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The Influence of Advanced Cognitive Ability on the Development of Psychological Defenses and in Understanding and Managing Affect: A Study of Latency-aged Gifted Students

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THE INFLUENCE OF ADVANCED COGNITIVE ABILITY ON THE DEVELOPMENT OF
PSYCHOLOGICAL DEFENSES AND IN UNDERSTANDING AND MANAGING AFFECT:
A STUDY OF LATENCY-AGED GIFTED STUDENTS

by

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Abstract

THE INFLUENCE OF ADVANCED COGNITIVE ABILITY ON THE DEVELOPMENT OF PSYCHOLOGICAL DEFENSES AND IN UNDERSTANDING AND MANAGING AFFECT: A STUDY OF LATENCY-AGED GIFTED STUDENTS

by

Kahlila Robinson

Advisor: Steve Tuber, Ph.D.

The present study examines the influence of advanced cognitive ability on the development of psychological defenses and in understanding and managing affect, using the lens of Emotional Intelligence (EI). Theories of psychological defense maturity state that defense mechanisms are influenced both by the cognitive level of the individual and by the cognitive complexity of the defense itself (Cramer, 1999; Cramer, 2009). Individuals with exceptional cognitive ability may therefore show a corresponding “match” with complex defense use. In addition to defense use, how well one is able to identify, understand, manage and use emotion to facilitate thought, abilities often labelled Emotional Intelligence (EI), is a set of functions that have also been theorized as being related to cognitive ability (Mayer, Salovey, Caruso, & Sitarenios, 2001). The present study was therefore conducted in an effort to better understand the combined role of defense use, EI, and advanced cognitive ability during latency, a period of development that presents a myriad of affective and cognitive shifts.

A sample of 29 latency-aged gifted elementary school students completed measures assessing their crystallized and fluid reasoning ability, their EI emotion management and emotional understanding abilities, and their use of Denial, Projection and Identification using responses from the Thematic Apperception Test and Cramer’s (1991) Defense Mechanism
Manual (DMM). The BRIEF-TF teacher rating scale was also examined in relation to EI measures and DMM scores. Results indicated that crystallized reasoning ability was significantly positively related to emotional understanding. No relationship existed between fluid reasoning ability and emotion management. For the sample as a whole, the defense of Projection dominated. Results indicated that developmental parameters, including affective and cognitive, are perhaps more influential in the development of defenses than superior intelligence in itself. The relative use of Identification, which was minimal in this sample, had a significant positive relationship with emotional understanding, while no relationship was found between Identification and emotion management. A significant inverse relationship was found between emotion management and the ability to inhibit, shift and display emotional control in the classroom (BRIEF-TF BRI scale). Clinical and theoretical implications of these findings were discussed, including a thematic illustration of TAT responses.

Key words: Defense mechanisms, Emotional Intelligence, gifted students, latency
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Introduction

The middle childhood stage of development presents a myriad of shifts, including important affective and cognitive gains that influence identity and form the foundation for later aspects of functioning (Erikson, 1968). During this time, typically developing children have increased maturation and interconnectivity of the brain (Berger, 2011), allowing for greater speed and efficiency of working memory, a wider knowledge base, expanded vocabulary and improved metacognitive ability (Berger, 2011). These advances allow children to begin grasping concepts such as causality and time, and to accomplish highly complex skills such as reading and writing (Allen & Marotz, 2003). Piaget (1973) speaks to significant cognitive gains made during this period, those that form the foundation for using logic and scientific thinking. During this time, latency-aged children are also making important gains in their ability to use inhibitory control (Lewis, Lamm, Segalowitz, Stieben & Zelazo, 2006) selective attention, and emotion regulation (Berger, 2011). The affective and cognitive gains made during latency support the demands for independent functioning, those that are characteristic of this stage (Allen & Marotz, 2003).

With regards to Freud’s (1925) stages of psychosexual development, the middle childhood period, termed the “latency phase,” is when infantile sexual drives are relatively diminished or are sublimated, and defensive structure is reorganized by means of superego development (Berger, 2011; Tyson & Tyson, 1990; Erikson, 1968). Referring to Freud’s stage theory, Erikson (1968) asserts that the child redirects the sexual drives, those that had previously permitted her to “dream and play” (p. 124), into activities which allow her to gain recognition for her own personal pursuits and projects. The child develops a “sense of industry,” (p.124) becoming an “eager and absorbed unit of a productive situation” (p.124) who seeks to learn the technical and social aspects of her society. By moving from a world of play and fantasy, to a
world of skills and tools, latency-aged children gain a “token sense of participation” (p. 127) in the world of adults, an experience which is at the heart of their developmental conflicts and objectives. The negative aspect of this need to feel capable is the possible development of “an estrangement from himself and from his tasks,” (p. 127) or, a sense of inferiority. This sense of inferiority can occur in the academic, home and social contexts. In all, the essential question during this stage is one of competence – can I make it in this big world of people, places and things?

The great developmental shifts that take place during latency make it an especially fascinating time to explore the nature of the relationship between affect and cognition. Historically, this relationship has been a vigorous topic of debate among theorists, empirical researchers, and philosophers alike (Montgomery, McCrimmon, Schwean & Saklofske, 2010). Philosophically, affect has been discussed with regards to its opposition to ‘rational’ thinking, raising the question as to whether affect is destructive or adaptive (Forgas, 2008). Other arguments concern whether affect and cognition are integrated or separate systems, whether affect is an antecedent of cognition, independent of cognitive process or is ‘post-cognitive’ (Zajonc, 1980), among other debates.

Contemporary cognitive theories posit that in adulthood, affect can influence how information is processed and retrieved from memory, including the idea that affect can prime ideas and memories, and can therefore influence the content and process of cognition (Forgas, 2008). Furthermore, research exploring the brain regions that have been found to be involved with the construct of ‘cognitive reappraisal’ suggest that there is an overlapping set of regions in the prefrontal cortex, those which support working memory and response-selection functions,
that are also involved with the cognitive regulation of emotionally aversive thoughts and feelings (Ochsner, Bunge, Gross & Gabrieli, 2002).

Further insights on the relationship between affect and cognition has been provided by research on Asperger Syndrome. Being that a primary feature of Asperger’s is impairment in social functioning, within the context of typically developing intellectual skills (Montgomery et al., 2010), areas for dissonance between cognition and affect may be aptly explored. Interestingly, in studies examining affective functions in persons with Asperger Syndrome, subjects displayed the ability to adequately understand emotion language and to reason through emotionally heightened scenarios. However, these subjects displayed impairment with applying such knowledge in real world contexts (Montgomery et al., 2010). This result speaks to the potential dissonance that can be found between cognition and affect, and the complicated nature of the relationship.

Psychodynamic theorists have also contributed to the discussion on the nature of the relationship between cognition and affect. For example, Thompson (1986) extended Piaget’s (1973) thoughts on symbolic functioning in her proposal that affect encapsulates cognitive components. She argues that affects represent internalized object representations, representations that have meaning and are therefore cognitive in nature. These representations refer to external reality and affect the ways in which the experience of reality is filtered. Thompson further states that the cognitive components of affects do not necessarily involve a linguistic encoding, but may also involve sensorimotor or imagistic encoding. Affects therefore draw on and are formed by multiple forms of cognition.

Cramer (1997) describes an integration of affect and cognition in her explanation of the development of defenses in children. She uses the defense of Denial to illustrate her point,
describing its origins as an innate reflex – in this case a blink reflex, which serves to shield the infant from overwhelming visual stimuli. The subsequent stage of this reflex is the voluntary response of closing the eyes to shut out disturbing stimuli. Cramer describes that in the following stage, whereby the voluntary response becomes internalized, cognitive process is involved because the motor response is transformed into a cognitive operation. With Denial, this cognitive operation comes in the form of attention withdrawal; protection from anxiety is provided by failing to attend (or failing to perceive), upsetting stimuli. Cramer (1997) further describes that Denial continues to develop cognitively, both by integrating language to create a negation of an upsetting experience or feeling (“I’m not scared”), and with the unconscious ability to perceive an upsetting event but to turn it in to its opposite.

As with Piaget (1973), who asserted that affect is constructed according to the cognitive development of the child, Cramer (1997) emphasizes that the development of psychological defense mechanisms is in part a function of the cognitive operations that are available at a given stage. As such, she hypothesizes that from early through middle childhood the use of less complex defenses will decrease, while the use of more complex defenses will increase. She has tested this hypothesis with use of the Thematic Apperception Test (TAT; Murray, 1943) and the scoring and categorization system she created for the TAT, the Defense Mechanism Manual (DMM). Through use of the DMM she has confirmed the developmental path certain defenses will take, and has found that over time Denial will decrease, the use of Projection will increase and that a gradual increase in the use of Identification will occur. Again, she posits that increasing cognitive development influences the remission of less complex defenses and the increased use of more complex defenses. In all, these theorists provide a framework regarding the intrinsic link between affects and cognition. Most notably, the development of defenses,
which are the unconscious cognitive structures which help to “protect the individual from experiencing excessive anxiety, and to protect the integration of the self” (Cramer, 2006, p.7), have been theorized as being, in part, a function of cognitive development.

The nature of the relationship between cognition and affect is fascinating, one which contrasts cognitive processes that are well understood with those which are innate and mysterious. In all, research conducted in recent decades provides an abundance of evidence pointing to the interdependence of affect and cognition; cognitive process can in part determine emotional responses, and affective states are involved with how people remember, perceive and process interpersonal experience (Forgas, 2008). However, the exact formulation of how affect and cognition relate is far from complete; there is still a gap in the understanding of how affect may influence thinking and behavior and how cognition may influence affect.

The construct of Emotional Intelligence (EI) was developed within the context of an expanding definition of intelligence, a definition proposed by theorists such as Sternberg (1998) and Gardner (1983), that included the various forms and functions of emotion (Chan, 2003). EI refers to the ability to perceive emotions, to use emotions adaptively on cognitive tasks, to understand emotions, and to regulate emotion (Mayer & Salovey, 1997). It is further defined as “the ability to carry out accurate reasoning about emotions and the ability to use emotions and emotional knowledge to enhance thought” (Mayer, Roberts & Barsade, 2008, p. 511). This definition frames EI as a cognitive ability, one that relates to reasoning and problem solving in the emotional domain (Austin, 2010). Yet another way EI may be understood is by equating it with the ability to “reality test” emotions. As Thompson (1986) describes, this involves ascertaining the appropriateness or inappropriateness of emotion by accurately assessing the
cause of the emotion, knowing what the emotion is, knowing whom or about what the emotion is directed towards, and being able to judge whether the emotion is justified in relation to its cause.

Throughout the time that EI was being developed in the scientific literature (as first defined by Salovey & Mayer, 1990), popular writers, most notably Goleman (1995), put forth their accounts. Many of these popular models included variables that were not used in research on EI such as empathy, optimism and assertiveness. In the popular literature it was suggested that EI was at least as important as IQ in predicting outcomes such as superior leadership and work capabilities, and that it could contribute towards improved learning, reduced aggression and better decision-making (Goleman, 1995). Due to its popularization and use in mass media, EI began to receive the label of being an “umbrella term.” However, recent studies have re-established the salience of EI in relation to psychological wellbeing, academic success and social competence (Austin, 2010; see Farrelly & Austin, 2007 for a thorough review). In considering these findings, it is clear that the construct of EI is emerging as a rich and dynamic area of clinical research, one that fits well with the broader pursuit of understanding the nature of the relationship between cognition and affect.

As previously discussed, the latency stage of development presents a myriad of affective and cognitive shifts, those that are ripe for the study of the relationship between affect and cognition. Another area that is ripe for such a study is the influence of advanced cognitive ability or intellectual “giftedness” on affective domains, including defense development and EI functioning. In his review of neuroimaging studies with gifted children, Geake (2009) describes that there are structural differences in the brains of gifted individuals, those that allow for high working memory capacity, highly adaptive cognitive control, and greater interconnectivity than
same aged, non-gifted peers. However, it is not clear to what degree, if any, the advantage of such cognitive prowess may have for affective development and regulation.

Research conducted on the emotional functioning of gifted children has found inconsistent results; some studies suggest that due to their elevated intellect gifted children suffer from interpersonal challenges and may need special accommodations to buffer their emotional difficulties (Plucker & Levy, 2001, Peterson, 2009). In line with this research, Dabrowski (1972) asserts that emotional intensity and sensitivity is characteristic of gifted children, outlining five dimensions of “psychic overexcitability” which speak to such children’s heightened and broadened emotionality. Lovecky (1994) also speaks to emotional vulnerability of the gifted in her conceptions of ‘asynchronous development.’ In her view, asynchrony is present when cognitive abilities exceed the child’s emotional capacities, creating within the individual experiences that are qualitatively different than those of non-gifted peers. She believes that this unique development renders such children emotionally vulnerable and requires modifications in their academic and social environments.

In contrast, other studies have found that giftedness serves as a protective factor (Konstantopoulous et al., 2001), and that superior cognitive ability supports problem solving and coping skills. For example, Kitano & Lewis (2005) found that gifted adolescents are more likely to use the coping strategies of working hard and achieving than they are to ignore a stressor. In sum, it appears that despite efforts by researchers, a gap still exists in the understanding of the emotional development and functioning of gifted students.

One reason for the failure to more thoroughly address the emotional functioning of gifted students is based on such mixed conclusions in the literature, and the assumption by adults that gifted children will eventually succeed in many areas of life, leaving them in a category which is
generally disregarded (Peterson, 2009). Because of preconceptions regarding the stable emotional dynamics of gifted students, educators may miss indications of emotional distress. In reality, such groups may experience quite difficult affective experiences, including having skewed expectations of themselves, intense fear of criticism and concern over mistakes, and great difficulty coping with failures (Peterson, 2009). In addition, for some children, the affective experience of being gifted may especially be compounded by complex emotional variables related to culture, class and familial pressures.

Exploring emotion in children as a function of advanced cognitive ability is an important question to consider. In order to facilitate this exploration, measures of EI and psychological defense use will be studied in relation to crystallized and fluid reasoning skills. Crystallized reasoning refers to the ability to retain and demonstrate acquired academic knowledge (e.g., vocabulary ability), while fluid reasoning skills involve the ability to solve novel problems, use logic and apply inductive and deductive reasoning (e.g., pattern recognition, abstract reasoning, and problem-solving). Teacher rating scales will be employed as a separate measure of students’ emotional functioning and will further enrich the empirical questions raised in this study. Study objectives are to develop a better understanding of the influence of advanced cognitive ability on latency-aged children's development of psychological defenses and on their understanding and management of affect.

While many researchers have examined the role of cognitive deficits and biased information processing on mental health (e.g. Muris & Field, 2008; Joorman & D’Avanzato, 2010; Kring & Bachorowski, 1999; among others), and there is a plethora of research on emotional functioning within gifted populations (see Neihart, 1999 and Prieto & Ferrando, 2009 for a thorough review), there has been limited research generated involving the role of advanced
cognition in psychological defense development. For example, available research on defense mechanism development has used samples of children within the average range of intellectual functioning (e.g., Cramer & Brilliant, 2001, Cramer, 2007). The literature on EI and gifted students is similarly limited (see Chan, 2003 and Zeidner et al., 2005 for exceptions). The current study serves to address this critical gap in the literature as well as contribute towards our understanding of the range of emotional development in children. Further, integrating measures of psychological defense with measures of EI broadens the scope and understanding of subjects’ management of affective experience, and provides an opportunity to find correlations between the measures, thus expanding the understanding and use of those measures.

Certainly there is heterogeneity in the emotional functioning of intellectually advanced students. The areas of functioning to be explored in this study, along with variables such as attachment classification, biological makeup and culture are among those that may also contribute to the emotional functioning of children in this sample. The question of what areas of cognition, be that reasoning ability or defensive structure, may account for emotional variability in this group, and how these areas may contribute to this variability, is a viable area to further explore. Study outcomes may better inform theories of cognitive process as they relate to the complexity of emotional life in gifted children. In addition, the continued contribution of EI research within the study of gifted children may help to deepen the understanding of such student’s potentialities and vulnerabilities. This work will offer further insights towards our understanding of the processes that underlie emotion regulation and dysregulation in children, and can support new clinical interventions and directions for further empirical research.
Literature Review

To what degree does intellectual skill determine one’s ability to understand and manage affect? Is it possible for advanced intellectual capacity to accelerate an expected developmental sequence in the affective domain? What aspects of cognition most influence and relate to affective process? The following review of the literature seeks to inform a foundation for these questions and to provide further rationale for study aims and procedures.

Although there is a plethora of theory concerning affective and cognitive development during the latency phase, the literature review will focus mainly on those theorists with a psychodynamic perspective. Developmental theory including Freud’s psychoanalytic theory, Erikson’s stage based theory and Piaget’s theory of cognitive development will be explored in relation to study objectives. It is important to note that since the time of its prominence in the scientific literature, Piaget’s theory of cognitive development has faced scrutiny. Modern empirical work has modified many of his original notions, and modifications of such kind will be discussed. That being said, Piaget’s theories have served as a starting point from which much empirical research has been based, and is therefore a valid source to inform the questions raised in this study.

The nature of the relationship between affect and cognition will continue to be discussed in the literature review. This section will attempt to contrast contemporary theoretical viewpoints, based on studies using functional magnetic imaging (fMRI) of the brain, and more dated conceptions. This discussion will lead into an exploration of the construct of Emotional Intelligence, with special attention paid towards the expanding view of the construct of intelligence. Following this, definitions and measurement of EI will be discussed. To relate the literature more directly to study aims, EI will then be discussed as a function of cognitive ability, which is a vibrant area of research. To introduce another study variable, the role of crystallized
and fluid reasoning in the management of affective functioning will be addressed. This discussion will raise a number of theoretical propositions between reasoning skills and emotional functioning.

To provide a depth of understanding about study subjects and the unique cognitive variables they present, a discussion of Intellectual Giftedness, and the social-emotional functioning of gifted children will follow. A review of EI functioning within gifted populations will provide validation for the importance of further study in this area. Defensive structure and its development in children, as well as cognitive correlates of defense, will provide further groundwork for the hypotheses raised in this study. Shared correlates of defense and EI will close the literature review.
Affective and Cognitive Development during Latency

Due to intellectual advances and other forms of maturation, middle childhood is a time of great potential for gaining independence and autonomy (Berger, 2011). Psychoanalytic theory speaks to these developments considerably, highlighting the important changes that occur to the ego and superego as well as corresponding affective and cognitive shifts. Freud’s (1925) conception of this stage, which he termed “the period of sexual latency,” (p. 261) is the period of time that follows the oedipal crisis and precedes adolescence (Berger, 2011). The term refers to specific underlying psychic changes, including the relative reduction of infantile sexual wishes and fantasies (due to the resolution of the Oedipus conflict), the development of the capacity to sublimate drive impulses, and the reorganization of the ego’s structure as influenced by superego development (Tyson & Tyson, 1990). From a psychoanalytic perspective, latency is the stage of development where external control imparted by parental figures begins to be replaced by emerging inner control. Inhibition, the control of drives by a strengthened ego, and the ability to self-reflect are some of the cognitive and affective hallmarks of this stage. These gains allow for greater autonomy for the child as well as the potential to develop neurotic conflicts (Tyson & Tyson, 1990).

In their synthesis of Freud’s thoughts on latency, Tyson & Tyson (1990) assert that the relative reduction of the force of sexual drives and expansion of cognitive skills that occur during this time are facilitated by affects better functioning as protective signals, signals which alert the child to internal conflict or to external danger. In turn, these expanded cognitive skills aid in distinguishing and categorizing affect, allowing for greater awareness of and reflection on affective experience. With a developing synthesis between affect and cognition, a child learns how to better understand and manage affect, instead of being overwhelmed by its potentially
disorganizing effects. These abilities reflect a strengthened ego, one that is capable of accurately perceiving affect, properly identifying the associated conflict or danger, employing defense effectively, and adjusting behavior according to the demands of the situation.

Tyson & Tyson (1990) go on to describe a psychoanalytic perspective on cognitive development during latency. They present the idea that cognitively, the child is transitioning from thought that is fantasy-based and involves magical thinking, to more reality-based. In this way, intrapsychically, the child is making a firm distinction between primary process (mental states that are unconscious and concern the subjective inner world) and secondary process (conscious or unconscious thinking that is characterized by reason and logic and is expressed verbally). In relation to these changes, preoedipal and oedipal wishes become more foreign as they are set apart from more organized, logically-based thought process. All of these shifts, in turn, support higher-order mental capacity and organization, including the ability to use logic and conduct reality testing. These new cognitive skills can form, in part, because there is less interference from instinctual urges, those that have been more active in earlier stages of development. It is important to note that during this time, although the child makes an (unconscious) effort to repress instinctual fantasies and wishes and develops logical, reality-based thinking, the world of fantasy remains; however it becomes more readily expressed internally rather than externally.

Although cognitive advances, such as the development of reflective thinking, have supported the latency-aged child’s capacity to handle intellectual and interpersonal challenges in a logical way, the child’s ability to reality test and to be objective remains variable. As Tyson & Tyson (1990) aptly note, “a child may be able to recognize that a weight or a volume remains the same no matter what the shape of the container in a school science experiment, yet remain
vulnerable to feeling cheated when mother’s piece of cake looks bigger” (p. 187). Through this example, Tyson & Tyson highlight the variability of affective and cognitive domains at this critical stage of development, and the natural possibility that exists for a child to regress to earlier modes of perception by interpreting events egocentrically.

From a psychoanalytic perspective, a major task of the latency stage concerns the child’s ability to accommodate and tolerate the “internal watchman, judge, and critic” (Tyson & Tyson, 1990, p. 312) that is the emerging superego. In the early stages of latency the superego is newly formed. As such, it initially reflects a distorted, incomplete version of the moral values and prohibitions of parental objects. Because of its nascent quality, the superego has the tendency to be especially harsh, rigid, and strict. Early on, the superego also tends to be inconsistent and easily externalized, such that a child can display highly rigid moral standards on some occasions while appear to lack all moral standards on others (Tyson & Tyson, 1990). The defense of Projection is therefore an active, adaptive defense during this time period because it serves to protect the child from a painful sense of self-accusation. Superego development also takes form in the latency-aged child’s concern with rules and fairness, especially as it relates to himself and his peers (Tyson & Tyson, 1990).

