myself about how I felt better in the past | 1 | 2 | 3 | 4 | 5 |
| 70. Hurting myself only takes away my bad feelings for a short time | 1 | 2 | 3 | 4 | 5 |
| 71. I feel better when I feel the tingling sensations in my body fading away | 1 | 2 | 3 | 4 | 5 |
| 72. I feel worse when I don't ask for any help | 1 | 2 | 3 | 4 | 5 |
| 73. My bad feelings are short-lived when I tell myself that things won't always be bad | 1 | 2 | 3 | 4 | 5 |
| 74. Pouting makes me feel even more badly | 1 | 2 | 3 | 4 | 5 |
| 75. I immediately feel better once I relax the muscles in my body | 1 | 2 | 3 | 4 | 5 |
| 76. My bad feelings hang around for a long time when I have been hurtful towards others | 1 | 2 | 3 | 4 | 5 |
| 77. Zoning out reduces how badly I feel | 1 | 2 | 3 | 4 | 5 |
| 78. I continue to feel bad when I frown | 1 | 2 | 3 | 4 | 5 |
| 79. I keep feeling badly when I get tingles down my spine | 1 | 2 | 3 | 4 | 5 |
| 80. Focusing on other times I have felt badly makes me feel even worse | 1 | 2 | 3 | 4 | 5 |

**Thank you for completing this questionnaire**

Appendix 6
Confirmatory Factor Analysis: 4 Factor Solution

Factor Loadings

| | COG | BEH | PHYS | SOC |
|---|---|---|---|---|
| Item # | | | | |
| AERQ1 | 0.50 | | | |
| AERQ25 | 0.53 | | | |
| AERQ45 | 0.41 | | | |
| AERQ69 | 0.44 | | | |
| AERQ77 | 0.24 | | | |
| AERQ13 | 0.57 | | | |
| AERQ21 | 0.53 | | | |
| AERQ37 | 0.55 | | | |
| AERQ61 | 0.40 | | | |
| AERQ80 | 0.57 | | | |
| AERQ9 | 0.38 | | | |
| AERQ29 | 0.46 | | | |
| AERQ49 | 0.45 | | | |
| AERQ57 | 0.55 | | | |
| AERQ73 | 0.39 | | | |
| AERQ17 | 0.49 | | | |
| AERQ33 | 0.50 | | | |
| AERQ41 | 0.59 | | | |
| AERQ53 | 0.68 | | | |
| AERQ65 | 0.43 | | | |
| AERQ6 | | 0.39 | | |
| AERQ18 | | 0.32 | | |
| AERQ34 | | 0.27 | | |
| AERQ54 | | 0.14 | | |
| AERQ62 | | 0.32 | | |
| AERQ2 | | 0.30 | | |
| AERQ30 | | 0.54 | | |
| AERQ50 | | 0.36 | | |
| AERQ58 | | 0.35 | | |
| AERQ74 | | 0.50 | | |
| AERQ14 | | 0.38 | | |
| AERQ22 | | 0.46 | | |

| | | | |
|---|---|---|---|
| AERQ38 | 0.43 | | |
| AERQ42 | 0.33 | | |
| AERQ66 | 0.39 | | |
| AERQ10 | 0.30 | | |
| AERQ26 | 0.42 | | |
| AERQ46 | 0.12 | | |
| AERQ70 | 0.18 | | |
| AERQ78 | 0.57 | | |
| AERQ12 | | 0.38 | |
| AERQ27 | | 0.48 | |
| AERQ47 | | 0.24 | |
| AERQ59 | | -0.01 | |
| AERQ71 | | 0.42 | |
| AERQ7 | | 0.34 | |
| AERQ19 | | 0.53 | |
| AERQ39 | | 0.55 | |
| AERQ63 | | 0.35 | |
| AERQ67 | | 0.43 | |
| AERQ3 | | 0.24 | |
| AERQ31 | | 0.58 | |
| AERQ43 | | 0.55 | |
| AERQ51 | | -0.09 | |
| AERQ75 | | 0.48 | |
| AERQ15 | | 0.49 | |
| AERQ23 | | 0.43 | |
| AERQ35 | | 0.48 | |
| AERQ55 | | 0.37 | |
| AERQ79 | | 0.43 | |
| AERQ5 | | | 0.58 |
| AERQ16 | | | 0.57 |
| AERQ36 | | | 0.65 |
| AERQ52 | | | 0.61 |
| AERQ64 | | | 0.63 |
| AERQ24 | | | 0.54 |
| AERQ32 | | | 0.44 |
| AERQ4 | | | 0.34 |
| AERQ48 | | | 0.50 |
| AERQ72 | | | 0.56 |
| AERQ8 | | | 0.60 |
| AERQ20 | | | 0.38 |
| AERQ40 | | | 0.49 |
| AERQ56 | | | 0.55 |
| AERQ60 | | | 0.47 |

| | |
|---|---|
| AERQ11 | 0.47 |
| AERQ28 | 0.58 |
| AERQ44 | 0.65 |
| AERQ68 | 0.47 |
| AERQ76 | 0.65 |