As latency unfolds, the superego modifies, transitioning from a primitive, distorted version of internalized moral standards and values to more reality-based standards. As the child continues the identification process with parental objects and other admired authority figures, the self-criticism, punishment and self-rewards that he experiences will eventually lead to an overall more consistent feeling of well-being (Tyson & Tyson, 1990). With this shift, the child will become less dependent on external authority and begin to develop autonomous superego functioning. When superego development has not been successful, a child may have difficulty
adhering to behavioral expectations and forming identifications with authority figures (Tyson & Tyson, 1990).

The capacity to develop sublimations during latency, to satisfy instinctual impulses instead of defending against them, Tyson & Tyson (1990) assert, is another optimal intrapsychic development for this phase. The ability to sublimate successfully is displayed by the latency-aged child’s engagement in new interests and goals. The increased competence that accompanies many of these new interests and met goals serves as a source of narcissistic gratification, as well as social approval. These feelings gradually allow the child to become less dependent on parental objects for building and maintaining self-esteem. Altogether, these developments create “greater harmony in the internal world,” (Tyson & Tyson, 1990, p. 313), a harmony which allows for greater mood and affect stability, and less vulnerability to regression of ego functions. Tyson & Tyson (1990) extend Erikson’s notion of a “sense of industry,” indicating that it is a “pleasure in industry,” a new quality of affect which comes along with the ability to sublimate. This new quality of affect is what indicates the child’s success in mastering both inner and outer domains of functioning during latency.

As the latency period develops, the child turns from investment in fantasy to more active investment in the objects in the real world, including his peers. As a result, social relationships with peers become much more important, as well as contribute to the child’s sense of self. Same-sex peer groups serve multiple functions, including opportunities to form new identifications and sources for libidinal gratification, and to further explore and consolidate gender identity (Tyson & Tyson, 1990). Group activities may serve as a respite in that they can often tolerate more lax superego standards; the child can express otherwise forbidden impulses such as overt aggression in team sports and other activities. Socially, the child becomes drawn to games with objectives
and rules, and becomes motivated to pursue and maintain the social norms of his peer group. Self-esteem is especially determined by shifts in relations with peers, as experiences of exclusion and inclusion are poignant aspects of the latency stage (Tyson & Tyson, 1990).

Finally, Freud’s (1908) discussion of the “family romance” fantasy, one that typically occurs during latency, speaks to cognitive and affective gains made during this period. This fantasy is thought to be conscious and common (Tabin, 1998), although it contains unconscious components tied to the child’s feeling of disappointment in not achieving oedipal love, as well as having to share his parent’s love with siblings (Freud, 1908). This theory dictates that in response to feeling slighted by his parents’ boundary, and his perception that they prefer each other to him, the child compensates by developing a fantasy about his family origins. He imagines himself to be an adopted child or step-child, believing that his biological parents are nobles, celebrities, supernatural, or some other higher status (Tabin, 1998, Tyson & Tyson, 1990). The child develops a low opinion of his actual family, and fantasizes that he is placed with them only temporarily, until his ‘real’ family resurfaces and he is able to move on to better opportunities. Furthermore, as “intellectual growth increases” (Freud, 1908 p. 236), this fantasy also serves to address the child’s emerging realization that his parents are not all-powerful and all-knowing, as he had once perceived them to be. The child may begin to compare his parents with those of his peers, and to doubt the unique attributes he had developed for them (Freud, 1908). The growing disappointment the child experiences about his ‘less than optimal’ parents is balanced out by his grandiose fantasies involving his ‘real’ parents, the royal or supernatural beings he is temporarily estranged from (Tabin, 1998, Tyson & Tyson, 1990). These fantasies, Freud (1908) asserts, disguise the child’s actual longing for the idealized version of his parents that he once had. In addition, this fantasy reflects an unconscious dilemma for the latency-aged
child; the child fears his potential destruction of his parents as he grows more autonomous and into his full potential (Tabin, 1998). Said differently, it is both frightening and thrilling to perceive that one’s own emerging capacities may exceed the capacities of one’s parent, when in reality, the child still very much needs his parents’ guidance and care (Tabin, 1998). Tyson & Tyson (1990) argue that cognitive developments during latency allow for the kinds of shifts in thinking that are required for this fantasy.

As previously discussed, Erikson (1968), who builds on Freud’s conception of the latency stage, defines this period of development as the time when children acquire a sense of ‘industry’ while at the same time fending off a sense of ‘inferiority’ about their competency. According to Erikson, (Evans, 1967) the child becomes “a person with increased cognitive capacities and much greater ability to interact with a much wider range of people in whom he is interested, whom he understands, and who react to him” (p. 26). During this stage, which occurs roughly between the ages of 7 – 11, the child has realized the importance of integrating with peers, having successfully resolved, given up or repressed the wishes of the oedipal phase due to shifts in ego and superego development (Tyson & Tyson, 1990). With this newfound understanding, the child directs his attention and energy towards social problems he is able to master. As per Erikson (Evans, 1967), the child develops “an enormous curiosity during this stage of life – a wish to learn, a wish to know” (p.26). Thus, the main themes of this phase become the determination to master tasks set before him and a desire to be productive (Maier, 1969).

In an effort to resolve feelings of inferiority and develop feelings of competency, a child delves into learning the tools and symbols of his culture (including drawing pictures, writing sentences, solving math problems, etc.) (Crain, 1992). The child senses that if he improves upon these skills his future will be successful. The conflicts that emerge during this stage become
positively resolved when the child experiences success at the tasks set before him and receives praise from adults. Ultimately, children become ‘industrious’ by being diligent and persevering at tasks, as well as by delaying gratification (Crain, 1992). When a sense of inferiority has developed, this may be due to experiences of ridicule or punishment for their efforts, and may be reflected in a sense of pessimism and lack of confidence in their ability to meet others’ expectations. Repeated experiences of inferiority may negatively impact a child’s self-concept (Crain, 1992).

Piaget described cognitive development during middle childhood, again beginning from around the age of 7 to the age of 11, as the phase of ‘concrete operational thought,’ (Piaget, 1973) whereby logical thinking is applied to concrete situations, those that are visible and tangible (Maier, 1969; Berger, 2011; Crain, 1992). No longer egocentric, children in this stage develop the capacity to be objective and systematic, and can consider two hypotheses, perspectives, or aspects of a problem simultaneously (Crain, 1992). A child is now able to break down a whole into its parts, to examine and classify its parts, to relate parts to each other, and to develop his understanding of how they comprise a whole (Maier, 1969). The development of these mental operations is facilitated by what the child learns to abstract from his concrete experiences in the environment. In addition, children in this stage begin to grasp concepts that are implied, versus stated explicitly; they become able to infer information between one fact and another (Maier, 1969). These ways of thinking form the foundation for using logic and scientific thinking (Crain, 1992).

One of the developmental gains made during this period involves the child’s ability to explore several possible solutions and to consider multiple points of view while at the same time returning to his original viewpoint (Berger, 2011). This aspect of concrete operational thought is
termed ‘reversibility,’ or, the ability to relate events or thoughts to a system of interrelated parts. With this new way of thinking, children become more influenced by logic than they are to their immediate perceptions (Crain, 1992). For example, in experiments testing the concept of *conservation*, children can understand that two liquids of the same amount remain equivalent despite the depth or height of the vessel they are transferred into. Importantly, over the course of the concrete operational period, these mental actions become internalized, not those that the child needs to perform himself in order to understand them (Crain, 1992).

In addition, Piaget (1973) asserts, a child at this stage of cognitive development is working hard to establish systems of classifications, such that he can understand and form hierarchies in his mind, defining and further dividing objects into subclasses, according to shared characteristics (Crain, 1992, Maier, 1969). Classifying objects allows the child to organize experiences and to develop an awareness of their relationship with each other. With this capacity, the child can also begin to explain his experiences and thoughts in relation to others. A child is thought to be able to classify by means of *nesting*, or classifying smaller parts into a whole, and *latticing*, or linking together related objects/classes in order to create a whole (Maier, 1969). Thus, the child can now understand that each object has several reference points. Such cognitive leaps also allow the child to begin to understand logical relationships (Maier, 1969). Although modern research suggests that the ability to classify can develop earlier than the period of middle childhood, it is during middle childhood when children can use the ability to classify more flexibly and simultaneously than younger children (Berger, 2011).

The new abilities the child has gained with regards to classifying and ordering experiences, and being aware of their logical relationships with each other, integrates several independent reference systems into an interrelated larger system (Maier, 1969). With these gains,
the child is better able to explain and justify experiences in his environment, allowing for his world to shift “from one of mythology to a world of science” (Maier, 1969, p. 139). Importantly, as a child begins to conceive of these concepts, he may be able to understand relationships but be unable to verbalize or apply his knowledge accurately (Maier, 1969). In addition, although a child in this stage can think logically and systematically within the realm of tangible objects performing real activities, their thinking has not yet developed to the point of consistently being able to use abstract thinking and hypothetical reasoning across domains (Crain, 1992).

Interpersonally, the phase of concrete operations brings new developments. For example, the child’s new found interest in categorization and comparison assumes a role in the social realm, as does the child’s eagerness to avoid self-contradiction, a practice that was active in previous phases of cognitive development. In addition, the child is eager to understand various patterns of social behavior, and to understand others in terms of their social position (Maier, 1969).

As previously described, with the emergence of concrete operations, new cognitive skills support the ability to reason and to use logic. These developments allow the child to develop a less egocentric point of view, what Piaget (1962) terms, ‘decentering.’ Tyson & Tyson (1990) also speak to this concept, describing that decentering contributes to the child’s ability to be objective, to think beyond a single viewpoint and to account for multiple variables of a given situation. A latency-aged child therefore has the capacity to imagine how someone else may feel in a given situation and can appreciate that someone else has a different perspective and separate reality than themselves. These developments, in turn, support the child’s ability to self-reflect, and to develop the capacity for empathy. Further, the latency-aged child is more aware of the system of moral values, and he is capable of reflecting on his actions within this system.
Appropriately, he begins to reevaluate the grandiose demands of his former egocentric self, as well as understand that to become socially accepted, he has to modify his own actions and consider others’ needs and viewpoints (Tyson & Tyson, 1990).

**The nature of the relationship between affect and cognition**

In exploring affective process and functioning in gifted youth, one broad theoretical question arises: how integrated are the domains of affect and cognition? A robust relationship during this developmental period would certainly provide support for the idea that those individuals with advanced cognition may also show prowess in the emotional domain. Zajonc (1980), whose research on preferences and decision making speaks to this question, argues that in nearly all instances, affect is not free of thought, nor is thought independent of affect. The first stages of the organisms’ reaction to stimuli, as well as the first elements of retrieval, Zajonc (1980) asserts, are affectively based. Further, he argues, a universal phenomenon is that of liking something or being afraid of something without having conducted the cognitive analyses required to know what that ‘something’ is. Tyson & Tyson (1990) also speak to this question, asserting that affects are mental structures having “motivational, somatic, emotional, expressive, and communicative components, as well as and an associated idea or cognitive component” (p. 155). In all, these theorists provide a framework for the integrated nature of affect and cognition.

Modern researchers using adult subjects, including Forgas (2008), have also contributed to the discussion on the nature of the relationship between the domains, and to the question of which process may precede the other. For example, he discussed one dominant view that affective states may support the selection of cognitive strategies, such as those used in social cognitive tasks. In this way, affects serve as ‘superordinate cognitive programs’ (Cosmides & Tooby, 2000 as cited in Forgas, 2008) that help to activate and select adaptive cognitive
strategies in response to problems. As previously discussed, the dynamic relationship between affect and cognition has also emerged in constructs such as reappraisal, which is the process by which cognition can transform negative affective experience (Ochsner et al., 2002; Ochner & Gross, 2005). One way that reappraisal is thought to function is through interactions between cognitive control and emotion-processing systems. These underlying processes help to neutralize affect, signal the need for a reappraisal to remain active, and evaluate states of both internal and external stimuli, which help to monitor further changes in emotional state. When working optimally, cognitive reappraisals help an individual to both dampen negative emotion and maximize positive aspects of a scenario in order to adaptively cope with it (Gross, 1998).

Although this construct is useful in serving to further differentiate and expand on the relationship between affect and cognition, the cognitive mechanisms that are involved with the process of reappraisal are still not well understood (Ochsner, et al., 2002).

Functional magnetic resonance imaging (fMRI) studies have explored the brain regions thought to be involved with affective process, providing insight regarding the biologically-based determinants of affect. In such studies, the amygdala has shown to be an important emotion-processing and regulation region, one that is active in evaluating whether a stimulus is affectively salient, as well as generating behavioral responses to affect and facilitating the process of moving affective experience into declarative memory (Forgas, 2008). In addition, evidence has shown that both the amygdala and the medial orbital frontal cortex (MOFC) help to encode and symbolize the affective components and contextual relevance of stimuli (Oschsner, et al., 2002). The attentional controls mediated by the prefrontal cortex and anterior cingulate cortex are active in regulating emotion in adults (Lewis et al., 2006; Ochsner et al., 2002). In
addition, in neurological studies, the prefrontal cortex has been shown to be active in the affect regulation and in the processing of conscious affective experience (Forgas, 2008).

Piaget (1981) offers a related, yet distinct perspective on the nature of the relationship between affect and cognition, asserting that emotion and cognition are different aspects of one system. In his writings, he frames affect as being an energetic component of cognition, using the analogy of gasoline and a motor: affect is the gasoline that activates the motor of cognition, but does not change its structure. Piaget asserts that affect can speed up or slow down intellectual functioning, such as the case of a child who struggles in a particular academic subject due to having an affective “block” or feeling of intellectual inferiority with certain academic tasks. In this way, he emphasizes the complementary relation between the systems, stating “It is impossible to find behavior arising from affectivity alone without any cognitive elements. It is equally impossible to find behavior composed only of cognitive elements” (Piaget, 1981, p.2). In this way, Piaget argues that cognitive acts are never affectively neutral. For example, whenever we are thinking, we are making choices among the various things to think about, which imply some affective movement away or towards a thought. Piaget (1981) creates another link between these concepts with his position that affect is constructed according to the cognitive development of the child.

As discussed in the introduction, Thompson (1986) extended Piaget’s thoughts on this topic in her discussion of affects encapsulating cognitive components. Thompson asserts that affects draw on and are formed by multiple forms of cognition. As with Piaget, Cramer (1997) also asserts that the development of defenses is a function of the cognitive operations that are available to the child at a given age. She hypothesizes that from early through middle childhood
the use of less complex defenses will decrease, while the use of more complex defenses will increase.

Based on the aforementioned work of many theorists and researchers, it is apparent that cognitive and affective processes interact with one another continuously and robustly throughout the lifespan (Zajonc & Markus, 1984; Forgas, 2008). For example, affect has the ability to influence information processing and symbolic functioning, and in turn, multiple forms of cognition, including those involved with the process of creating mental representations, are encapsulated in affective experience (Thompson, 1986; Forgas, 2008). On the basis of Cramer’s theory (1997), a significant increase in the use of Identification is not expected until adolescence. Considering the viewpoints presented in this review, is it possible that the affective trajectory that Cramer describes is accelerated in children with advanced cognitive ability?

**The evolution of the construct of Emotional Intelligence**

The construct of Emotional Intelligence has developed out of an emerging notion that intelligence is a multilayered, multi-determined ability. For example, in Gardner’s seminal work, Frames of Mind (1983) he reviews studies on prodigies, brain-damaged patients, and normal children and adults, among others, to evaluate the range of the human brain. From these studies he has come to develop a theory of *multiple intelligences*, thus challenging the idea of a single factor such as IQ accounting for intellectual capacity. He defines seven distinct intelligences: logical-mathematical, linguistic, spatial, inter-personal and intra-personal, musical and bodily-kinesthetic. Gardner furthers his argument in his discussion of a “pluralistic view of the mind” (1993, p.5) in which he describes various cognitive strengths and contrasting cognitive styles.

In a related line of thinking, in Beyond IQ (1985) Robert Sternberg proposed his triarchic theory of human intelligence. This theory proposes three subcategories of human intelligence:
componential, experiential, and practical. The componential subcategory refers to information processing ability, such as recognizing and defining problems. The experiential or, creative subcategory is concerned with how well a task is performed with regards to how novel or familiar it is. Finally, the practical or contextual subcategory is defined as the ability to adapt to, shape or select an environment most suitable to one’s own abilities. These practical abilities derive from the acquisition of tacit knowledge, which is knowledge gained from experience that is not explicitly taught. Along with Gardner, his research has shown that these areas of functioning are independent, and as such, he recommends that an individual not only be assessed for analytical ability as is traditional of intelligence tests, but also for creative and practical ability. As is wholly apparent from Stenberg’s theories, intelligence is a multilayered construct, one with an array of abilities that he has tested empirically.

Multidimensional theories of intelligence, such as Gardner’s model, have faced scrutiny from researchers and cognitive theorists, including Geake (2008) who argues that there are not distinct forms of intelligence, but rather, distinct applications of the same underlying general intelligence. Geake (2008) cites research on the concept of a general intelligence, or $g$, research that has found positive inter-correlations for distinct cognitive abilities. These inter-correlations, Geake suggests, provide evidence for the notion that there are shared brain functions involved with various cognitive abilities. Further, he asserts, it is the interconnectedness of these functions, and the adaptive ability of the brain, that is the key to understanding what underlies multiple applications of intelligence. He believes that it is unlikely that the separate intelligences as Gardner (1983, 1993) describes are independent, given the evidence to suggest shared neural pathways of such distinct abilities.
In relation to affective functioning, prior to these theoretical works which propose a link between affective process and cognition (Sternberg, 1985; Gardner, 1983, 1993), psychologists such as Thorndike (1920) put forward a model of intelligence which included not only traditional intellectual factors but also a construct he termed social intelligence, defined as: “the ability to understand and manage men and women, boys and girls – to act wisely in human relations” (1920, p. 288). In this way, the construct of Emotional Intelligence has its roots in this definition of social intelligence, as it combines both a cognitive and behavioral component, and grounds the ability to understand and manage others as an intellectual capacity (Derksen, Kramer & Katzko, 2002). Although social intelligence is a different construct than EI, it covers similar theoretical ground and offers an example of how the concept of intelligence has been evolving and expanding for nearly a century.

EI may also be considered a derivative of Wechsler’s (1943) conception of ‘non-intellective factors’ of general intelligence, which he defines as “all affective and conative abilities that in any way enter into global behavior” (p. 103). He states (1943): “…our intelligence tests as now constituted measure effectively only a portion of and not all of the capacities entering into intelligent behavior…The portions or aspects of intelligent behavior which our tests do measure effectively are those which are determined by the intellective factors of intelligence, whether by the general one "g" or more specific ones such as verbal ability, abstract reasoning, arithmetical and other abilities which have been isolated by tetrad and multifactorial analyses. These intellective factors do not, in my opinion, constitute everything which enters into intelligent behavior” (p. 101). Wechsler (1943) goes on to point out the large unaccounted for variance that is shown under factor analysis of cognitive batteries, which he proposes is due to an insufficient number of variables used in such analyses. He further proposes
that total intelligence cannot be measured until tests include measures of these non-intellective factors.

In all, both the historical and evolved definitions of intelligence show a movement away from IQ as being the sole expression of intellectual ability. Accordingly, the concept of “giftedness” has shifted from a stable, unchangeable trait defined by high IQ as measured on a psychometric test, to one of giftedness in multiple forms and identified by excellence in various domains of performance (Morelock, 1993). Gardner (1993) also discusses this shift, citing that cognitive-developmental psychology has moved from the belief of a core logical capacity or trait, one that underlies all other capacities, to studies of various intellectual spheres, such as the multiple intelligences he describes. This movement has underscored the development of the construct of EI and gives support to its usefulness in the study of gifted children.

**Definitions of Emotional Intelligence**

The scientific investigation of EI is still in its early stages. Salovey and Mayer (1990) were the first researchers to propose a systematic theory of the construct. They followed their original model with a revised version (1997), defining EI as an ability to both recognize the meaning of emotions and to reason and problem-solve on the basis of them. They posit that EI is involved in the capacity to perceive, assimilate and understand emotions, as well as to manage them (Mayer & Salovey, 1997; Salovey & Mayer, 1990). In their model, they emphasize that EI is an ability, as opposed to a trait or a disposition.

The general theoretical prediction held by Salovey & Mayer (1990) is that EI is positively associated with measures of psychological health and negatively associated with psychological distress. This formulation is based on the notion that the components of EI not only assist with stress management and coping, but also with enabling high EI individuals to establish better
social support networks (Austin, 2010). EI ability has also been found to be related to academic success in late adolescents (Parker et al., 2004 as cited in Austin, 2010), social competence in adolescents (Mavrovelli et al., as cited in Austin, 2010), and self-reported quality of relationships in adults (Ciarrochi et al., 2000 as cited in Montgomery et al., 2010).

Although Salovey and Mayer (1990) offer a definition of EI that has been repeatedly studied in the scientific literature, there exist other definitions and associations of EI. These other models include functions of emotion and cognition, but also motivation, temperament, and self-awareness, among other abilities and traits (e.g. Bar-On, 2000, Goleman, 1995). These various associations with EI have led to criticism of the construct as being over inclusive and have in part contributed to the difficulty of the scientific field with forming a single definition of the term (Matthews, Emo, Roberts & Zeidner, 2006). In the literature, the question remains regarding whether EI is a personality trait, a type of ability, or some combination of the two (Petrides & Furnham, 2003). Two distinct theoretical and conceptual models have come to be established in response to this problem: EI as a mental ability and EI as a mixed model where it consists of both cognitive abilities and aspects of personality and motivation. Such mixed models, otherwise known as ‘trait EI,’ have been criticized for their overlap with existing personality constructs; critics have asserted that mixed-models are not formulating a new construct but are instead modeling a conglomeration of existing ones (Davies, Stankov & Roberts, 1998). By contrast, ability models hold the theoretical basis that EI is a form of intelligence and as such, should be measured by objective, performance-based scales which assess the subjects’ maximal, versus typical, performance within the domains of EI (Matthews et al., 2006). Although there is some overlap between the trait and ability models, another way of understanding their difference is
that trait EI is concerned with behaviors and tendencies that occur cross-situationally versus
ability models that are concerned with actual abilities that exist within the emotional domain.

**Measurement of Emotional Intelligence**

A coexisting debate involving how EI should be conceived theoretically involves
determining how it should be measured. Proponents of the mixed-model concept understand EI
as a dispositional trait that can be measured by self-report (Saklofske, Austin & Minski, 2002).
The most widely used self-report measures are the Emotional Quotient Inventory (EQ-I, Bar-on,
1997) and the Schutte Self-Report Emotional Intelligence Test (SSEIT; Schutte, Malouff, Hall,
Haggerty, Cooper, Golden, et al., 1998). The Bar-On EQ-I includes 15 self-report scales that
measure such concepts as self-regard, independence, problem-solving ability and reality testing.
However, Mayer, Caruso & Salovey (2000a) argue that such attributes more closely measure ego
strength or social competence than they do EI. Although the self-report measures show some
criterion validity, due to their subjective nature and risk of response distortion, critics suggest
that they are problematic as assessments of ability (Zeidner, Shani-Zinovich, Matthews &
Roberts 2005). Also, it would seem to be a paradox to expect those with low EI to be able to rate
themselves accurately (Matthews et al., 2006).

The main proponents of the ability approach involve some of the original researchers of
the construct, Mayer, Caruso & Salovey (2000a). These researchers have produced the Mayer-
Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey & Caruso, 2002). The
MSCEIT, along with its predecessor (the MEIS; Mayer, Caruso & Salovey, 1999) is designed
with the idea that EI involves problem solving both with and about emotion. This scale measures
a four-component hierarchy of skills as previously discussed: 1) the ability to perceive and
identify emotion in self and others, 2) the ability to use emotional experience to facilitate
cognition and performance, 3) the ability to understand the relationships between emotion and context and 4) the ability to regulate emotion. The scale presents a framework in which not only emotional experience, but also the social and cognitive functions related to the expression, management, and use of emotions are integrated.

A valid question to raise in considering the usefulness of either the mixed-model or ability model and their corresponding measures is the assumption regarding the explicit, versus implicit, nature of emotional knowledge and aptitude (Zeidner, Matthews, Roberts & MacCann, 2003). Both models assume that EI functions in a way that can be reported verbally, for example, being able to describe how to manage emotions in a difficult interpersonal encounter. However, emotional behavior is complex and multilayered, and may rely on implicit skills that are outside of conscious awareness. For example, in managing our emotional lives we may unconsciously register verbal cues from others and also display a nonverbal emotion (Matthews et al., 2006). In these cases, we may be able to detect emotional cues from others without awareness and without being able to fully explain how we have been able to do so. This is also the case in the unconscious process involved with the use of defenses. Defensive process occurs outside of awareness and may interact with an individual’s ability to accurately perceive information from others. In this way, measures assessing emotional competence may not be predictive of these unconscious processes. Thus, there may also be a psychometric problem with the measurement of EI. Specifically, in the emotional domain, there may not be a ‘right’ or ‘wrong’ answer to questions involving strong affective material (Matthews et al., 2006). For example, when thinking of how to best resolve an argument with a friend, or how to best comfort a loved one, there may be many solutions, and not necessarily a ‘correct’ solution (Matthews et al., 2006).
Despite the difficulties in defining and measuring EI, researchers have continued to pursue alternate methodologies for its study. Among them are measures such as the Situational Judgment Test Paradigm where respondents rate a scenario for emotional salience and make judgments regarding the most competent emotional response to the scenario. Test items were created by using scenarios in which emotion management involving sadness, anger, and fear would be required. For example, for anger, situations involving arguments, being impeded in goal striving, and unfairness in both personal and work contexts were created. The respondent has to choose among four options as to the most effective action to take (Austin, 2010).

The current study presents the use of two measures using this model, the Situational Test of Emotion Management for Youth (STEM-Y; MacCann & Roberts, 2008) and an adapted version of the Situational Test of Emotional Understanding (STEU; MacCann & Roberts, 2008). These assessments measure the EI domains of Emotion Management and Emotional Understanding, respectively, and have been created, in part, in response to the aforementioned criticisms of the currently available measures of EI. They will be discussed in further detail in the following chapter.

**Emotional Intelligence as a function of cognitive ability**

Theorists who have developed the construct of EI have also attempted to understand to what degree EI is sufficiently related to other forms of intelligence. Among the more recent EI research findings (Austin, 2010) is the discovery that the domain of Understanding Emotion, as measured on the STEU and MSCEIT, is related to measures of crystallized and fluid intelligence (Vocabulary and Letter Series subtests, respectively; Gf/Gc Quickie Test Battery). Austin and colleagues (2010) found that the Vocabulary and Letter Series subtests showed significant positive correlations with the MSCEIT Understanding branch, as did the Vocabulary subtest with
the STEU. These results raise the possibility that the EI domain of Understanding Emotion as measured on these EI assessments is related to crystallized reasoning ability (vocabulary ability), as it has shown to have a correlation with both the STEU and the MSCEIT Understanding Emotion branches. However, this result also raises the question as to whether correlations of these ability EI tests with tests of vocabulary are accounted for by similarities in their verbal content (Austin, 2010).

In line with this question, Zeidner et al. (2003) propose an ‘investment model’ of emotional competence which suggests that a child’s verbal ability constrains their learning of the rules for socially appropriate feelings and displays of emotion, components that are an important basis for emotion regulation. Izard, Fine, Schultz, Mostow, Ackerman & Youngstrom (2001) have also found a link between verbal ability and emotional functioning in their studies of Emotion Perception and Labeling (EPL). In this research they assess children’s understanding of rules for linking verbal and facial expressions of emotion. They were able to show that EPL at age five predicted academic competence at age nine. Based on these results, Izard (2001) and her colleagues suggest that verbal ability precedes and influences emotion ability. Stated differently, language plays a key role in the acquisition of emotional ‘rules’ including those related to the feeling, display and coping options of emotion (Izard et al., 2001).

The STEM-Y, STEU and MSCEIT all require an adequate level of verbal comprehension. However, the fact that only the STEU and the Understanding branch of the MSCEIT correlated with measures of intelligence and not the STEM and other branches of the MSCEIT suggests that the observed correlations are not solely accounted for by verbal ability (Austin, 2010). In relation to this finding, Mayer, Salovey, Caruso & Sitarenios (2001) argue that the Understanding Emotion domain of EI is the most “cognitively saturated” of the domains,
asserting that this branch shows the strongest association with abstract reasoning and emotional information processing. In contrast, they claim, the Emotion Management domain creates an interface between cognition and general personality. As such, Emotion Management is considered less cognitively laden than Emotional Understanding, because of the integration of motivational, emotional, and cognitive systems. In summary, these findings present the possibility that EI ability is in part a function of cognitive ability, and specifically verbal ability, that relates to the acquisition of emotional competence.

The role of crystallized and fluid reasoning ability in emotional functioning

Another lens from which to understand the relationship between advanced cognitive ability and emotional functioning is to consider the role of the subject’s crystallized and fluid reasoning ability. The current study explores what components of these abilities may be involved with the management and understanding of emotion. The distinction between these domains and their possible emotional correlates is important to make because even among theorists who support the notion of a general intelligence, crystallized and fluid reasoning are thought of as having independent determinants and expressions (Toga & Thompson, 2005).

Fluid reasoning (FR) is the capacity to solve novel problems, to use logic and inductive and deductive reasoning. It is a cognitive domain that is thought to be independent of acquired knowledge. FR is associated with information processing and abstract reasoning ability and in studies has been found to be related to working memory and executive functioning (Toga & Thompson, 2005). It is reflected heavily on tasks such as matrices. FR emerges early in development and is thought to influence the way in which children learn tasks that involve complex spatial, numerical or conceptual relations (Cattell, 1987). FR advances rapidly through middle childhood, increases at a slower rate through adolescence, and begins to decline after late
adolescence (Ferrer, O’Hare & Bunge, 2009). Crystallized ability, in contrast to fluid reasoning, is thought to be dependent on school-based and culture-specific knowledge and is represented by performance on tests of vocabulary and general knowledge. The large knowledge base that may be acquired within one’s family, school, and other settings may allow an individual to solve complex problems by efficiently applying such knowledge (Schweizer & Koch, 2002).

As was described in the previous sections, crystallized ability, and specifically verbal ability, may be related to how one performs on the Understanding Emotion domain of EI. As a function of crystallized reasoning ability, it is also reasonable to suggest that those children with a large knowledge base of information (as acquired in a gifted elementary school setting) may be successfully able to apply emotion-related competencies on a test of EI. This application of skills may generalize to how the child is able to manage and understand their own emotions and those of others.

FR ability may be associated with the speed or efficiency with which novel emotional information is processed (Austin, 2010). In addition, the information processing component of fluid reasoning may be theoretically linked to emotional functioning. In a study conducted by Farelly & Austin (2007), fluid reasoning ability was positively correlated with an emotion-related inspection time task, a component of “emotion-processing” (p.1046) ability. Furthermore, the advanced ability to understand causality in conceptual relations may in turn relate to the ability to understand causality within the emotional domain. In addition, because of the more implicit, environmentally independent nature of FR ability, this ability may relate to the more implicit functions of emotionality, those that are not declarative. In this way, these skills may be more involved with Emotion Management functions of EI than they are with Understanding
Emotion functions. The current study examines the proposed theoretical links between reasoning skills and emotional functioning.

**Definitions of Intellectual Giftedness**

In reviewing the literature on giftedness, it is evident that there is a less than precise definition. From a strictly psychometric perspective, giftedness is defined by how well one performs on an IQ test, with scores of 130 and above, those that reach the 98th percentile, meeting criteria. Gardner (1993) offers a definition of giftedness, proposing that it is “a sign of precocious biopsychological potential in particular domains that exist in a culture” (p. 41). He emphasizes that having advanced cognition does not necessarily mean that one acts intelligently. Morelock (1996), who has conducted extensive research on gifted children, believes that giftedness implies the advanced ability to construct meaning, to think abstractly, and to respond emotionally to abstract concepts. Her integration of emotion in this definition is meaningful to the basis of the current study. Renzulli (1988) defines three “clusters” of giftedness: (a) above-average, though not necessarily superior general and/or specific ability, (b) high levels of creativity, and (c) high levels of task commitment. He argues that gifted behavior consists of an interaction of these three clusters and that children who manifest or are capable of developing this interaction require particular educational opportunities and support. Further definitions include those of the “gifted achiever” and that of the “gifted child” (Morelock, 1996, p 6). The first definition includes an understanding of giftedness as being an unusual capacity for judgment and abstract reasoning that is revealed in childhood. The second identifies giftedness as intellectual development that surpasses that expected of the child’s chronological age. As one can observe from these definitions, there exists an inclusive definition of giftedness, one that is not solely dependent upon IQ or academic excellence.
It is important to note that because of its various connotations and associations, some critics suggest that giftedness is an elitist social construct rather than a genuine phenomenon (Borland, 1997). The construct has raised objections among psychologists, educators and parents because of what it may imply about both whom it is applied to and whom is excluded from the distinction. Its history in the scientific literature, including extensive research on giftedness by the well-known eugenicist, Terman, has been confounded with variables such as social class and race (Ceci, 1990), thus underscoring a ‘cognitive elite’ status that may serve a divisive role within the educational field.

Geake (2009), who has conducted extensive reviews of fMRI research on giftedness and on creative intelligence, defines gifted learners as having “enhanced cerebral interconnectivity” (p. 12), explaining that gifted children show enhanced frontal lobe activity, that which allows for “high-level performance in the various facets of working memory” (p. 12), as well as more efficient neural interconnectivity than their non-gifted counterparts. He cites numerous neuroscientific studies to support this claim, those which have shown that highly gifted children are especially adept at knowing what steps to take to solve a problem, as well as enhanced “bilateral activations” (p. 12) of the brain, those which are indicative of enhanced information processing capacity. Geake’s conceptions regarding gifted children’s enhanced interconnectivity of the brain adds to the discussion on the integration of affect and cognitive functions. Perhaps this advanced interconnection supports the integration of these functions.

Related to Geake’s claims is the finding that giftedness has also been associated with greater capacity for metacognitive ability, meaning, the ability to think about one’s own way of knowing, remembering, and understanding (Cheng, 1993). In thinking about the link between metacognition and giftedness, it is reasonable to propose an association between superior
metacognitive ability and the advanced ability to think about and regulate emotion. Stated differently, metacognition may relate to the ability mentalize, a related concept which refers to the ability to understand the underlying intentions, feelings, thoughts, desires, and beliefs that guide behavior (Fonagy et al., 1998). While metacognition refers to cognition which focuses on the self (Allen, Fonagy & Bateman, 2008), mentalization involves the ability to attend to mental states in self and others, and to interpret behavior based on this underlying information (Allen et al., 2008). In this way the terms are distinct. However, Allen, Fonagy & Bateman (2008) view metacognition as a “specific domain of thinking that falls within the scope of mentalizing” (p. 49), making an overlapping connection between the constructs. Should some gifted children show an advanced capacity to use metacognition, as proposed by Cheng (1993), they may, in turn, show an advanced ability to think about mental states in self and others. Although the current study does not integrate mentalization capacity as a variable, the link between this construct and the advanced cognitive skills involving the use of metacognition, further informs the concept of giftedness and its many possible illustrations.

**Social and Emotional functioning of the gifted**

There is an abundance of research on the emotional and social adjustment of gifted students, that which could constitute a study in itself. Neihart (1999) conducted an extensive review of such literature, dating back from the 1800’s. She concluded that empirical research suggests two contrasting views of how giftedness impacts psychological well-being: the first, that gifted children have a greater capacity for understanding self and others, allowing for better adjustment to stressors than non-gifted peers, and the second, that gifted children are in fact more at risk for maladjustment due to their heightened sensitivity to interpersonal stressors and greater degree of alienation and stress, as related to their advanced cognitive capacities. Historically,
Neihart (1999) cites, the prevailing view was that giftedness increased vulnerability to social-emotional maladjustment. The surge of research which was conducted on gifted children’s social emotional functioning in the 1980’s and 90’s provided mostly mixed results, and thus did not do much to dispel or support this claim. However, Neihart (1999) discussed the conclusions found among numerous empirical studies stating that gifted students display equivalent or lower levels of depression than their non-gifted peers, that gifted youth do not have greater rates of suicidal ideation and suicide than non-gifted youth, and that gifted youth do not have greater levels of anxiety than non-gifted youth. Based on her comprehensive review of the literature, both on global and specific measures of psychological well-being, social competence and rates of psychiatric disorders among gifted youth, Neihart (1999) concludes that the social emotional well-being of a gifted child is most influenced by “the type of giftedness, the educational fit, and the child’s characteristics such as self-perceptions, temperament and life circumstances” (p. 15). Positive and negative psychological outcomes among gifted youth, Neihart (1999) asserts, are based on how these factors may work synergistically. Thus, quite broad parameters contribute to psychological well-being among gifted youth. Prieto & Ferrando (2009) have also conducted such a review, and conclude that empirical evidence points to great heterogeneity within the group; that “individual outcomes depend on the individual and the specific situations” (p. 149). To date, there have been no definitive conclusions as to whether gifted students manage stressors more or less well than their non-gifted counterparts (Prieto & Fernando, 2009).

To cite some specific examples of the inconsistent conclusions and heterogeneity that Neihart (1999) and Prieto & Ferrando (2009) were referring to, the following studies have shown both positive and negative social-emotional correlates of giftedness. Konstantopoulos, Modi, and Hedges (2001) used The National Educational Longitudinal Study (NELS), a large, national
study of economic, social-emotional and academic characteristics of 8th graders started in 1988, to identify correlates of gifted functioning. Using data from test scores and questionnaires, Konstantopoulos, et al. (2001) found that eighth grade students with high self-confidence were 2.5 times more likely to be gifted than not, and that students with high self-esteem were 1.5 times more likely to be gifted than non-gifted. Gifted students also scored nearly twice as high on locus of control scales and on scales of self-concept. Study findings, Konstantopoulos, et al. (2001) conclude, indicate that gifted students are more likely to feel in control of their lives and are likely to be psychologically well adjusted. The finding that gifted youth have increased sensitivity and empathic ability (Davis & Rimm, 1998; Piechowski, 1997) as well the capacity to integrate emotions, intellect and creativity in a way that is healthy and adaptive (Roeper, 1982) are among some of the other positive correlates of giftedness found through empirical study. Most of these studies refer to the fact that these positive correlates may not be generalizable to the entire population of gifted youth.

In contrast to these positive emotional correlates of giftedness, researchers have cited that gifted students can be challenged by feelings of inadequacy and are at risk for social isolation (Davis & Rimm, 1998). In addition, some of the social-emotional difficulties that are the most commonly cited in the literature include the gifted student’s sense of pressure to perform at a consistently high level, their fears of failure, and feelings of inadequacy in areas outside their domains of expertise. Plucker & Levy (2001) indicate that these intrapersonal challenges may be especially compounded when such gifted students believe they may need help with keeping up with their academic and personal demands.

Yet another vulnerability of the gifted that is discussed in the literature is the possible degree of asynchrony between cognitive development and social, moral and emotional
developmental processes. Theorists such as Lovecky (1994) have discussed this potential problem, citing that the higher the child’s intellectual capacity, the greater the risk of varied development among interpersonal domains. Stated differently, there is a risk of emotional upheaval and disorganization when a child’s mental capacities exceed their emotional capacities. As the level of ‘asynchrony’ between cognitive and emotional development increases, such children are thought to be socially and emotionally more at risk. This literature suggests that gifted populations function differently from their peers and require greater emotional support in their academic and familial environments. However, this asynchrony may not translate to emotional vulnerability, as Delisle and Galbraith (2002) assert, “gifted individuals perceive greater levels of complexity in the world around them, and they find this complexity interesting and meaningful” (p. 63). This greater sensitivity and perceptive ability may therefore support a gifted child’s stimulation and fulfillment in their environment.

Many of the negative social-emotional correlates of students identified as gifted align with Dabrowki’s (1972) concept of ‘overexcitabilities.’ Dabrowski (1972) asserts that emotional overexcitability is characteristic of gifted children, and outlines four other dimensions of “psychic overexcitability” which speak to such children’s heightened and broadened response to various stimuli. Emotional overexcitability is characterized by labile and intense emotionality, the tendency to somatize, concern with and interest in morbid themes, the ability to experience intense empathy, and strong affective expression (Sousa, 2009). Such characteristics are thought to support the capacity for strong emotional attachments to others as well as heightened self-reflective capacity. However, it would make sense that those gifted children who have heightened sensitivities of the kind that Dabrowski explains would exhibit poor social emotional functioning when feeling vulnerable or overwhelmed.
Based on this brief review, it is apparent that not all gifted students may experience the social-emotional challenges as referenced above. In fact, in the literature, the heterogeneity of this group is emphasized; there is a breadth of diversity found within this population, both across intellectual and non-intellectual attributes (Lubinski & Benbow, 2000). It is clear that the population of gifted children exhibit a range of important social and emotional characteristics that may be related to their cognitive functioning. The proposed research sets out to better understand this topic from multiple angles. The construct of EI is especially useful in this regard because of its integration of emotional and cognitive processes.

**Emotional Intelligence and Giftedness**

There has been limited data generated regarding the relationship between Emotional Intelligence and academic giftedness. Zeidner, Shani-Zinovich, Matthews, & Roberts (2005) assessed EI in a group of gifted and non-gifted Israeli high school students. The study compared 83 intellectually gifted and 125 non-gifted students on two measures of EI, the MSCEIT, and an EI self-report measure titled the Schutte Self-Report Inventory (SSRI). Study results found that gifted students obtained higher scores on the MSCEIT than the non-gifted group. However, their mean score on the SSRI was significantly lower than a non-gifted group, thus showing mixed results. Study authors concluded that differences found in EI between gifted and non-gifted groups depends on the method of evaluation, explaining that the self-report measure was not as valid a measure of EI because of its overlap with personality factors. This study went on to confirm the role of verbal ability in EI, but it did not further establish to what degree EI functions may be associated with fluid reasoning abilities in a gifted sample.

Chan’s (2003) study using a sample of 259 gifted Chinese adolescents explored the relationship between EI and social coping strategies with use of the Emotional Intelligence Scale
(N.S. Schutte et al., 1998 as cited in Chan, 2003) and the Social Coping Questionnaire (SCQ; Swiatec, 1995 as cited in Chan, 2003). This group performed higher on EI domains involved with the appraisal and management of one’s own emotions than they did on domains related to the use of emotions in problem solving. Further, results of the study showed a correlation between specific components of EI and specific social coping strategies endorsed by the sample. This study relied solely upon self-report data, which has a risk of response distortion, and lacked a comparison sample of non-gifted youth. These study limitations diminished the extent to which the relationship between EI and academic giftedness could be further understood and explored.

The results of these studies with regards to the function of EI within gifted populations are inconclusive. These studies also do not provide a measure of “real life” criteria for social emotional adjustment, such as a teacher rating scale, to complement results of the EI measures. Finally, neither of them account for psychological defense structure, an overarching variable which may have associations with EI.

As is suggested in the literature, the EI domain of Understanding Emotion may be a function of verbal ability. It is plausible that students with advanced verbal skills (crystallized reasoning ability) also show competence in this domain. In addition, as previously discussed, fluid reasoning ability may also have a relationship with emotional competence, and specifically with those implicit functions of affective experience and management. Furthermore, managing emotions, in the form of using conscious processes such as coping mechanisms, has already been associated gifted children’s social-emotional functioning. With these associations in mind, it is apparent that EI is a useful and applicable means for better understanding the emotional functioning of gifted students.
Defensive structure and its development in children

As with Anna Freud (1966), Cramer (1997) defines defense mechanisms as cognitive processes that function to maintain self-esteem and to protect the individual from negative and overwhelming affects such as anxiety. Further, defenses are normal cognitive processes used by individuals to adapt to reality. They are adaptive functions because they allow the individual to tolerate difficult intrapsychic and interpersonal situations. However, when used excessively, defenses may distort reality (Cramer, 1987). Cramer offers an overview of how defenses function in her paper entitled “Seven Pillars of Defense Mechanism Theory” (2008):

“(1) defenses function outside of awareness; (2) there is a chronology of defense development; (3) defenses are present in the normal personality; (4) defense use increases under conditions of stress; (5) defense use reduces the conscious experience of negative emotions; (6) defense function is connected to the autonomic nervous system; (7) excessive use of defenses is associated with psychopathology” (p. 1963). Cramer further explains that defenses function to shift an internal state, but without the intent of changing an external reality. Alternatively, she asserts, coping refers to (effortful) conscious and purposeful strategies used to address anxiety and solve personal problems (Cramer, 1998).

Cramer (1987), extending upon Freud’s (1966) suggestion that defenses reflect various levels of complexity, has investigated the developmental trajectory of defense mechanisms, and specifically the defenses of Denial, Projection and Identification. In describing their chronology in children, she states that they develop along a continuum, based on the level of cognitive complexity involved with the functioning of the defense (Cramer, 1987). In this way, certain defenses emerge during certain periods, becoming fully formed at the appropriate time, and then declining gradually in importance as new defenses emerge and predominate. If this is the case,
Cramer (1997) suggests, there should be some evidence for the presence of all defenses, mature and immature, at all ages. However, the relative strength of the defenses should change in accordance with age. As Cramer has described, defenses are stage-based and develop much in the same way that ego functions such as cognitive operations or moral reasoning develop (Cramer, 1987). In her 1987 study on the development of defenses in children, among others, Cramer provides empirical support for the hypothesis that defenses have a developmental course. The idea of defenses having their own chronology was also discussed by Anna Freud (1966) when she described that defenses may contribute to pathology if they come into use prior to the appropriate age or are maintained long after the developmental stage in which it is considered appropriate. For example, when Denial and Projection are maintained past their normal developmental peaks in childhood and continued into adulthood.

Defenses are thought to be employed under conditions of stress in order to help manage affective disruption and restore emotional homeostasis (Cramer, 2008). Furthermore, defenses will increase when a person feels anxious or their self-esteem is threatened. Cramer (1996) posits that subjects experience mild stress associated with the administration of the TAT, which requires the subject to tell a story to an unfamiliar picture and with an unfamiliar examiner. The novelty of the testing situation is thought to activate defensive process. Cramer created the DMM for the TAT with the thought that the occurrence of defense mechanisms is best supported by the use of an undirected method that would provide samples of verbal behavior and for which no stereotyped response is available (1987). The subjects’ responses on the TAT are thought to reflect their possible use of defenses in real life situations, those situations that may involve a similar level of discomfort as on the TAT task.
Cramer (1987) hypothesizes that Denial, the most immature of the defense mechanisms within her DMM paradigm, is most active in children before age five. After its development and heightened activity in early childhood, Denial continues to be used in fantasy, for example, where weakness can be turned into strength and failure into success. Projection, a defense which functions by attributing unacceptable thoughts and feelings to others, is considered more psychologically complex because of the heavier cognitive demand involved. It requires that one be able to differentiate between internal and external stimuli as well as be able to judge which feelings may be acceptable or unacceptable. This defense aligns with the development of judgment towards thoughts, feelings and experiences that are “good” or “bad,” “right” or “wrong,” which begins to occur during middle childhood (Cramer, 1987). Cramer (1987) hypothesizes that the defense of Projection is common in children ages three to fifteen.

Identification is the most mature of the defenses Cramer (1987) discusses. It requires the capacity to differentiate self from other, to recognize and differentiate “others” and to create internal representations of those others (Cramer & Gaul, 1988). It functions by taking positive aspects as seen in others for oneself and rejecting negative aspects in others as not being related to the self. The defense of Identification therefore serves to provide a sense of security and self-esteem. Its development is a slow process that begins in infancy and continues throughout adolescence, and involves the internalization, and then later separation of parental attitudes, values and skills (Cramer & Gaul, 1988). During the separation phase of these internalized parental influences, individuals aim to create a self based on new identifications with selected role models. This period most notably occurs during adolescence.

In normative development children progress from lower to higher level defenses, however, environmental circumstances may cause arrest or regression in this course. In a study
measuring elementary school students’ defensive responses to experimental experiences of success and failure, Cramer & Gaul (1988) hypothesized that under conditions of minimal stress, second grade students would be expected to use the defenses of Denial and Projection predominantly, with less use of Identification. Sixth graders were hypothesized to use Projection and Identification predominantly with less use of Denial. However, following an experience of failure, researchers hypothesized that the children’s overall defense activity would increase and would regress to a lower developmental level. In this way, it was expected that students who used higher order defenses would have had an experience of success. The results of this study showed clearly that the experience of failure elicits the use of lower level defenses, with the experience of success supporting the use of higher levels of defense, as measured with the DMM. Subjects in the ‘failure’ group used more Denial than subjects in the ‘success’ group, who used more Identification than Denial. Researchers concluded that children’s defense development is influenced by experiences of failure or success, depending on their age. Based on this study, Cramer & Gaul (1988) posit that positive and supportive experiences with the environment may support the development and promote the use of higher order defenses. This point is especially relevant for the purposes of this study as the population of gifted children may have had positive experiences with academic and intellectual stimuli.

Sandstrom and Cramer (2003) extended on Cramer’s theory of defense development by exploring emotional and behavioral correlates of mature versus immature defense use in children. In this study, 95 elementary school students were given the TAT, and their responses were coded using the DMM. Results indicated that those children who employed Denial to a greater degree than other defenses, a defense which was considered immature for this age group, reported higher levels of anxiety and depression, as well as received higher parent ratings of
internalizing and externalizing behavior problems than children using more developmentally mature defenses. These results are important in that they clearly speak to the relationship between unconscious aspects of emotion regulation and psychological adjustment in children.

**Defense as a function of cognitive ability**

There are mixed results regarding the influence of IQ on defense use; a relationship between the variables is more apparent in adulthood than in childhood. For example, in Cramer’s (2007) study, which tested children at different developmental levels (ages 11 – 18), results indicated that the use of Identification at age 18 (but not at an earlier age) was determined by IQ level. Subjects with higher IQ’s showed the expected increase and greater relative use of Identification starting at age 18 versus those subjects with lower IQ’s. Cramer & Brilliant’s (2001) study exploring defense use and defense understanding in 1st through 5th graders found similar results regarding the influence of IQ as a function of age. Along with the defense use and defense understanding measures, the Peabody Picture Vocabulary Test (PPVT) was used as a measure of IQ. Results indicated that neither defense use nor the subject’s ability to understand defense were related to IQ. However, as the PPVT is really a measure of receptive single word vocabulary and not of IQ, this result has to be interpreted with scrutiny. That being said, while a relationship between IQ and defense use in adulthood has been found in several empirical studies (see Cramer, 2009 for a review), the indications for this relationship in childhood, with subjects of average intelligence, have not been found. One explanation for this lack of relationship during childhood, Cramer (2009) asserts, is the fact that during childhood defense use is in flux, with developments in one defense overlapping with the development of others. This state of flux is thought to obscure the possible emerging relationship between defense use and IQ. In contrast,
by adulthood, this development has stabilized, and a consistent relationship between the variables is able to emerge.

Sophisticated defenses are more cognitively complex, and are thought to better maintain reality testing and the capacity to regulate emotion than less complex defense use (Mayer & Salovey, 1995). In adults, higher IQ is related to the greater use of mature versus immature defenses. Cramer explains this outcome through use of her “match theory” (1999) that suggests that there may be a match between the cognitive complexity of a defense and the cognitive ability of an individual. In this way, Denial, which a less cognitively complex defense than Identification, would “match” with lower levels of cognitive ability. Although existing studies do not provide support for an interaction between IQ and defense use in children, based on Cramer’s (1999) match theory, it is not unexpected that children with advanced intellectual capacity may show different results. It may be the case that advanced cognitive ability accelerates the developmental trajectory of defenses that Cramer describes.

**Shared correlates of Emotional Intelligence and defensive functioning**

I have thus far outlined the concept that both EI and psychological defense mechanisms present an intersection of cognition and affect. Because the purpose of psychological defenses is to protect the self from negative affect, and EI is defined as the ability to identify, understand, express and manage emotion, defensive structure and EI may serve interrelated functions. Although defenses are unconscious mental mechanisms that help to regulate emotion, and EI is thought to regulate emotion at a high level of consciousness (Mayer & Salovey, 1995), EI theorists have also asserted that some forms of unconscious regulation may reflect emotional intelligence (Mayer & Salovey, 1995). The interrelation between defenses and EI has been further discussed in that unconscious psychological processes that may obscure relevant, context-
based information may in turn reduce emotional intelligence (Mayer & Salovey, 1995). Another way in which defenses and emotional intelligence relate is their shared emphasis on the cognitive aspects of their use. Defenses are theorized as reflecting a cognitive hierarchy (Cramer, 1999), while certain EI functions are thought to be more “cognitively saturated” (Mayer et al., 2001) than others. It is possible that due to their related aims in the regulation of affect that defense use and emotional intelligence are interrelated functions, or perhaps correspond to shared cognitive processes. Further, individual performance on the TAT task itself, the conduit for measuring defensive functioning in this sample, may reflect emotional intelligence capacity. Responses to the TAT are thought to reveal the subject’s actual ability to accurately interpret a difficult situation, as well as the thoughts and feelings of those involved (Tuber, 2012). On the TAT the subject is required to provide a context for the scene that is presented, a scene that may be experienced as ambiguous and morbid, and to create a resolution of story themes, one that may correspond with the strained dynamics or that may in some ways attempt to resolve them, perhaps through acknowledging the morbidity (Tuber, 2012). In this way, the demands of the TAT task mimic the ability to identify, understand, express and manage emotion, those abilities that underlie EI functioning. The relationship between these constructs will be further explored in the current study.

**Summary**

In the preceding sections I have outlined an exploration of emotional functioning in gifted children from three lenses: crystallized and fluid reasoning ability, Emotional Intelligence, and the use of psychological defense mechanisms. This exploration was preceded by an overview of affective and cognitive development during latency, as well as a discussion on the integration of affective and cognitive functions. The first lens takes a purely cognitive approach
to understanding emotional development, based on the findings that aspects of emotional competence may in part be a function of both crystallized (verbal ability) and fluid (emotional information processing) ability. Emotional Intelligence is a construct that bridges the constructs of emotion and cognition in that it is measured as an ability and reflects possible cognitive functions. Its use in this endeavor may speak to the more declarative aspects of emotional functioning, those that are learned through social interaction. Finally, defenses represent a fuller integration of the construct of cognition and affects, being that defenses are cognitive structures that regulate affect. Using the lens of defenses may aid in understanding the more implicit nature of emotional functioning and thus is also a constructive area for further exploration into the question of how intellect influences affective process.
Method

Participants

This study used a sample of fourth through sixth grade students from a publicly funded elementary school for gifted and talented children located in New York City. These students are subject to a rigorous selection process involving scoring at or above the 95th percentile on the Stanford-Binet V, performing successfully on a series of specialized cognitive tests, and participating in an observation of their play and social skills by a group of psychologists and educators. School curriculum for the fourth through sixth grade includes developing student abilities with investigation and experimentation methods, exploring academic topics in-depth through independent research, and art activities meant to encourage critical and divergent thinking.

Subjects were recruited by way of school administration permission, child assent and parent consent. Teachers in each of the 4th, 5th, and 6th grade classes, encompassing a total of approximately 130 students, disseminated information about study procedures with use a script provided by the PI. Of the 32 students who provided parental consent, 3 declined child assent and were therefore not included in the study. More information about subject recruitment and how consent was obtained is provided in the procedures section.

Assessments

1. The Situational Test of Emotion Management-Youth version (STEM-Y)

As earlier defined, EI refers to abilities in identifying, understanding, and managing emotion in self and in others, as well as using emotion to facilitate thought (Zeidner et al., 2005). This group was administered the Situational Test of Emotion Management-Youth version (STEM-Y, MacCann & Roberts, 2010) as a measure of the EI domain of Emotion Management, defined as the ability to regulate or manage emotion in self and other’s (MacCann et al., 2010).
This test is constructed as a “situational judgment test paradigm,” where the subject is presented with a written description of an emotionally charged situation in which they are offered several possible responses (MacCann & Roberts, 2010).

The STEM-Y is a downward extension of the STEM (MacCann & Roberts, 2008) for use with children aged 10 - 15. To develop a downward extension of the STEM, two professional item writers from the Educational Testing Service (ETS) were provided with the coded interview transcripts for the development of the STEM, as well as the final list of STEM items. These writers used the STEM materials to develop analogous content that represented the same general themes, but was appropriate to the lives of elementary school students. Eleven items, each with four possible responses, were developed for the STEM-Y. Participants were required to select which of these four responses they would be most likely to perform in the given situation. An expert scoring key was developed by asking 17 experts (7 males, 10 females) to rate the effectiveness of each response on a 6-point scale from “very ineffective” to “very effective.” For example if the mean expert rating was 3.5 out of 6 for option C, a participant selecting option C would score 3.5). Experts consisted of 6 emotions researchers, 7 clinical psychologists, and 4 educators who worked with middle-school-aged students.

The STEM-Y has been used in two recent studies: MacCann, Wang, Matthews, & Roberts (2010) and MacCann, Fogarty, Zeidner & Roberts (2011). In the 2010 study, the reliability of the STEM-Y was .71. Correlations with HEXACO personality and cognitive ability indicated evidence for discriminant validity (i.e., the STEM-Y is distinct from these constructs). In addition, STEM-Y scores predicted the valued outcomes of GPA, life satisfaction, and both positive and negative feelings towards school, indicating some evidence of criterion validity. In
the 2011 study, the reliability of the STEM-Y was .69 and it predicted greater problem-focused coping and less emotion-focused coping among eighth graders.

An example STEM-Y item is: You and James sometimes help each other with homework. After you help James on a difficult project, the teacher is very critical of his work. James blames you for his bad grade. You respond that James should be grateful, because you were doing him a favor. What would you do in this situation? (a) Tell him from now on he has to do his own homework, (b) Apologize to him, (c) Tell him “I am happy to help, but you are responsible for what you turn in,” or (d) Don’t talk to him; with (c) noted as the most effective response in the expert scoring key.

2. The Situational Test of Emotional Understanding – adapted version

The EI domain of Emotional Understanding is defined as the ability to understand “relationships among emotions, situations and time-courses” (MacCann et al., 2010, p. 673), as well as the ability to describe one’s own and others’ feelings and to understand how various emotions may blend to create other emotions (Mayer et al., 2008). Roseman’s (2001, as cited in MacCann & Roberts, 2008) appraisal theory is used as the basis for item construction and scoring of the STEU. This theory identifies the relationships among 17 discrete emotions according to specific combinations of seven appraisal dimensions. For example, relief results from specific circumstances involving the cause, motive and aversive stimuli associated with the emotional event. An example given to display this theory is: relief occurs when “an unwanted situation becomes less likely or stops altogether.” The STEU item generated based on this combination of emotion and appraisal is: an unwanted situation becomes less likely or stops altogether. The person involved is most likely to feel: (a) regret, (b) hope, (c) joy, (d) sadness or
(e) relief; with (e) as the correct answer. A similar process was conducted for 13 other emotions in the assessment.

With the permission of the authors of the STEU, Carolyn MacCann, Ph.D. and Richard Roberts, Ph.D., an adapted version of the STEU, one appropriate for the age range of subjects in this sample, was used to measure the EI domain of Emotional Understanding. This adaptation was conducted through use of a cognitive laboratories (cog-labs) procedure and the under the supervision of the test co-author, Richard Roberts. The cog-labs process involved a “think aloud” procedure in which each test item was evaluated for grade level language and content analogous to what is listed in the STEU, but that is appropriate to the lives of elementary school students. This procedure was conducted with 2 children of average-range intelligence within the same age range as study subjects. The scale has 25 items including those with a school-based context, a personal-life context, and those that are context reduced. An example of an item is as follows: An unwanted situation becomes less likely or stops altogether. The person involved is most likely to feel: (a) regret, (b) hope, (c) joy, (d) sadness or (e) relief; with (e) as the correct answer. A similar process was conducted for 12 other emotions in the assessment. Responses are in arranged in a multiple-choice format (see appendix for full scale).

Because this scale was adapted for use with this study, the reliability and validity analyses have not been conducted and are currently unknown.

3. Thematic Apperception Test

In order to better identify the ways in which defensive structure may be associated with EI functions and advanced cognitive capacities, subjects were administered the Thematic Apperception Test (TAT, Murray, 1943), a widely used projective assessment. The TAT is a projective test that requires the subject to make up a story about a picture that is visually
presented. Each subject was asked to tell a story in response to seven TAT cards (1, 2, 3BM, 3GF, 4, 6BM, 7GF) following standard instructions.

The TAT is thought to reveal important, otherwise obscured emotional information about the subject (Alvarado, 1994). This information is understood as being conscious or unconscious. In considering the argument raised regarding the implicit nature of emotional functioning, the idea that not all emotional processing is information that can be declared or measured, the TAT provides an important tool in understanding how the subject processes and manages emotion implicitly.


The Defense Mechanisms Manual (DMM, Cramer, 1991) is a categorical system created for the TAT, and was used to quantify the subjects’ use of the defenses of Denial, Projection and Identification. Participants told stories to 7 TAT cards (as described above) and their responses were tape recorded and transcribed. The coding of TAT stories required interrater reliability by trained coders.

For each defense, there are seven categories representing different aspects of the defense, as derived from psychodynamic theory. Each category was scored as many times as it occurred in each story. Denial was scored, for example, when (1) a salient aspect of the TAT card is omitted, (2) some aspect of a card is misperceived, (3) there is a reversal of usual perception or of the story itself, (4) there is negation (e.g., “He is not scared”), (5) an aspect of a story is denied (e.g., “It did not really happen.”), (6) positive aspects of a story are overemphasized or the negative aspects are minimized, or (7) there is unexpected optimism in a story. In a story, a defense can be scored more than once and more than one defense can be scored. Each defense was summed for all seven stories, leading to total scores for Denial, Projection, and
Identification, and a Total defense score. In addition, because participants differed as to the total number of defenses scored across the seven TAT cards, scores were converted to relative scores by dividing the score for each individual defense by the total defense score, yielding a relative score for that defense. This proportional score method was used in numerous other studies with the DMM (Cramer & Brilliant, 2001, Porcerelli et al., 1998; Cramer, 1987; Cramer & Gaul, 1998). For ease of understanding, the relative score was then converted to a percentage score. For example, if a subject had 15 Denial responses and 40 total defense responses, the relative score for Denial would be 37%. This relative score was used in all subsequent analyses.

The DMM has been demonstrated to have good interrater reliability with children, adolescents, and adults (e.g., Cramer, 1991b, 1998a, 1998b; Cramer & Block, 1998; Hibbard et al., 1994; Porcerelli, Thomas, Hibbard, & Cogan, 1998; Sandstrom & Cramer, 2003). In addition, the validity of the DMM has been demonstrated with experimental studies designed to test specific hypotheses derived from defense mechanism theory. For example, both children and college students have been found to show an increase in defense use following stress-inducing experimental interventions (Cramer & Gaul, 1988; Sandstrom & Cramer, 2003b, Cramer, 1991a). In addition, defense use as assessed by the DMM has been shown to be related to adult measures of personality and psychopathology (Cramer, 1999, 2003; Hibbard & Porcerelli, 1998).

5. The Wechsler Abbreviated Scale of Intelligence (WASI, Wechsler, 1997)

The WASI was used as a measure of crystallized and fluid intelligence. The WASI is a brief screening tool designed to measure general cognitive ability in children and adults ages 6–89. It consists of four subtests: Vocabulary, Block Design, Similarities, and Matrix Reasoning. These subtests measure verbal knowledge, visual-spatial processing, and verbal and non-verbal reasoning, respectively. They yield an overall Full Scale IQ score (FSIQ-4). For this study,
scores on the Vocabulary and Matrix Reasoning subtests were used to represent crystallized and fluid reasoning abilities, respectively. In addition, the Similarities and Block Design subtests were used to calculate a Full Scale IQ score. Higher scores indicate higher intellectual functioning within the measured domain.

**Vocabulary subtest**

The Vocabulary subtest is comprised of 42-items which are scored 0, 1, or 2. On this task, the subject is required to define given words orally. It is a measure of expressive vocabulary, verbal knowledge, and crystallized intelligence. Both the vocabulary subtest score and the Verbal IQ score, which includes the Similarities subtest score, were used in analyses.

**Matrix reasoning subtest**

The Matrix Reasoning subtest is a 35-item subtest, scored 0 or 1, in which the respondent is asked to complete a pattern in a set of picture matrices by choosing from five possible choices. This subtest measures nonverbal fluid reasoning. Both the Matrix Reasoning score and the Performance IQ score, which includes the Block design subtest, were used in analyses.

The WASI was normed with 2,245 people aged 6–89, and was stratified on sex, ethnicity/race, and education level as well as geographic region (Psychological Corporation, 1999). The internal consistency of the WASI was calculated within a sample of children ages 6–16, using Cronbach’s alpha. Reliability coefficients ranging from .86 to .93 were found for the Vocabulary subtest and .86 to .96 for the Matrix Reasoning subtest, indicating good internal consistency. Test retest reliability was also established for the same age group. Strong reliability coefficients were found for the Vocabulary subtest (r = .84) and the Matrix Reasoning subtest (r = .76) (Psychological Corporation, 1999). Convergent validity studies were conducted with the
Wechsler Intelligence Scale for Children-Third Edition (WISC-III) and indicated strong relationships ($r = .72$ to $.81$).

The validity of the WASI has been established through studies with various populations. The measure was found to exhibit sufficient sensitivity for screening of mental retardation as well as for screening individuals with cognitive giftedness. The WASI provided a valid estimate of general intellectual functioning in children with ADHD, and significantly discriminated among children with and without reading and math disabilities (Psychological Corporation, 1999).

7. The Behavior Rating Inventory of Executive Function – Teacher Form (BRIEF-TF)

To further establish the subject’s ability to manage emotional experience, teachers completed the BRIEF-TF (Gioia, Isquith, Guy, & Kenworthy, 2000) for each student participant that belonged to his/her class. The BRIEF-TF is a teacher rating scale developed to assess executive functioning in children and adolescents (Gioia, Isquith, Guy, & Kenworthy, 2000). It contains 86 items that yield a Behavioral Regulation Index, a Metacognitive Index and the composite summary score, the Global Executive Composite. The Behavioral Regulation Index (BRI) is comprised of three clinical subscales: the Inhibit, Shift and Emotional Control scales. The Emotional Control scale, the scale most meaningful to the current study, measures the ability to modulate emotional responses appropriately. Overall, the BRI is indicative for the child’s ability to shift set and modulate emotions via inhibitory control (Gioia, et al., 2000). The remaining five subscales measure other areas of Executive Functioning ability and include: Initiate (ability to begin a task), Working Memory (ability to hold information in mind), Plan/Organize (ability to anticipate future events), Organization of Materials, and Monitor
(ability to assess one’s performance). Higher scores on the BRIEF-TF indicate weaker executive functioning ability.

Items on the BRIEF were generated from behavioral descriptions of executive skill difficulties from clinical interviews with teachers (Gioia, Isquith, & Guy, 2001). Item-category membership was validated by nine clinical neuropsychologists, as well as by item-total correlation analyses, principal component factor analyses, and inter-rater agreement (Gioia et al. 2000). The BRIEF-TF was normed with 720 teachers who provided ratings for 403 girls and 317 boys from private and public schools in Maryland, USA. The sample’s demographics were representative of the US population in 1999 (according to gender, socioeconomic status, ethnicity, and geographical population density). Internal consistency for the scale was measured using Cronbach’s alpha; coefficients ranging from .80 to .98 were found for both clinical and normative samples (Mangeot, Armstrong, Colvin, Yeates, & Taylor, 2002). Internal consistency of the three indexes — Metacognition Index (MI), Behavioral Regulation Index (BRI) and the overall score index, the Global Executive Composite (GEC), are also high, ranging from .94-.98. Test-retest stability ranges from .72 to .84 over an average three-week period (Gioia et al., 2000).

Validity was established by exploring correlations between the BRIEF-TF and other measures of child behavioral functioning. Behavioral measures that were compared to the BRIEF included: the Child Behavior Checklist (CBCL; n = 200), the Teacher Report Form (TRF; n = 192), and the Behavior Assessment System for Children, Parent and Teacher Rating Scales (BASC-PRS, n = 80; BASC-TRS, n = 27; Gioia et al., 2000). Correlations between the BRIEF and the above mentioned tests ranged from .3 and .6 (Gioia et al., 2001). Factor analyses indicated that the executive functioning constructs measured by the BRIEF-TF were indeed separate from the internalizing and externalizing constructs measured by various other tests such
as the Child Behavioral Checklist, Achenbach TRF and the BASC-TRS (Gioia et al., 2000). Overall the BRIEF-TF is psychometrically sound, demonstrates appropriate reliability, and has good content and construct validity.

**Procedures**

Subjects were recruited within the school setting; classroom teachers disseminated information about the study with use of a script provided by the PI. Students who expressed interest in participating in the study were given a parent consent form to bring home. The parents of each student participant completed a parent consent form that was returned to the teachers, who then turned them in to the PI. On this form, parents were encouraged to contact the PI via phone or email for any further information about the study. Subjects with completed parent consent forms then completed child assent forms with the PI. At that time, each subject was given further information about the research, and told that his/her participation would involve the following: completing a paper & pencil measure which taps into their emotional knowledge and management, making up an audio-recorded story to a set of emotionally-laden pictures, and completing a cognitive measure. They were also told that their teacher would complete a questionnaire regarding their behavior in the classroom. Participants were further informed that these clinical measures would be administered both in and outside of class on an individual and group basis. The risk that the measures may generate anxiety or emotional discomfort was explained as well as the research team’s confidentiality procedures. Subjects were also told that all data including measures, audiotapes and transcripts would be kept in locked files without any identifying information and accessible only by key research personnel. Subjects were informed that their name would never appear on any of the research data and that they would be identified only by a unique code number. Finally, subjects were told that their participation was voluntary.
Students who agreed to participate in the research project and had completed parent permission and child assent forms were given a unique participant code number which was placed on one master list that was kept in a locked cabinet in a room that contains no other research files. All data collected was identified only by the unique participant code number. Subject names were never written on materials or transcripts completed by subjects. Likewise, audiotapes of subject TAT responses were identified only by the subject’s research code number; a member of the research team transcribed the tapes. These data were stored in locked file cabinets in a different room from the one in which the master list of code numbers was kept.

Only the PI had access to the room and keys to the file cabinets. All data (identified by unique code) was entered on a secure computer. The computer database is password protected. The master list that associates unique code number and names was also stored in a locked file cabinet. Only the key research personnel have the key to the file cabinet containing the code. This file cabinet also contains a copy of every signed consent form, as they are the only research forms that feature patient names. All research staff were required to complete the CITI Course in The Protection of Human Research Subjects.

Once assent was gathered from subjects, each subject completed the STEM-Y and the STEU-adapted in their respective classrooms. While in this group format, each subject read and completed the measures independently at their desk while the PI observed. The WASI and the TAT were administered individually, in a separate location within the school, and by a trained research assistant. Each subject’s teacher completed the BRIEF-TF. The TAT stories were scored with the DMM by a trained coder when all of the TAT data was transcribed.
Hypotheses

The preceding review of literature suggests support for the following hypotheses that were tested in this study:

Hypothesis (1): Based on the finding that verbal ability has a meaningful, causal effect on the acquisition of emotion-related skills and competencies and the finding that verbal ability is strongly associated with the Understanding Emotion domain of EI, scores on the Vocabulary subtest of the WASI, a measure of crystallized reasoning, will have a positive correlation with scores of Emotional Understanding on the STEU-adapted.

Hypothesis (2): Fluid reasoning ability is proposed as being related to emotion management in that it may be involved with emotional information processing and the ability to understand emotional causality. Based on this theoretical proposition, scores on the Fluid Reasoning subtest of the WASI (Matrix Reasoning) will show a positive correlation with scores of Emotion Management as measured by the STEM-Y.

Hypothesis (3): In keeping with the concept of Cramer’s (1997) developmental model of defenses as depending on the cognitive operations available to a child, this group will show a more robust phenomenon of her stage-based theory and will display a relative stronger use of Identification than of Projection and Denial.

Hypothesis (4): Furthermore, as I have argued that EI and the use of defenses function in similar ways, the subject’s use of the higher order defense of Identification as measured on the DMM will have a positive correlation with their performance on both the STEU-adapted and the STEM-Y.
Hypothesis (5): The student’s EI performance and their use of Identification as measured on the DMM will have a negative correlation with symptom scores as reported on the BRIEF-TF teacher rating scale.
Results

This chapter presents the results of the current study. It begins by reporting descriptive statistics for the demographics of the sample. Summary statistics for all study variables (WASI, STEM-Y, STEU-adapted, DMM, BRIEF-TF) will then be presented including frequencies, means, standard deviations, skew and kurtosis. Following this, the relationship among subscales as well as the relationship of demographic variables to outcome measures will be examined. Finally, the chapter presents results of data analyses testing each of the five hypotheses as well as post-hoc analyses.

Demographic characteristics of the sample

Preliminary analyses included descriptive statistics of participant characteristics. Frequency distributions for demographic variables including age, gender and grade are presented below. Twenty-nine children from a specialized elementary school for intellectually gifted students participated in the study and were recruited within the school. Of the twenty-nine participants, there were 15 (51.7%) males and 14 (48.3%) females. The majority of the sample was in the 4th grade (65.5%), with a smaller number of 5th grade (27.6%) and 6th grade (6.9%) subjects. The age range was 9.4 to 11.9 with a mean age of 10.4 (SD = 0.7). Because the sample was skewed towards the younger end of the distribution, it is also useful to report the median age of the group, which is 10.3, in addition to the mean age.

Outliers and Missing Values

The data was screened for missing information and coding errors. Due to data collection restraints, the WASI had approximately 17% missing data. Specifically, three subjects did not complete the Vocabulary subtest on the WASI and four subjects each did not complete the Block Design or Similarities subtests. One subject did not complete the Matrix Reasoning subtest. In these cases of missing WASI data, a WASI full scale IQ was determined by use of the two-
subscale calculations and norms. Three subjects do not have a full scale IQ due to missing subscale data and are only included in analyses using their completed subscales. There is complete WASI data, including all four subtests, on 24 participants. One (3.4%) out of the 29 participants had incomplete responses on the STEM-Y measure. Two subjects (6.8%) out of 29 participants had incomplete responses on the STEU-adapted measure. Two (6.8%) out of the 29 participants had incomplete responses on the BRIEF-TF. One subject has missing responses to one TAT card.

Reliability

Cronbach’s Alpha was computed for the two EI measures. The STEM-Y had a Cronbach’s Alpha of 0.80, indicating good internal consistency. The STEU-adapted had a Cronbach’s Alpha of 0.51 indicating poor internal consistency. When the Cronbach’s Alpha was computed for the STEU-adapted, six out of 25 items had negative corrected item-total correlations. These items were removed and Cronbach’s Alpha was run again, with an increase to 0.73. This corrected STEU-adapted scale was used for all subsequent analyses. The rationale for using the corrected scale is that the original, low alpha STEU-adapted scale is, by definition, not measuring a consistent, single construct. In that sense, subjects were rating this scale in an inconsistent manner. When the items that were negatively associated with the total score were removed, the scale is closer to measuring a consistent construct. It should be noted that analyses for both the corrected and original scales were run, resulting in slight differences in summary statistics. However, none of the analyses for the relationship between demographic variables and outcome measures or the tests of hypotheses resulted in vastly different outcomes with use of the corrected, versus the original scale.
As stated in the previous chapter, internal consistency for the BRIEF-TF was measured using Cronbach’s alpha, with coefficients ranging from 0.80 to 0.98 for both clinical and normative samples (Mangeot, Armstrong, Colvin, Yeates, & Taylor, 2002).

The TAT data were coded by the author and a fellow doctoral candidate using the DMM. After they extensively self-trained using the DMM manual and TAT protocols not used in the current data set, and consulted with their supervisor, who is very experienced in coding the DMM, they each coded seven randomly selected protocols. Coders were blind to demographic data and IQ. To test the inter-rater reliability for the DMM, a two way mixed model intraclass correlation coefficient (ICC) was computed using absolute agreement as the standard. Then, the Spearman-Brown correction for double coding \( \left( \frac{2r}{r+1} \right) \) was applied (Shrout & Fleiss, 1979). ICC values are all in the excellent range (\( \geq 0.74 \) is excellent); 0.92 for Denial, 0.94 for Projection and 0.93 for Identification, indicating excellent reliability between raters. The remaining protocols were then coded by the author.

**Summary Statistics**

Means, standard deviations, medians, and skew and kurtosis statistics for the criterion and predictor measures were computed to describe the sample and to assess normality of the data prior to conducting hypothesis tests. For the current study, measures of interest were the WASI, the EI measures STEM-Y and STEU-adapted, the DMM scale scores and the BRIEF-TF. Means, standard deviations, skew, and kurtosis statistics for each of the measures can be found in Table 1. The scales were all normally distributed except for the BRIEF-BRI and the BRIEF Emotional Control scales which were slightly kurtotic (2.803 and 2.782, respectively) due to three outliers. The outliers were recoded down to next highest levels (BRI: 91 \( \rightarrow \) 65, 92 \( \rightarrow \) 66, 96 \( \rightarrow \) 67;
Emotional Control: 93→71, 93→71, 100→72), resulting in a normal distribution for these scales.

In order to better depict the unique cognitive profile of this group, WASI scores for this sample were compare to the WASI clinical validity scales using a gifted population. The WASI Full Scale IQ mean for this sample (M = 134.81) was higher than expected and significantly different from the Full Scale IQ scores obtained from the clinical validity scales using a gifted population for WASI norms (M = 128.91, SD = 8.29; one sample independent t-test: t (25) = 2.44, p = 0.02). This outcome was also true for the WASI Verbal IQ score; the Verbal IQ mean for this sample (M = 135.50) was higher than expected and significantly different from the Verbal IQ scores obtained from the clinical validity scales using a gifted population for WASI norms (M = 125.61, SD = 10.82; one sample independent t-test: t (23) = 4.48, p < 0.001). The WASI Performance IQ mean (M = 126.79) for this sample was statistically equivalent to the Performance IQ mean obtained for the clinical validity scales using a gifted population for WASI norms (M = 125.48, SD = 8.57; one sample independent t-test: t (23) = 0.50, p = 0.61).

The STEM-Y means for this sample were statistically equivalent to those obtained from a sample of middle school students (mean age = 13.22, SD = 0.49) of average intelligence (M = 42.32, SD = 4.84; one sample independent t-test: t (27) = 1.69, p = 0.10) (MacCann, et al., 2010). The STEU-adapted scale had a mean score of 12.85 (SD = 3.37) out of a total 19 possible points. As of this writing, there are no equivalent norms for the STEU-adapted scale.

The DMM relative defense use scores for this sample were statistically equivalent to those obtained from a sample of demographically similar middle school students of average intelligence (Cramer & Brilliant, 2001); (Denial M = 29, SD = 19; one sample independent t-test: t (28) = -1.79, p = 0.43; Projection M = 38, SD = 23; one sample independent t-test: t (28) = 1.4, p
Identification $M = 33$, $SD = 22$; $t (28) = -0.57, p = 0.57$). However study means did differ significantly from other studies using demographically similar subjects (Porcerelli et al., 1998; Cramer, 2009). These differences may be attributed to the variation in TAT cards and the defenses they “pull” for, as well as demographic differences between groups that require further analysis. At the time of this writing, no appropriate norms exist for the DMM.

The BRIEF-TF scores from this sample were statistically equivalent to those obtained from the 9 – 13 year old norms (Behavioral Regulation Index (BRI) $M = 50$; one sample independent $t$-test: $t (26) = 0.57, p = 0.56$; Metacognition Index (MI) $M = 50$, one sample independent $t$-test: $t (26) = 1.91, p = 0.06$; Global Executive Composite (GEC) $M = 50$, one sample independent $t$-test: $t (26) = 1.94, p = 0.06$).

Relationships among Subscales

Intercorrelations for the WASI are presented in Table 2. As presented in the table, correlation was suppressed due to one subject with extremely high Verbal IQ and average Performance IQ. After removing this subject from a subsequent analysis, the correlations between measures were still lower than the values in the WASI manual. As a whole, the sample showed lower Performance IQ scores than Verbal IQ and this may have reduced the association between the two scales, as compared to the non-gifted normative sample that provided the comparison correlation between scales.

The Pearson correlations for the DMM were Denial and Projection, $r = -0.27, p = 0.15$; Denial and Identification, $r = -0.56, p = 0.002$; and Projection and Identification, $r = -0.64, p < 0.001$. The direction of these correlations differ from a study using subjects from a similar age group (Porcerelli, et al., 1998), however, based on Cramer’s stage-based theory of defense development, whereas at one stage of development certain defenses predominate while others
lessen in use, the direction of these correlations are expected. In addition, bearing this theoretical model in mind, it would make sense that Identification would have a significant negative correlation with both Denial and Projection, in that greater use of Identification indicates developmental maturity, and a move away from the lower order defenses of Denial and Projection. Further, Denial and Projection, although negatively correlated, were not significantly different. It is not unexpected that these latter two defenses would not correlate because they are both relatively developmentally immature, and are more likely to co-occur than Identification would with either defense. As such, an increase in the use of Projection, would not necessarily correspond with a decrease in Denial, or vice versa. Again, there are no current norms for the DMM from which to contrast this correlational data.

Intercorrelations for the BRIEF-TF scales are presented in Table 3. They range from 0.16 to 0.93, as compared to the range of .41 to .96 as is reported in the BRIEF manual.

**Relationship of demographic variables to outcome measures**

Independent sample t-tests, Spearman’s rho and Pearson correlations were used to examine potential associations among demographic variables (gender, age and grade) and the dependent variables: Emotional Intelligence (STEM-Y and STEU-adapted Scales); Defensive Functioning (DMM Relative Defense Scores); Behavioral Functioning at school (BRIEF-TF scales Behavioral Regulation Index (BRI), Metacognition Index (MI) and Global Executive Composite (GEC)). IQ is not included in this analysis as it is not an outcome measure.

Independent sample t-test results show significant differences between genders on the relative use of Denial as measured on the DMM. T-tests showed that females scored significantly lower on the relative use of Denial than males, meaning females used Denial less frequently than males. T-tests also showed significant results for the total defense score; females produced more
defenses, on the whole, than males (see Table 4). In addition, Pearson correlations showed a trend with age and the relative use of Denial \((r=-0.33, p=0.07)\), with age accounting for approximately 11% of the variance in the relative use of Denial. Stated differently, as age increased the relative use of Denial decreased (see Table 5). This outcome was expected based on previous studies with the DMM (Cramer & Brilliant, 2001; Cramer, 1997; Cramer, 2007).

Spearman’s rho found significant association between the BRIEF-TF GEC score and grade as well as the BRIEF-TF BRI score and grade (see Table 6). Specifically, as grade increased, symptom scores increased. In looking at this result further, it was apparent that three high scorers produced this association.

In summary, gender was associated with the relative use of Denial as well as the total number of defenses produced, there was a significant association between BRIEF-TF GEC score, BRIEF BRI score, and grade, and there was a non-significant trend associated with age and relative use of Denial.

**Tests of Hypotheses**

**Hypothesis I: Relationship between crystallized reasoning ability (i.e., vocabulary ability) and understanding emotional experience.** Hypothesis I predicted that subjects’ crystallized reasoning ability would be associated with the Understanding Emotion domain of EI. That is, the Vocabulary subtest as measured on the WASI would have a meaningful association with acquisition of emotion-related skills and competencies, specifically with regards to correctly identifying emotional language given a specific situation (as measured on the STEU-adapted).

Correlational analyses were run to examine the relationship between these variables. As predicted, a Pearson correlation showed a significant positive association between the
Vocabulary scores as measured on the WASI and the corrected STEU-adapted, (Vocabulary) $r (24) = 0.65, p < 0.001$, with Vocabulary explaining 42% of the variability in the STEU-adapted.

Results indicate that Hypothesis I was supported in that crystallized reasoning ability (vocabulary) was significantly related to the EI domain of understanding emotion, as measured on the STEU-adapted.

**Hypothesis II: Relationship between fluid reasoning ability and managing emotional experience.** Hypothesis II predicted that subjects’ fluid reasoning ability would be associated with the Managing Emotion domain of EI. That is, Matrix Reasoning subtest and Performance IQ scores as measured on the WASI would have a meaningful association with the ability to manage emotional experience in self and other (as measured on the STEM-Y).

Correlational analyses were run to examine the relationship between these variables. No significant relationships were found between the Matrix Reasoning or Performance IQ scores and the STEM-Y, (Matrix Reasoning) $r (28) = 0.23, p = 0.22$; (Performance IQ) $r (24) = 0.24, p = 0.25$. Although the findings did not reach a level of statistical significance, the size of the correlation between these variables may be considered a small to medium effect size (the Matrix score and Performance IQ variables accounted for approximately 6% of the variability in the STEM-Y score). The hypothesis was not supported by these findings. It should be noted that in addition to this non-significant finding, there was no significant relationship found between the Similarities subtest, which is an alternate measure of fluid reasoning ability, and the STEM-Y: (Similarities) $r (25) = 0.08, p = 0.69$.

**Hypothesis III: Relationship between advanced cognition and relative use of higher order defenses.** Hypothesis III predicted that this group of cognitively advanced students would show a more robust phenomenon of Cramer’s stage-based theory (Cramer, 1997) and display a
relative stronger use of Identification than of Projection and Denial. Because females and males showed different levels of relative use of Denial, these analyses will examine the sample as a whole and will also examine females and males separately.

For the sample as a whole, paired sample t-tests showed that this group had stronger use of relative Projection \((M = 41.76, SD = 14.03)\) versus Denial \((M = 27.07, SD = 13.06)\), \(t\) (28) = -3.654, \(p < 0.001\). This group did not have a significant difference in the relative use of Identification \((M =31.25, SD =16.22)\) versus Denial \((M = 27.07, SD = 13.06)\), \(t\) (28) = -0.39. There was a significant difference between the relative use of Projection \((M = 41.76, SD = 14.03)\) versus Identification \((M = 31.25, SD = 16.22)\), however, this was not in the expected direction (i.e., there was stronger relative use of Projection versus Identification) \(t\) (28) = 2.05, \(p = 0.04\).

When the sample was split into gender, paired sample t-tests showed that females used Projection \((M = 46.48, SD = 16.86)\) more than Denial \((M = 19.54, SD = 8.58)\), \(t\) (13) = -5.37, \(p < 0.001\), which is the same result as the group as a whole. However, females also showed greater relative use of Identification \((M = 34.22, SD = 18.81)\) versus Denial \((M = 19.54, SD = 8.58)\), \(t\) (13) = -2.30, \(p = 0.03\), which is a result that is unique to the female group. There was not a significant difference found for the relative use of Identification versus Projection \(t\) (13) = 1.31, \(p = 0.21\). To state these outcomes more explicitly, when these analyses were run with the male group, there were no significant differences found between the relative use of each of the defenses. Overall, the female group used less Denial and more Projection than the male group, with no significant difference found between the use of Projection and Identification. The female group also had a relative greater use of Identification versus Denial.
The male group showed no significant differences between the use of Denial, Projection or Identification (see table 4). However, there was a trend for relative stronger use of Projection (M = 37.35, SD = 9.31) versus Identification M = 28.53, SD = 13.46, t (14) = 1.76, p = .09. Although these findings did not reach a level of statistical significance, the results indicate a medium to large effect size (d = 0.66).

Results indicated that Hypotheses III is partially supported in that there was a relative stronger use of a mature (Identification) versus immature (Denial) defense with the female group. This result was not found for the group as a whole. In addition, the female group and the group as a whole showed relative greater use of Projection versus Denial. However, there is not support for Hypothesis III in that Identification was not used to a greater degree for the group as a whole.

**Hypothesis IV: Relationship between relative use of Identification and the understanding and management of emotional experience.** Hypothesis IV predicted that the subject’s relative use of Identification would show a positive correlation with their performance on both the STEU-adapted and the STEM-Y. Correlational analyses were run to examine the relationship between these variables. A positive correlation was found between the STEU-adapted and the relative use of Identification (STEU-adapted) \( r (28) = 0.45, p = 0.01 \). No significant relationship was found between the STEM-Y score and the relative use of Identification; (STEM-Y) \( r (29) = -0.19, p = 0.32 \).

These results indicate that Hypothesis IV is partially supported in that the STEU-adapted score had a significant, positive relationship with the relative use of Identification. In this sample, as subject use of Identification increased, their ability to understand emotion, as measured on the STEU-adapted, also increased. The size of the correlation between the STEU-
adapted and relative use of Identification can be considered a medium to large effect size (the relative Identification score accounting for 20% of the variability in the STEU-adapted score). No significant relationship between the STEM-Y and the relative use of Identification was found.

**Hypothesis V: Relationship between EI functioning, relative use of Identification, and teacher rating scales.** Hypothesis V predicted that the student’s EI performance and their use of Identification as measured on the DMM would reveal a negative correlation with symptom scores as reported on the BRIEF-TF. Correlational analyses were run to examine the relationship between these variables. No significant relationship was found between the STEM-Y scores and the BRIEF-TF GEC score, between the STEU-adapted scores and the BRIEF-TF scores (including the GEC, BRI or MI scales), or for the relative use of Identification and the BRIEF-TF scores (see Table 7). A significant correlation was found between the STEM-Y score and the BRIEF-TF BRI score; \( r (27) = -0.42, p = 0.02 \). Although the BRI includes the Emotional Control Scale, it should be further noted that a significant correlation was found between the STEM-Y score and the BRIEF-TF Emotional Control Scale; \( r (27) = -0.58, p = 0.001 \).

Hypothesis V is partially supported in that there was significant inverse relationship found between scores on the STEM-Y and scores on the BRIEF-TF BRI scale and Emotional Control Scale. This result indicates that as subject scores on the STEM-Y scale would decrease, their scores on the BRIEF-TF BRI would increase, that is to say, subjects with less emotion management ability as measured on the STEM-Y had increased symptom scores as measured on the BRIEF-TF BRI scale (ability to inhibit, shift and display emotional control).
Post Hoc Analyses

Post hoc analyses (I) were run to examine whether the subject’s relative use of Projection and Denial had an influence on their ability to manage emotional experience in the classroom, as measured on the BRIEF-TF. Pearson correlations found a significant inverse relationship between the relative use of Denial and BRIEF-TF BRI and GEC scores (see Table 8). This relationship is unexpected in that the relative use of an immature defense would likely have a linear relationship with symptom scores, not an inverse relationship. When data was further studied using a visual examination of a scatterplot, two data points stood out as unusual, and it was apparent that two subjects had a pattern of very low relative Denial scores along with very high symptom scores. It should be noted that both of these subjects were females in the 5th grade, a common factor that may, in part, explain their similar pattern. With this information, the correlation was retested with these data suppressed. When data from these subjects were suppressed, no significant relationships were found between the relative use of Denial and the BRIEF-TF BRI and GEC scores.

No significant result was found for the relationship between relative use of Denial and the BRIEF-MI score, nor for Projection and these BRIEF-TF scores (see Table 8). Although these results indicate that there is a significant inverse relationship between the relative use of Denial and the subject’s ability to manage emotional experience in the classroom, as measured on the BRIEF-TF, when the two highest data points were removed, no relationship between subject relative use of Denial and the BRIEF-TF scales were found. No significant relationship was found between the relative use of Projection and these scales.

Post hoc analyses (II) were also run to examine the influence of the relative defense scores on the BRIEF-TF Emotional Control Scale (i.e., emotional reactivity). Again, Pearson
correlations revealed a significant inverse relationship between the relative use of Denial and the Emotional Control Scale; \( r(27) = -0.46, p = .015 \). This unexpected, inverse relationship was due to two data points with a pattern of low relative Denial and high symptom scores. Again, when these data were suppressed, no significant relationship was found between these variables.

No significant relationship was found for the relative use of Projection \( (r(27) = 0.38, p = 0.05) \) or Identification \( (r(27) = 0.07, p = 0.71) \) and the BRIEF-TF Emotional Control Scale. However, the relative Projection score has a medium to large effect size, accounting for approximately 14% of the variance in the Emotional Control Scale. These results indicate an inverse relationship between the relative use of Denial and emotional control, as measured by the teachers of the subjects, however, no relationship existed between these variables when the two highest data points were removed.

Finally, a post hoc analysis (III) was run to examine the influence of the subject’s Full Scale, Verbal, and Performance IQ scores on the total number of defenses produced as measured by the DMM. Pearson correlations revealed a significant positive relationship between the Verbal IQ score and the Total Defense score; \( r(24) = 0.46, p = 0.02 \). No significant relationship was found between WASI Performance IQ and Total defense \( (r(24) = 0.16, p = 0.43) \) or for the WASI full scale IQ and Total defense score \( (r(26) = 0.29, p = 0.14) \). Results indicate that as subject Verbal IQ increased, their total number of defenses increased. However, there was not a significant relationship found for the influence of the Performance or Full Scale IQ on the total number of defenses generated from the TAT, as measured by the DMM.
Discussion

The intricate relationship between affect and cognition is especially complex during latency, when certain important cognitive gains are made, and a demand to feel competent within a world of challenging academic, interpersonal and intrapsychic experiences is very present (Erikson, 1968). Theories of psychological defense maturity state that defense mechanisms, like other aspects of cognitive maturation, follow a consistent developmental sequence, and are influenced both by the cognitive level of the individual and by the cognitive complexity of the defense itself (Cramer, 1999; Cramer, 2009). One aspect of this theory suggests that individuals with exceptional cognitive ability may show a corresponding “match” with complex defense use. In adults and late adolescents, a significant relationship between IQ and defense use has been found in numerous studies, such that those subjects with higher IQ’s were more likely to use mature versus immature defenses (Cramer, 2007; Cramer, 2009). Although this same result has not been found in children of average intelligence (Cramer & Brilliant, 2001) it possible that cognitively advanced children would have greater relative use of complex defenses, such as Identification, than they would less complex defenses, despite their given developmental stage.

In addition to defense use, how well one is able to identify, understand, and manage emotion, both within the self and between self and others, abilities often labelled Emotional Intelligence (EI), is a set of functions that have also been theorized as being related to cognitive ability. Previous studies involving the integration of cognition and affect through the lens of EI have not considered the variable of psychological defenses, and few have examined advanced cognition as a variable (see Chan, 2003 and Zeidner et al., 2005 for exceptions). The present study was therefore conducted in an effort to better understand the combined role of defense use, EI, and advanced cognition in emotional functioning. This goal was accomplished by using a sample of highly intellectually advanced students and examining key variables within the realms
of cognition and emotional processing that were hypothesized to interrelate. Study results found some support for these hypotheses as well as presented some important findings regarding the relationship among cognition, affect and behavior during latency.

**Interpretation of Results**

The relationship between the demographic data and outcome measures revealed a number of significant findings. Specifically, females used Denial less frequently than males, and produced more defenses, on the whole, as compared to males. It is possible that the number of defenses produced corresponds to story length; females have been noted in the literature to produce longer TAT stories than males at this stage of development (Kagan, 1960), and would therefore offer more defense material. For example, on Card 1, females had an average total word count of 108 which was statistically significantly different from the male’s average word count of 78. In this regard, it is also worth noting that although females produced more defenses than males, possibly as a function of producing longer stories, females and males did not differ in their understanding of emotion language, as measured on the STEU-adapted. This outcome suggests that there are differences in how the expression of emotion language has been shaped in males and females. Further, this difference is perhaps a function of aspects of acculturation, and of parental expectations and differences in communicating emotion language with their male and female children.

In addition to these findings, there was a non-significant trend with regards to age and the relative use of Denial; as age increased the use of Denial decreased. Although the age range of the current group is restricted (9 – 11 years old), this finding is consistent with previous research regarding defense development in relation to age (Cramer, 1987; Cramer, 1997; Porcerelli et al., 1998; among others) and lends further support to the theory of defense development as a
consistent phenomenon. Importantly, the current sample did not differ from a sample of average IQ but otherwise demographically similar youth on the EI measures or for the BRIEF-TF measures. Although these groups cannot serve as a comparison sample in that they did not employ equivalent study measures and procedures, on its surface, this finding suggests that the subjects in the current sample do not differ in their ability to manage emotion, as measured on the STEM-Y and BRIEF-TF, as compared to children of average intelligence. Further research would need to be conducted in order to verify such results.

As expected, vocabulary ability was significantly related to the EI domain of Understanding Emotion. This finding is consistent with previous studies that examined the relationship between verbal ability and Understanding Emotion (Austin, 2010; Mayer et al., 2000; Barchard & Hakstian, 2004), and contributes to the broader question of whether EI ability is a distinct form of intelligence. Because this finding was robust, it is possible that the correlation found between the measures is due to the fact that that STEU-adapted required an adequate level of verbal comprehension, and is accounted for by verbal ability. However, it should be noted that the Emotion Management domain of EI, as measured by the STEM-Y, also required a high level of verbal comprehension and did not correlate with vocabulary ability. This latter finding suggests that the correlation that was found between verbal skills and Understanding Emotion is not exclusively due to verbal ability. A more general interpretation of this finding, as also found by Izard, Fine, Schultz, Mostow, Ackerman & Youngstrom (2001) in their studies on Emotion Perception and Labeling, is that verbal ability in itself may precede and influence emotional competence. Furthermore, the present group of highly verbally gifted students may have been particularly adept at applying the verbal skills that are required to both understand and complete the Understanding Emotion task. This finding supports the idea that
language plays a key role in the acquisition of emotional ‘rules’ including those related to the expression and understanding of emotion (Izard et al., 2001).

Correlational analyses did not reveal a significant relationship between subjects’ fluid reasoning ability and the EI domain of Managing Emotion. This link was based on the theoretical proposition that the information processing component of fluid reasoning may underlie the efficiency with which novel emotional information is processed, as well as the idea that the advanced ability to understand causality in conceptual relations may correspond with the ability to understand causality in emotional experience. This non-significant finding aligns with previous studies that state that EI performance is more closely related to crystallized than to fluid reasoning ability (Farrelly & Austin, 2007; Austin, 2010). This finding further suggests that the Managing Emotions domain calls on cognitive operations that are not strongly related to fluid reasoning ability, even in the case of advanced ability in this area. It is also possible that due to ongoing maturation of the brain, the cognitive processes associated with fluid reasoning, including processing speed, are not yet functioning at a level to efficiently encode and subsequently respond to complex affective experience (Jeff Rosen, personal communication, July 2014). When brain functions have matured, perhaps an association between fluid reasoning capability and the EI domain of Managing Emotion can be observed.

More generally speaking, this finding raises the question as to what degree the ability to use logic and apply reasoning skills is actually called upon to resolve emotion-related tasks during latency. Furthermore, it supports the notion that there are emotion-related tasks that are distinct from domains that are typically associated with the concept of intelligence. This point aligns with Sternberg’s (1985) proposed view that an information processing domain of human intelligence is independent from a practical domain, the domain that is concerned with resolving
problems that occur in day to day experience (Sternberg et al., 1995). Although there is some evidence to support the idea that fluid reasoning, as a component of processing speed, is related to emotional processing in adults (Farrelly & Austin, 2007), this relationship was not robust enough to make that case in this sample of highly intelligent children. In addition, as referenced by Mayer, Salovey, Caruso, & Sitarenios (2001) in their statements on the differences in “domain of application” (p. 236) between cognitive and emotion related information, an important consideration to make is the vast difference inherent in the tasks. The dissimilarities in the STEM-Y and the fluid reasoning (matrices) tasks may in turn correspond to distinct areas of cognitive functioning, those that do not strongly overlap. Although analysis of the STEM-Y measure itself showed good internal consistency with Cronbach’s Alpha at .80, and internal consistency reliability ranged from .69 - .71 in recent studies, the measure is still subject to substantial error variance. Because of this, the measure itself may have not been sensitive enough to detect a relationship. Finally, the lack of finding between these measures may have also been due to the restricted range in the fluid reasoning score (only a 15 point range for the Matrix Reasoning subtest).

There were mixed results for the proposition that these highly intelligent subjects would show a relatively stronger use of Identification than the less mature defenses of Projection or Denial. Overall, this finding was not evidenced by the data. However, although the sample sizes were small, there were some important distinctions made between the way females and males performed. For the sample as a whole, Projection dominated. Strictly considering the subjects’ developmental stage, this result is expected; children in this age range have generally matured from using Denial as a defense to using Projection, and are in the beginning stages of using higher order defenses such as Identification (Cramer, 1997; Cramer & Brilliant, 2001; Cramer,
2007). In this sample, Projection was also used with greater relative use than Identification and, although Identification was used with greater frequency than Denial, there was no significant difference found between the relative use of Identification and Denial.

When the sample was divided by gender, females were consistent with the group as a whole in that they used Projection with greater relative use than Denial. Females, however, used Denial significantly less than males, which resulted in the female group having greater relative use of Identification than Denial. The female group therefore used both Projection and Identification to a greater degree than Denial. This pattern aligns more closely with the study hypothesis regarding defense maturity than the pattern from the male group and group as a whole. The result found for the female group aligns with Cramer’s (2007) finding with 11 – 12 year old subjects of average intelligence, where both Projection and Identification were used more than Denial. However, in contrast to Cramer’s study, for this group, there was not a significant difference found between the relatively greater use of Projection over Identification.

In sum, current findings do not support the notion that these highly gifted subjects are more “emotionally mature” in terms of their defense mechanism development than would be expected, considering their developmental stage. Based on previous research, it is likely that later in their development these subjects would show a distinct developmental pattern with regards to their defenses and cognitive ability. For example, as previously referenced, Cramer (2007) found that the use of Identification at age 18 was determined by IQ level; 18 year olds with high IQ’s had the expected developmental increase in use of Identification at this age, while 18 year olds with lower IQ’s showed a decrease in use of this defense. However, the current data do not support the notion that IQ and defense mechanisms have this same correspondence during the middle childhood stage of development. As will be discussed further, the influence of IQ may be
better reflected in the subject’s abilities to use adaptive coping skills and metacognitive ability to understand and regulate emotion.

Another consideration for why the hypothesized relationship between IQ and defense development was not found in this group is the idea that even these very intellectually advanced students would need to have made a developmental leap, both cognitively and affectively, in order to use Identification as a primary defense. In terms of affective development, use of Identification is thought to be influenced by attaining varied self-other emotional experiences and potential corresponding Identifications, those that often more vigorously occur during the process of identity development in adolescence (Blos, 1967; Cramer, 2007). In contrast, during latency, the need to protect the self and maintain self-coherence is better facilitated by use of Projection, when many of the intrapsychic challenges concern managing a burgeoning superego. The cognitive component of defense maturation is therefore only one variable involved in this complex process; the unconscious, intrapsychic shifts in the development of the self, those that relate to specific developmental conflicts and objectives, cannot be understated.

With regards to cognitive development, this group may have needed to reach the level of formal operations in order to use the more cognitively complex defense of Identification over and above the other defenses. To this end, in a related study conducted by Chandler, Paget and Koch (1978), results indicated that there is a relationship between children’s cognitive ability (as based on Piaget’s stages of cognitive development) and their ability to understand defenses. Children who were in the concrete operational phase were found to be adept at understanding defenses such as Repression and Denial, those that in part involved the logical inverse (i.e., negation) of unacceptable feelings. However, this group struggled with understanding more complex defenses that are meant to transform unacceptable affects into a logical replacement
(i.e., rationalization, reaction formation). That study found that only children in the formal
operational stage were able to understand more complex defenses that require decoding both the
logical inverse and logical replacement concepts. Although no formal testing was completed in
the current study regarding Piaget’s stages of cognitive maturity, this information may have shed
further light on the observed relationships. As it stands, the present study supports the notion that
emotional stage development cannot be trumped by IQ.

As referenced by Cramer (2009), the lack of a hypothesized linear relationship between
IQ and defense use at this age is also possibly due to the myriad of transitions that are occurring
in middle childhood, those that are a part of normative development. During this stage of
childhood and continuing into adolescence, the use of certain defenses is in flux, with gradual
increases and decreases in their use. Referencing Siegler’s (1996) theory of ‘overlapping waves,’
Cramer (2009) posits that change in defense use corresponds with the gradual development of
different cognitive abilities; as one such ability continues to develop, another may emerge and
overlap with the development of the previous ability. Stated otherwise, as children discover new
strategies, they choose adaptively among the various approaches they know in order to solve
emotional problems. The timing of these shifts may differ across individual children. With this
idea in mind, it is likely that even in children with advanced cognitive ability, these shifts
obscure a relationship between defense use and IQ, especially given the narrow age range of the
subjects.

As expected, the relative use of Identification had a significant positive relationship with
the EI Emotional Understanding domain. In the Emotional Understanding task, the subject is
required to reflect on a character’s affective state in an emotionally charged hypothetical
scenario (“Phil's classmate Bart asks Phil to lie for him about something that Bart broke in the
classroom. Phil does not agree. Phil is most likely to feel?""). This process of correctly identifying the affect the character may feel is complex, and speaks to the idea of having to “reality test” emotion (Thompson, 1986) whereby the subject has to ascertain the appropriateness of an emotion by accurately assessing its cause. Being that Understanding Emotion is considered the most “cognitively saturated” (Mayer et al., 2001) domain of EI, it is not unexpected that it would correspond with the most cognitively complex defense used in this study.

In addition, because the Emotional Understanding task requires thinking about others’ mental states, it may be thought of as a component of mentalization (Fonagy, Target, Steele & Steele, 1998), or, the ability to understand the underlying intentions, feelings, thoughts, desires, and beliefs that guide behavior (Fonagy et al., 1998). On the EI task, the subject needs to correctly interpret the mental state of the character presented in the scenario in order to perform successfully. Similarly, the use of Identification, although an unconscious process, has at its very basic form components of mentalization in that it requires the capacity to differentiate self from other, and to create internal representations, (albeit based on idealized self and object representations) of those others (Cramer & Gaul, 1988). Bearing these similarities in mind, the capacity to mentalize may be an underlying shared factor that led to the positive correlation between these variables.

Although the ability to mentalize and the unconscious use of Identification have some similarity, it is important to emphasize that they are not the same. Especially in childhood, identifications can exist without the child having a clear idea of what the person they are identifying with may be thinking or feeling. For example, a child may want to be like an admired adult, without having a real sense of how that adult functions emotionally. That being said, the more we learn to “read” another's thoughts the more we may in fact want to consciously identify
with them (Tuber, personal communication, May 2014). Further research would need to be conducted to verify unconscious and cognitive correlates of mentalization, including defense use.

The fact that no relationship was found between Identification and the Emotion Management domain of EI may be explained in a number of ways. Emotion Management is considered less cognitively laden than Emotional Understanding, because of the integration of motivation and other aspects of general personality (Mayer et al., 2001). For that reason, it may have less correspondence with what is considered a cognitively complex defense. Additionally, in contrast to the Understanding Emotion domain of EI, there is less of a demand to reflect on another’s mental state. In this task, the subject is asked to reflect on what he or she would do, given an affectively charged scenario. The internal processes involved with making decisions about how to manage affect and adapt to challenging emotional input may be distinct from those processes that underlie the unconscious use of Identification.

As expected, a significant inverse relationship was found for the relationship between subject’s ability to manage emotion, as measured on the STEM-Y, and their ability to inhibit, shift and display emotional control in the classroom (BRIEF-TF BRI scale). Subjects who did not respond as successfully on the hypothetical test had a corresponding difficulty with their ability to manage emotion in the classroom. This finding is important in that it links the child’s ability to successfully respond to an emotionally difficult hypothetical situation with their actual behavior in a classroom setting. In contrast to this finding, no relationship was found between the STEM-Y and the BRIEF GEC score, which includes the Metacognition Index and is indicative of the subject’s executive functioning ability.

There was no significant relationship found between the STEU-adapted scale and any of the BRIEF-TF scales. This result is unexpected in that one would anticipate that the
Understanding Emotion domain would correspond with observed behavior. This finding highlights the idea that having a strength or deficit in the ability to verbally label affect does not necessarily correspond with behavior. In addition to this finding, there was no significant relationship found for the relative use of Identification and the BRIEF-TF scales. Although again, this result is unexpected in that Identification is a mature defense and would likely correspond with behavioral maturity (i.e., self-regulation capacity), this result does align with the previous finding that Identification and the ability to manage emotion, as measured on the STEM-Y were not found to correlate. The lack of significant findings regarding Identification and the BRIEF-TF scales is also likely a function of the relatively small occurrence of Identification in the sample as a whole.

Regarding the inverse relationship revealed in post hoc analyses between the relative use of Denial and the BRIEF BRI, GEC and emotional control scales, this result was primarily due to two subjects with patterns of very low relative Denial use paired with high symptom-related scores on the BRIEF-TF. Although it is not possible to directly connect these two subjects’ defense patterns with behavior, or to generalize these results, based on the developmental arc of defense use as proposed by Cramer (1997), this result is unexpected. Theoretically, the limited use of Denial, which is considered an immature defense at this age, would more likely correspond with psychological and behavioral maturity, while the relatively strong use of Denial would likely have the opposite outcome. Furthermore, without these two extreme data points, analyses did not reveal any linear relationship between immature defense use and behavior. Again, this is unexpected in that defense use in children has been found to correspond with personality, psychopathology and other aspects of behavioral functioning (Cramer, 1998b; Sandstrom & Cramer, 2003b). These overall inconsistent results regarding defense use as it
connects to behavior during latency speaks to study limitations, as well as the need to gather more cross-sectional and longitudinal data in this area.

Verbal IQ was linked to the total number of defenses produced. This finding is indicative of how fundamental language is to the use of defenses, especially considering the TAT, a storytelling, “emotional problem-solving” task (Tuber, 2012 p. 118) that demands the subject to respond to ambiguous and morbid stimuli (Tuber, 2012). The TAT therefore is not just a task that reflects verbal fluency, but the ability to use such fluency under stressed conditions (Tuber, personal communication, May 2014). With this distinction in mind, this finding suggests that a child’s overall verbal ability may allow greater access to defense in terms of its expression and variability. In line with this finding, there was not a significant relationship found between subject Performance IQ or Full Scale IQ and number of defenses produced.

**Thematic Illustrations**

The quantitative findings just discussed may obscure important qualitative aspects of subject defense use and ability to understand and manage affect. Each subject offered a particular blend of defenses, and therefore it would be useful to provide some case examples for further edification of the relationships between defense use, emotional intelligence and cognitive ability. As referenced earlier, the influence of advanced cognitive ability on emotional functioning may be reflected in a child’s capacity to use adaptive problem solving and coping skills, such as addressing rather than ignoring a stressor (Konstantopoulous et al., 2001; Kitano & Lewis, 2005). Intellectual giftedness has also been associated with greater capacity for metacognitive ability, meaning, the ability to think about one’s own way of knowing, remembering, and understanding (Cheng, 1993). In keeping with these findings, the ability to use defenses adaptively, moral and emotional sensitivity, humor, and the use of an analytic response style
were all qualitative themes captured in subject’s TAT stories. In addition, although subject mentalization capacity was not formally tested, throughout many of the TAT stories subjects displayed mentalization ability in their attempts to understand the underlying mental states, motivations and intentions of the characters.

Card 7GF, the last card in the sequence of seven that were presented to the subjects, was particularly useful at capturing these themes. On this card, a pre-adolescent girl is sitting on a couch holding a doll on her lap, looking away from woman who is sitting behind her and appears to be reading to her from a book. Common responses to the card involve strained mother-child dynamics such as the “mother” attempting to give the “child” some directives or guidance which she is actively ignoring, the mother trying to soothe the child after some upsetting event, or the mother reprimanding the child. The doll or “baby” is often interwoven into the narrative. The following case examples are meant to both illustrate the aforementioned themes and reflect the heterogeneity of defense use and reflections of possible conscious coping skills in this sample. The illustrations will also help the reader to capture qualitative differences between subjects who used defenses considered age appropriate versus those considered mature or immature. Although case examples will be discussed in relation to subject defense use and possible behavioral correlates of defense, the writer does not presume that a clinical formulation can be based upon any single response or set of responses to the TAT task.

**Case 1 (9 year old female respondent)**

There is a woman and there is a girl holding a baby and the baby looks like it is this girl’s sister or brother. And the woman looks like a mom, the girls’ mom. And she looks like she’s teaching her something or she’s telling her something and the girl isn’t really paying attention - she’s staring off in the distance and the baby’s lying there in her arms.
The girl’s cradling the baby as if it’s her daughter and the mom has her eyes closed but the girl’s eyes are wide open and maybe the girl got kicked out of school so maybe she’s being home schooled. And the mom looks like - can’t really explain how the mom looks…she looks like she’s disappointed in her daughter. Cause her eyes are closed and, she’s, if her eyes were open she’d be staring at her daughter. And the girl looks like she’s disappointed in herself. In the future, the girl might find another school and her mom will be happy for her. But the mom will always remember that the girl is a bad child. Or maybe she - the mom took the girl out of school because something bad was happening. And the girl is angry at the person who was maybe doing the bullying. Or something was happening and that person was in charge. She’s probably angry at that person. And I’m not sure why there is a baby in the picture it doesn’t really have a significance. I’m done.

This response is an illustration of the capacity to use defenses adaptively, a quality which was weaved throughout many of the TAT responses from this subject pool. This subject aptly moves the negative affect away from the “bad” child and the negative dynamic between the characters, themes that may feel threatening, to some other, the “bully” who is not pictured in the card. Although her justification for the character’s feelings are somewhat heavily based on their facial expressions, the subject makes an attempt at mentalization in her ability to reflect on both the child’s and the adult’s mental states, providing a dynamic understanding of their underlying feelings. In addition, after offering a strictly descriptive response, the subject begins to integrate themes of past and present, and to create a story arc with accompanying appropriate affective themes. This organization is indicative of her cognitive ability. In terms of the DMM scoring system, this subject received numerous scores within the Projection category for her multiple references to ominous themes and facial expression as well as scores within the Identification
category for her reference to demands, control, influence and self-criticism. This subject also scored within the Denial category for reversing the theme of the child herself being bad to something bad happening to the child. In all, this subject used defenses in a way that appropriately fit her developmental category and that allowed her to adaptively cope with the negative affect stirred by the card. This child’s verbal ability allowed her to be expressive enough to convey a multilayered reflection of this stimulus.

**Case 2 (11 year old male respondent)**

Great, um this is a woman and a little girl and the little girl is holding I’m guessing a doll, since no baby would ever have a head that small and body that big compared to the head, proportions just don’t fit. The mother is looking at the doll whereas the little girl’s looking out. The little girl is thinking about where to go next with her little doll whereas the mother is saying watch out don’t slip or something like that, based on the little girl’s precarious position on the ground with neither foot completely firmly planted. And based on their clothes and also where they are in a plush couch and plush living room with the wooden floor tiles I’m guessing they’re rich and the little girl maybe wants to have fun, run around and play and the mother’s like don’t leave wait, wait, maybe you shouldn’t do this yet. Maybe you’re not ready. What will happen in the future I think that the little girl um…you know she might actually run away. *Run away from home?* Yeah. Um…so that’s it.

This subject has obvious verbal strengths, and this response captures the way a gifted child may use their advanced verbal or analytical skills defensively. This child is working hard to ignore the negative affect in the card by pointing out details such as the proportions of the baby and the child’s position on the bed. Providing such detail allows him to avoid acknowledging
affect, especially those that may concern the child character. In this sense, the plot twist provided at the end of the story where the girl “might actually run away” reflects the child’s own need to retreat from negative affect, as well as latency-aged dilemmas around the need to feel competent and independent. This subject’s analytic response style may serve him well with academic tasks. However, in terms of the ability to both acknowledge and regulate negative affective experience, it is possible that this child may struggle. To this end, many of the child’s overly detailed responses are coded as the “defensive need for self-justification” a score in the DMM Projection category. This subject’s response also speaks to the appropriateness of an integration of defenses at this age, and to the idea of a proximal “best fit” of both mature and immature defense use that support adaptive behaviors. For example, although this subject, on the whole, is using age-appropriate defenses, greater use of basic level Projection (as opposed to the more mature Projection score he received) would perhaps allow this child to better integrate negative affect. In addition, it is apparent from this response that the use of sophisticated verbal skills is not always adaptive in managing heightened affective experience. This child’s language skills served to undermine, rather than support his ability to acknowledge and manage negative affect.

Furthermore, it is possible that this child’s analytic style and tendency to focus on small details may contribute to his having a lack of flexibility in regulating heightened emotional experiences, as well as difficulty tolerating experiences that may be feel unresolved or inexact, as is the nature of many emotional experiences.

**Case 3 (10 year old female respondent)**

This looks like it was some time ago, and it looks like this is the mother and this is the daughter. And umm….She… I think the daughter, this is a doll, she’s carrying a doll. And the mother wants her to cooperate, umm, let’s see… Probably she wants her to put
the doll down, she looks like she’s too old for a doll, and the daughter is being stubborn and she’s refusing to not play with, she’s refusing to put the doll down. I think later the daughter will see sense and maybe, yeah, and she’ll give it to her little cousin. I think the daughter’s feeling like, really angry and stubborn I guess. And umm, the mother’s feeling like…fed up. But I think she’s trying to be patient.

This subject uses cognitive flexibility in being able to reflect on the mental states of both characters. The subject also displays her ability to hold multiple affects at once; the mother character is attempting to persuade the daughter, is expressing inner criticism about the daughter’s interest in doll play, is feeling “fed up,” all at the same time as trying to regulate her heightened emotion by “trying to be patient.” Although the narrative itself is not complex, this subject illustrates the ability to create underlying, layered emotional themes, as well as the practical use and need for adaptive coping skills, themes that were common to many subject stories. In addition, the themes presented in this card highlight some important latency-aged dilemmas. The girl character who is “too old for a doll” feels the need to hold on to it, despite her mother’s objections. This aspect of the story may represent the subject’s own developmental struggles with transitioning through the middle stage of childhood.

**Case 4 (9 year old male respondent)**

Um, this one, there’s a mom and her daughter. Her daughter is holding a baby doll. And, the mom is reading a book to the sister, to the daughter. And um, in the future…the book it’s gonna have a happy ending. And the girl is gonna play with her dolls. The girl is thinking about the book and she’s feeling, um, she’s feeling happy.

In contrast to the other responses in which both immature and mature defenses are integrated, this subject primarily uses Denial by attempting to minimize the negative themes that
are implied. Despite this child’s superior level IQ, this response is qualitatively less complex, both in the narrative that is created and the affective dynamics presented, as compared to his peers. This lack of complexity may correspond with the child’s own difficulty with differentiating, accurately labeling and understanding his own affective experiences. Although his defense use on this card was effective in that it served to protect him from acknowledging negative affect, this style may not be adaptive for handling many of the challenging interpersonal and intrapsychic experiences that are common to latency stage. Again, this card speaks to the optimal use of defense at this age as being an integration of both immature and mature defense use. In addition, this case is a clear representation of when cognitive capacities may exceed a burgeoning ability to differentiate and accurately express affective experience.

**Case 5 (10 year old female respondent)**

Well this one looks like a girl and her mother or um…like an older sister or something and I think that the girl is very disappointed in something or like angry at someone and I think that um the woman has a book in her hand so I think that she – the girl is actually trying to just ignore what the woman is trying to say and um I think that its um…she knows she’s kind of being rude but like she’s angry and she really doesn’t want to talk about anything so um…she just tries to ignore the woman and um…actually the girl looks very rich and the woman doesn’t so I’m guessing that woman is her maid and she doesn’t really quite want to listen to her because she’s just upset and doesn’t really want to express her feelings.

In this response, the subject offers a reflection of her own potential ability to self-reflect, hold multiple affective states, and self-regulate. Aside from not offering a rationale for the girl character’s disappointment in “something” or anger towards “someone,” the emotions of the
character are dynamic and complex. The subject is able to formulate an appropriate hypothesis regarding the presentation of the girl and the negative dynamic that is implied between the characters. In this way, the subject is aptly using mentalization capacity to connect the child’s behavior with her underlying mental state. Such a capacity is an adaptive emotional ability that allowed the subject to both acknowledge and sit with the negative themes of the card. The child also presents the child character as being one who has a strategy for managing her emotions in response to a heightened emotional state. The character “tries to ignore the woman” when she is feeling angry and “doesn’t want to talk.” All of these strategies are created within the complex power dynamic that exists between the “rich girl’ and her “maid,” an emotionally sophisticated feat. That being said, this child does not integrate one of the main percepts on the card, the baby, an indication of her use of an immature defense along with age appropriate and higher order defenses.

**Case 6 – (11 year old female respondent)**

Hmm….creepy. The rich girl does not like that her maid is telling her that she has to look after the baby sister. The maid is thinking oh my goodness please do it and a little irritated and the girl is very irritated and bored and is thinking why do I have to do this? The girl will take care of the child and the maid will be fired. Yay! Yay? Why yay? Yay, just, that was kind of random. *Was the yay for being finished or yay for the woman being fired?* Woman being fired I guess…random, random yay.

In contrast to some of the previous responses, this subject is able to acknowledge the negative affect of the card outright. She projects a negative sentiment with her description of the irritation that is felt between the characters. Although the subject does not further expand on or differentiate the affective themes, she displays accuracy and sensitivity to affect, a quality that
may serve as both a potential strength and vulnerability. In her response, it is apparent that she has difficulty with tolerating the intensive affect she perceives. The subject resolves this dilemma by swiftly disposing of it, by way of having the maid character fired. However, this management appears to be disorganizing to the subject herself, coinciding with her stated “random” feeling. Furthermore, the “yay” comment serves to disavow the ominous content she had produced. The potential difficulty of this response style lies in the deficit this child may have in her ability to manage affect in relation to her ability to accurately perceive it. Such a clinical picture could lead the child to develop oversensitivity to affective experience (as in Dabowski’s (1972) “psychic overexcitability”), and a potential corresponding disorganization of behavior. Of course, such a clinical summary would have to be further validated by other sources of information. In sum, this subject’s response illustrates that the ability to acknowledge and understand negative affect does not always coincide with the ability to manage it. This same outcome was illustrated by the quantitative measures employed in this study.

**Clinical Implications**

The results of this study offer a broader understanding of the dynamics between cognition, affect and behavior in gifted youth. The case illustrations provide potentially useful information regarding clinical composites of children who may be seen for treatment, as well as areas for intervention with gifted youth. For example, Case 2 illustrates the case of a child who may use advanced verbal and analytic skills defensively. This style may eventually contribute to impairments with regard to the ability to self-regulate and appropriately express emotion with important others. A clinician working with such a child may want to focus on supporting the child’s ability to acknowledge and tolerate negative affect, while at the same time helping him or her to become more aware of their analytic style, and curious about how this style may impair
their emotional functioning. The clinician may model the use of affective language as a way to broaden and further develop the child’s advanced verbal skills. The use of spontaneity in imaginative play may also support the child’s ability to better recognize affect in self and other, rather than use verbose language and analysis to turn away from it.

Gifted children who use immature defenses primarily, as in Case 4, may present with a corresponding deficit in their ability to self-reflect, to understand and differentiate complex affective experience, and to manage affect. In such a case, a clinician may in part be concerned with how to facilitate developmental shifts in defense use. Research has shown that as the capacity to understand a particular defense develops, children are able to “demystify” (Chandler et al., 1978) its function and the defense eventually lessens in use (Chandler et al., 1978; Cramer, 1999; Cramer & Brilliant, 2001). With this in mind, the clinician may want to elaborate on instances of immature defense use in play and in the relational aspects of the therapy. In this way, the child may begin to develop their own reflective capacities and use of immature defense and become more attuned to their complex emotional experiences. In addition, it is important to consider that this immature defense use is in the context of the child's advanced analytic or verbal skills. Such a child may have inappropriate behavioral expectations from adults and peers, which may serve as a stressor. Parent guidance and psychoeducation on this “asynchrony” (Lovecky, 1994) could be an appropriate course of action.

Yet another possible clinical presentation involves a child who displays an ability to understand the complexity and nature of affect, and can accurately perceive it, but has a deficit in being able to manage affect. As with the child in Case 6, the inability to manage affect that is so readily acknowledged can feel quite disorganizing. The therapist of such a patient may want to help the child recognize this ability as a strength, and yet support them with being able to better
recognize and tolerate experiences of feeling overwhelmed by affective input. This may be accomplished by modeling affective regulation, exploring what affects and combination of affects may feel most disorganizing, and reflecting on this difficulty in order to support appropriate emotional expression. Again, parent guidance would be useful in orienting the parent/guardians as to the child’s particular strengths and weaknesses, as well as reducing environmental stressors.

Further clinical implications include supporting a gifted child’s self-concept through discussing the theory of multiple intelligences. In this way, a child can broaden their idea of what is “smart” and be reminded that a deficit or a strength in one area does not define their overall ability, potential to be successful or lack thereof. Such a message could help normalize the experience of a child who displays gifted functioning in some areas but not others, and could possibly support their ability to cope with failures and feelings of inadequacy. In this way, a clinician may address perfectionistic traits that are common to many gifted children (Delisle & Galbraith, 2002).

**Theoretical Implications**

This study builds upon the small body of research that has been conducted regarding the influence of advanced cognition on defense development and within the construct of Emotional Intelligence (Chan, 2003; Zeidner et al., 2005). By addressing relationships that had previously been left unexplored in the literature, such as the integration of cognitive process with psychological defense mechanisms, EI and behavior, the current study broadens the theoretical understanding of the role of cognition in emotion during latency.

Based on existing studies using children of average intelligence, it is notable that the gifted children in this sample appear to be no more or less emotionally proficient in terms of
their Emotion Management ability, defense use or behavioral functioning than comparison groups. Again, such existing studies can only broadly inform current study results as they do not share equivalent study procedures. From a developmental perspective, the gifted children in this sample align with what would be expected of them regarding defense use. Results indicated that developmental parameters, including affective and cognitive, are perhaps more influential in the development of defenses than superior intelligence in itself. This finding supports current theory regarding IQ and defense development in children (Cramer & Brilliant, 2001; Cramer, 1997; Cramer, 2007). It more broadly supports the idea that emotional maturity is not simply a function of superior intellectual ability, that alternatively, such maturity is developed through repeated immersion in relationship with others, a process which is complex and takes time (Tuber, May 2014, personal communication). Furthermore, while there certainly exists a cognitive component of defense development, other developmental components of defense maturation, including unconscious, intrapsychic shifts that occur over the course of development, cannot be understated.

Importantly, the thematic illustrations implied that greater relative use of mature defense may not necessarily correspond with psychological well-being. For example, the most adaptive TAT responses were composed of a “best fit” of age-appropriate, mature and immature defense use. It may be true that a mixed-level use of defense, rather than a greater relative use of mature defense, allows for flexibility that best supports adaptive functioning during latency. Although Cramer’s (1991) theory speaks to Denial, Projection and Identification being active at varying degrees; perhaps this idea can be taken further, in that there is a level at which each of the defenses may function to best support adaptive behavior in response to unconscious, latency-aged intrapsychic needs and demands. Immature defense may serve important adaptive
functions, those that are just as crucial as age-appropriate and mature defense. In this way, there is no value in having to “speed up” development of immature defense in favor of mature defense.

In line with these thoughts, as in Case Four, the child whose fluid and crystalized reasoning skills appeared to be in advance of his ability to accurately label and fully express emotion, there may be an important developmental function to this lag. This developmental alexithymia, so to speak, may be part of a natural course of development that occurs for all individuals at varying times (Jeff Rosen, July 2014, personal communication).

Regarding the broad question of what aspects of cognition most influence emotion, study results reveal some significant relationships. Chief among them are that vocabulary ability (crystalized reasoning) is involved with the ability to Understand Emotion, as well as the total number of defenses that are produced on the TAT task. Fluid reasoning ability, on the other hand, did not correlate with Emotion Management. The fact that no relationship was found between fluid reasoning ability and Emotion Management ability lends further support to the idea that certain cognitive domains may not robustly overlap with affective process. It is also possible that continued maturation of the brain is needed in order for fluid reasoning abilities to be able to efficiently encode affective experience. Further, neither verbal ability nor fluid reasoning ability was found to have a relationship with observed behaviors.

Importantly, the use of Identification as a defense at this age showed a relationship with the Understanding Emotion domain of EI, but not with the Managing Emotion domain. This outcome lends further support to the idea that relative greater use of mature, cognitively complex defenses during latency does not have a one-to-one correspondence with emotional maturity and psychological well-being. A further theoretical interpretation of this result is that both
Identification and Understanding Emotion ability are cognitively complex processes that may call upon the ability to use metacognitive skills and mentalization.

Further study results revealed that a subject’s ability to correctly respond on the STEM-Y showed a correspondence with their ability to inhibit, shift and show emotional control in the classroom setting. This finding further supports the construct of EI as being clinically relevant. An unexpected result, one that does not align with current literature, was that defense use and classroom behavior as rated by teachers were not found to correlate. This outcome may have been due to several of the study limitations described below.

Although mentalization capacity was not formally tested, there were many examples of subject ability to mentalize in the TAT stories. Some gifted students’ emotional functioning may be especially supported by their metacognitive ability and verbal skills. However, verbal and analytic strengths may also serve a defensive function that undermines emotional functioning.

In sum, although verbal ability may support understanding emotion and expression of defense, it does not necessarily correspond with the ability to manage emotion. Fluid reasoning skills did not correspond with any of the emotion related tasks, lending support to the idea that there are distinct cognitive domains involving analytic versus emotion related tasks. Continued maturation of the brain may be required in order for fluid reasoning abilities to efficiently encode affective experience. Greater relative use of Identification correlated with greater Emotional Understanding ability; these two functions may have an underlying shared factor involving the capacity to mentalize. The greater use of Identification, however, showed no correlation with the Managing Emotion domain or with observed behaviors. Finally, the Managing Emotion domain of EI correlated with observed behavior, while the Understanding Emotion domain did not.
**Study Limitations**

Although the data provide a rich synthesis of how certain aspects of cognitive and emotional processes are linked, there were design limitations. The modest sample size limited the power of analyses; a larger sample would increase the power to test for the potential presence of moderating relationships between advanced cognitive capacity and emotional functioning. Another limitation was the lack of a comparison group from which to compare study variables and outcome measures. In this way, analyses were restricted to identifying differences within the group. Having a group of demographically similar students of average intelligence, those who would be subject to the same set of study procedures, would allow for possible further distinctions about the relationship between IQ and defense use.

With regards to the measures used in this study, those that were selected for the measurement of emotional functioning, including the STEM-Y, STEU-adapted and DMM, have had relatively limited use in empirical studies, as compared to the behavioral and cognitive measures that were used. The STEU-adapted scale required correction for analyses due to its poor internal consistency. Although this version of the STEU was approved by the authors of the original measure, more analyses would need to be run to determine whether the STEU-adapted is a valid and reliable measure of the EI domain of Emotional Understanding. The scale may have benefitted from further piloting prior to use in the current study to better identify items that may have been problematic. At the time of this writing there is a fully empirically validated measurement of EI for youth, titled the MSCEIT-YRV (Mayer, Salovey, & Caruso, in press), which was not available at the time of test administration.

Another limitation of the study was the restriction of developmental categories within this group. Having a greater range of ages within this study (2\textsuperscript{nd}, 5\textsuperscript{th}, and 8\textsuperscript{th} graders for example) and
a robust number of subjects within each developmental category would allow for a cross-sectional design from which to compare data. Being that the developmental theory of defenses is based on differences observed within this wider range of developmental categories, it may be true that the cognitive variables used in the present study, those that have corresponding shifts for each developmental stage, would have served as a stronger moderating variable.

The subjects were recruited from a specialized school for gifted students, located in an urban population. Their experiences may be different from cognitively advanced students who are integrated into a general population of students, or to students who attend a gifted and talented program within a larger school. Furthermore, subjects did not provide data related to race, culture, class, or family make-up. It is possible that such variables are among those that contributed to the variability in emotional functioning in this sample.

**Future directions**

Areas for further study include gathering longitudinal data on the current cohort by following them into advanced developmental stages. This opportunity would allow a better understanding of the course of defense development and EI ability in gifted youth. Additionally, a comparison sample using children of average intelligence would be especially useful in this regard. As it was only examined qualitatively in this study, the role of mentalization capacity in child defense use would be a viable area to further explore, using quantitative measures. In addition, further study on the role of the EI domain of Emotion Management and behavior in children would be useful, as current study results suggest an existing relationship. As presented in Cramer’s DMM and referenced by Tuber (2012), there are both immature and sophisticated aspects of any given defense. Thus, a further area to explore would be to conduct an analysis
using separate defense categories and identifying immature and mature defense use within each category.
### Table 1

**Descriptive Statistics of Outcome Measures**

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>M</th>
<th>SD</th>
<th>Skew</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASI Verbal IQ</td>
<td>24</td>
<td>135.50</td>
<td>10.80</td>
<td>-0.33</td>
<td>-0.61</td>
</tr>
<tr>
<td>WASI Performance IQ</td>
<td>24</td>
<td>126.79</td>
<td>12.73</td>
<td>-0.58</td>
<td>-0.63</td>
</tr>
<tr>
<td>WASI Vocabulary Subtest</td>
<td>26</td>
<td>132.00</td>
<td>6.01*</td>
<td>-0.41</td>
<td>-0.10</td>
</tr>
<tr>
<td>WASI Matrix Reasoning</td>
<td>28</td>
<td>118.00</td>
<td>4.28*</td>
<td>-0.69</td>
<td>-0.24</td>
</tr>
<tr>
<td>WASI Full Scale IQ</td>
<td>27</td>
<td>134.81</td>
<td>11.27</td>
<td>-0.09</td>
<td>-0.80</td>
</tr>
<tr>
<td>STEM-Y</td>
<td>29</td>
<td>43.88</td>
<td>4.89</td>
<td>-1.35</td>
<td>1.15</td>
</tr>
<tr>
<td>STEU-adapted</td>
<td>28</td>
<td>15.42</td>
<td>3.04</td>
<td>-0.17</td>
<td>-1.18</td>
</tr>
<tr>
<td>STEU-adapted corrected</td>
<td>28</td>
<td>12.85</td>
<td>3.37</td>
<td>-0.24</td>
<td>-1.38</td>
</tr>
<tr>
<td>DMM Relative Denial</td>
<td>29</td>
<td>27.07**</td>
<td>13.06</td>
<td>0.38</td>
<td>-0.64</td>
</tr>
<tr>
<td>DMM Relative Projection</td>
<td>29</td>
<td>41.76**</td>
<td>14.03</td>
<td>-0.53</td>
<td>0.27</td>
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<tr>
<td>DMM Relative Identification</td>
<td>29</td>
<td>31.28**</td>
<td>16.22</td>
<td>0.92</td>
<td>0.95</td>
</tr>
<tr>
<td>BRIEF-TF GEC</td>
<td>27</td>
<td>55.56</td>
<td>14.81</td>
<td>1.10</td>
<td>0.36</td>
</tr>
<tr>
<td>BRIEF-TF BRI</td>
<td>27</td>
<td>53.93</td>
<td>15.45</td>
<td>1.90</td>
<td>2.80</td>
</tr>
<tr>
<td>BRIEF-TF BRI with outliers recoded</td>
<td>27</td>
<td>50.92</td>
<td>8.34</td>
<td>0.80</td>
<td>-0.88</td>
</tr>
<tr>
<td>BRIEF-TF MI</td>
<td>27</td>
<td>55.00</td>
<td>13.55</td>
<td>0.80</td>
<td>-0.39</td>
</tr>
</tbody>
</table>

Note: *corrected* STEU-adapted task scored as total number correct out of 19. *Based on t-score distribution. **Percentage scores.
**Table 2**

*Intercorrelations for the WASI*

<table>
<thead>
<tr>
<th></th>
<th>Vocabulary</th>
<th>Block D</th>
<th>Similarities</th>
<th>Matrix R</th>
<th>Verb. IQ</th>
<th>Perf IQ</th>
<th>FSIQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>___</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Block D</td>
<td>-.034</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Similarities</td>
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<td>.246</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Matrix R</td>
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<td>.671**</td>
<td>.355</td>
<td></td>
<td></td>
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<tr>
<td>Verb. IQ</td>
<td>.881**</td>
<td>.087</td>
<td>.902**</td>
<td>.393</td>
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<tr>
<td>Perf. IQ</td>
<td>.098</td>
<td>.967**</td>
<td>.256</td>
<td>.836**</td>
<td>.203</td>
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<td></td>
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<tr>
<td>FSIQ</td>
<td>.638**</td>
<td>.731**</td>
<td>.705**</td>
<td>.796**</td>
<td>.724**</td>
<td>.820**</td>
<td>___</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed).**

Note: Block D. = Block Design, Matrix R. = Matrix Reasoning, Verb. IQ = Verbal IQ, Perf. IQ = Performance IQ, FSIQ = Full Scale IQ.
Table 3

Intercorrelations for the BRIEF-TF

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>S</th>
<th>EC</th>
<th>In</th>
<th>WM</th>
<th>P/O</th>
<th>O of M</th>
<th>M</th>
<th>BRI</th>
<th>MI</th>
<th>GEC</th>
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<tbody>
<tr>
<td>I</td>
<td>____</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>S</td>
<td></td>
<td>.818**</td>
<td></td>
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<tr>
<td>EC</td>
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<td>.770**</td>
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<td></td>
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<tr>
<td>In</td>
<td></td>
<td></td>
<td></td>
<td>.741**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>WM</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>P/O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.588**</td>
<td></td>
<td></td>
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<tr>
<td>O of M</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>.364</td>
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<td>M</td>
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<td>.872**</td>
<td></td>
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<td>BRI</td>
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<td>.900**</td>
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<tr>
<td>MI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.716**</td>
<td>.513**</td>
<td></td>
</tr>
<tr>
<td>GEC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.856**</td>
<td>.695**</td>
<td>.646**</td>
</tr>
</tbody>
</table>

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Note: I = Inhibit, S = Shift, EC = Emotional Control, In = Initiate, WM = Working Memory, P/O = Planning/organizing, O of M = Organization of Materials, M = Monitor, BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite
Table 4

Independent t-Tests: Gender differences on outcome measures

<table>
<thead>
<tr>
<th>Variable</th>
<th>Female M (SD)</th>
<th>Male M (SD)</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRI recoded</td>
<td>52.00 (8.30)</td>
<td>50.06 (8.56)</td>
<td>0.59</td>
<td>25</td>
<td>0.56</td>
</tr>
<tr>
<td>MI</td>
<td>53.00 (11.37)</td>
<td>56.60 (15.26)</td>
<td>-0.67</td>
<td>25</td>
<td>0.50</td>
</tr>
<tr>
<td>GEC</td>
<td>57.58 (17.30)</td>
<td>53.93 (12.87)</td>
<td>0.62</td>
<td>25</td>
<td>0.53</td>
</tr>
<tr>
<td>Total TAT</td>
<td>31.64 (10.86)</td>
<td>22.13 (9.11)</td>
<td>2.56**</td>
<td>27</td>
<td>0.01</td>
</tr>
<tr>
<td>Relative D</td>
<td>19.54 (8.58)</td>
<td>34.11 (12.77)</td>
<td>-3.57**</td>
<td>27</td>
<td>0.01</td>
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<tr>
<td>Relative P</td>
<td>46.48 (16.86)</td>
<td>37.35 (9.31)</td>
<td>1.82</td>
<td>27</td>
<td>0.07</td>
</tr>
<tr>
<td>Relative I</td>
<td>34.22 (18.81)</td>
<td>28.53 (13.46)</td>
<td>0.94</td>
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<tr>
<td>STEM-Y</td>
<td>43.09 (5.71)</td>
<td>44.56 (4.13)</td>
<td>0.77</td>
<td>26</td>
<td>0.44</td>
</tr>
<tr>
<td>STEU-a</td>
<td>13.35 (3.43)</td>
<td>12.35 (3.36)</td>
<td>0.77</td>
<td>26</td>
<td>0.44</td>
</tr>
</tbody>
</table>

*p < .05.  **p < .01. Note: BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite, D = Denial, P = Projection, I = Identification
### Table 5

*Pearson correlation: Age differences on outcome measures*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Correlation</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BRIEF BRI recoded</td>
<td>0.42*</td>
<td>0.02</td>
</tr>
<tr>
<td>BRIEF MI</td>
<td>0.29</td>
<td>0.13</td>
</tr>
<tr>
<td>BRIEF GEC</td>
<td>0.37</td>
<td>0.05</td>
</tr>
<tr>
<td>Total TAT</td>
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<td>0.37</td>
</tr>
<tr>
<td>Relative Denial</td>
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</tr>
<tr>
<td>Relative Projection</td>
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<td>0.98</td>
</tr>
<tr>
<td>Relative Identification</td>
<td>0.28</td>
<td>0.13</td>
</tr>
<tr>
<td>STEM-Y</td>
<td>-0.25</td>
<td>0.18</td>
</tr>
<tr>
<td>STEU-adapted</td>
<td>0.16</td>
<td>0.40</td>
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</table>

*Correlation is significant at the 0.05 level (2-tailed).

Note: BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite
### Table 6

*Spearman’s rho correlation: The association between grade differences and outcome measures*

<table>
<thead>
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<th>Variable</th>
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<td>BRIEF BRI</td>
<td>0.43*</td>
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</tr>
<tr>
<td>BRIEF MI</td>
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<td>BRIEF GEC</td>
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<tr>
<td>Relative Projection</td>
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<tr>
<td>Relative Identification</td>
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<tr>
<td>STEM-Y</td>
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<td>0.23</td>
</tr>
<tr>
<td>STEU-adapted</td>
<td>0.15</td>
<td>0.43</td>
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</table>

*Correlation is significant at the 0.05 level (2-tailed).

Note: BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite
Table 7

Hypothesis V: Relationship between EI functioning, relative use of Identification, and BRIEF
teacher rating scales

<table>
<thead>
<tr>
<th></th>
<th>Relative Identification</th>
<th>STEU-adapted</th>
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<tr>
<td>BRIEF BRI recoded</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<tr>
<td>BRIEF MI</td>
<td>Pearson Correlation</td>
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<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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</tr>
<tr>
<td>BRIEF GEC</td>
<td>Pearson Correlation</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
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<tr>
<td>Emotional Control Scale</td>
<td>Pearson Correlation</td>
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<td>Sig. (2-tailed)</td>
<td>0.001</td>
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</tbody>
</table>

*Correlation is significant at the 0.05 level (2-tailed).

Note: BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite
Table 8

*Post Hoc Analysis I: Relative use of Projection and Denial and its association with the ability to manage emotional experience in the classroom*

<table>
<thead>
<tr>
<th></th>
<th>Relative Denial</th>
<th>Projection</th>
</tr>
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<tbody>
<tr>
<td>BRIEF BRI recoded</td>
<td>Pearson Correlation -0.43*</td>
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</tr>
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<td></td>
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</tr>
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<td>BRIEF MI</td>
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<td></td>
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<td>BRIEF GEC</td>
<td>Pearson Correlation -0.38*</td>
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</tr>
<tr>
<td></td>
<td>Sig. (2-tailed) 0.04</td>
<td>0.17</td>
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*Correlation is significant at the 0.05 level (2-tailed).

Note: BRI = Behavioral Regulation Index, MI = Metacognition Index, GEC = Global Executive Composite
Appendix of Measures

APPENDIX A

SITUATIONAL TEST OF EMOTION MANAGEMENT: YOUTH VERSION

Instructions

In this test, you will be presented with a few brief details about an emotional situation, and asked to choose from among four responses what you would be most likely to do in the situation.

Please note, there are no right or wrong answers. We all deal with situations in different ways. All that you need to do is answer each question honestly.

1. You and James sometimes help each other with homework. After you help James on a difficult project, the teacher is very critical of this work. James blames you for his bad grade. You respond that James should be grateful, because you were doing him a favor. What would you do in this situation?

   (a) Tell him from now on he has to do his own homework
   (b) Apologize to him
   (c) Tell him “I am happy to help, but you are responsible for what you turn in”
   (d) Don’t talk to him

2. You are nervous about a speech that you need to give to the whole school about a project you’ve been working on. You are worried that some of the students will not understanding your speech, as it deals with some very difficult topics. What would you do in this situation?

   (a) Work on your speech to make it easier to understand and ask for questions afterwards
   (b) Practice your speech in front of your family or close friends
   (c) Just give the speech
   (d) Be positive and confident, knowing it will go well

3. You move to a new community away from all your friends. You find that your friends make less of an effort to keep in contact with you than you thought they would. What would you do in this situation?

   (a) Make the effort to contact them, but also meet people in your new community
   (b) Get involved in community events like sports or fund-raisers
(c) Let go of your old friends, who seem to be losers
(d) Try to tell your old friends how you feel

4. You have been working very hard with other students on a group project. A member of your team gives you some badly written work to include in the project. There is very little time before the project is due. What would you do in this situation?

(a) Suggest ways that the student can improve the work
(b) Don’t worry about it, just put the bad work in
(c) Tell the teacher about the situation
(d) Rewrite the work yourself

5. You have not spoken to your favorite cousin for months, although you were both very close when you were younger. You phone your cousin but he/she can only talk for five minutes. What would you do in this situation?

(a) Understand that relationships change, but call your cousin from time to time
(b) Make plans to drop by and visit your cousin in person and have a good chat
(c) Realize that your cousin is growing up and might not want to spend so much time with the family anymore
(d) Be upset about it, but realize there is nothing you can really do

6. You are the secretary for your school chess club. You just found out that some of the club members have been complaining because you lose things and don’t show up on time. What would you do in this situation?

(a) Point out that you are not the only one who is late
(b) Make a list of your strengths and find a role in the club that would better suit you
(c) Quit the club and look for another one that will appreciate you
(d) Make an effort to be on time and keep track of things

7. After school, you usually go to the mall with a really good friend. When your friend’s family moves to a different part of town, your friend stops coming to the mall. You miss these times. What would you do in this situation?

(a) Get your friend to meet you at the mall even if it’s not convenient for her
(b) Go to the mall and hang out with other people
(c) Suggest other activities you and your friend could do together even if they occur less often
(d) Never talk to your friend again
8. You are very excited about starting a new club. Then a family member remarks that the club will probably only last six weeks. What would you do in this situation?

(a) Ignore the family member’s comments
(b) Prove your family member wrong but doing everything you can to have fun and succeed at the new club
(c) Discuss with the family member how this club might be different than past clubs you were involved in
(d) Tell your family member he/she is wrong

9. Your best friend is moving to another state and is unlikely to come back. You have been good friends for many years. What would you do in this situation?

(a) Make sure you both keep in contact through email, phone, or letter writing.
(b) Spend time with other friends and keep busy
(c) Hope that your best friend will return soon
(d) Forget about your best friend

10. You were always involved in soccer and are a very good player. You move to a new school in a community that has a lot of sports activities, but no soccer. You miss playing soccer, but are concerned about starting another sport. What would you do in this situation?

(a) Talk to your parents and teachers about starting a soccer league in the new community
(b) Think about your skills and choose another sport that would use those skills (running or kicking)
(c) Give up on sports
(d) Play pick-up games in an empty lot with a few friends after school

11. You are given a warning by your teacher for having entered a restricted area. You were never informed that the area was restricted and will do detention if you get two more warnings, which you think is unfair. What would you do in this situation?

(a) Explain that you didn’t know the area was restricted
(b) Accept the warning and be careful not to go in the restricted area from now on
(c) Take a few deep breaths and calm down about the situation
(d) Spend a lot of time complaining to your friends about this
APPENDIX B

Situational Test of Emotional Understanding-adapted version (STEU-adapted)

Instructions:
The following questions each describe a situation, and ask you to choose which of five emotions is most likely to result from that situation.

Here is an example:
Clara receives a gift. Clara is most likely to feel?
(a) happy  (b) angry  (c) frightened  (d) bored  (e) hungry

If you think Clara would feel happy, you would mark option A and then move to the next question. There are 25 questions.

Items (correct alternative in bold text)
1. Xavier completes a difficult homework problem and receives a good grade. *Xavier is most likely to feel?*
   (a) Surprise  (b) Pride  (c) Relief  (d) Hope  (e) Joy

2. An irritating classmate of Eve's moves to another state. *Eve is most likely to feel?*
   (a) Regret  (b) Hope  (c) Relief  (d) Sadness  (e) Joy

3. Edna's classmate organizes a goodbye party for Edna, who is going to another school. *Edna is most likely to feel?*
   (a) Surprise  (b) Gratitude  (c) Pride  (d) Hope  (e) Relief

4. Something unpleasant is happening. Neither the person involved, nor anyone else can make it stop. *The person involved is most likely to feel?*
   (a) Guilty  (b) Distressed  (c) Sad  (d) Scared  (e) Angry

5. If Denise continues to do well on her English tests, she will not have to take a class in the summer, which is what she really wants. *Denise is most likely to feel?*
   (a) Distress  (b) Joy  (c) Surprise  (d) Hope  (e) Fear

6. Song finds out that a friend of hers borrowed money from her to buy candy instead of a book at the book fair, as it was intended. *Song is most likely to feel?*
   (a) Anger  (b) Excitement  (c) Contempt  (d) Shame  (e) Horror

7. Leya is very good at math. She is presented with a standard looking math problem but she cannot work out how to solve it. *Leya is most likely to feel?*
   (a) Confused  (b) Frustrated  (c) Surprised  (d) Relieved  (e) Distressed

8. Phil's classmate Bart asks Phil to lie for him about something that Bart broke in the classroom. Phil does not agree. *Phil is most likely to feel?*
   (a) Excitement  (b) Anger  (c) Horror  (d) Contempt  (e) Shame

9. Jim enjoys spending Saturdays playing with his father in the park. This year his father has work activities on Saturdays and he can no longer go to the park with him. *Jim is most likely to feel?*
(a) Angry  (b) Sad  (c) Frustrated  (d) Distressed  (e) Ashamed

10. Megan is deciding what to get from the cafeteria at lunch. Something happened and she felt regret. What is most likely to have happened?
(a) The cafeteria has run out of her favorite sandwich, and now she is trying to find out if it is too late to get one made for her.
(b) She chose a new sandwich that she liked that didn't think that she would.
(c) She couldn't get her favorite sandwich because they weren’t made that day.
(d) She didn't choose to take her favorite sandwich right away, and now someone else has taken the last one.
(e) She requested a special sandwich to be made and she is waiting to see if the cafeteria will make it.

11. Mary was working at her desk. Something happened that caused her to feel surprised. What is most likely to have happened?
(a) Her classmate told a silly joke.
(b) She was working on a new work problem that she hadn't dealt with before.
(c) She found some results on a task that were different from what she thought they would be.
(d) She realized she would not be able to complete her work.
(e) She had to complete a task she didn't normally do.

12. Gary is captain of the softball team. Recently, the team has been unable to recruit new players and Gary can't tell why. There doesn't seem to be anything he can do to help matters. Gary is most likely to feel?
(a) Scared  (b) Angry  (c) Sad  (d) Guilty  (e) Distressed

13. Someone thinks that another person has caused something good to happen to them. They are most likely to feel?
(a) Hope  (b) Pride  (c) Gratitude  (d) Surprise  (e) Relief

14. By their own actions, a person reaches a goal they wanted to reach. The person is most likely to feel?
(a) Joy  (b) Hope  (c) Relief  (d) Pride  (e) Surprise

15. An unwanted situation becomes less likely or stops altogether. The person involved is most likely to feel?
(a) Regret  (b) Hope  (c) Joy  (d) Sadness  (e) Relief

16. Hasad tries to use his new video game system. He has always been able to figure out how to use the game controller, but he cannot get it to function correctly. Hasad is most likely to feel?
(a) Distressed  (b) Confused  (c) Surprised  (d) Relieved  (e) Frustrated

17. Tina’s friend Janice became sick with the flu and had to go to the hospital. Although she has been careful to wash her hands and not share anything with Janice, Tina has also gotten sick. Now there is a small chance that Tina will also need to go to the hospital. Tina is most likely to feel?
(a) Scared  (b) Distressed  (c) Irritated  (d) Sad  (e) Hopeful
18. Quan and his older sister are talking about what happened to them that day. Something happened that caused Quan to feel surprised. What is most likely to have happened?
(a) His sister talked a lot, which did not usually happen.
(b) His sister talked about things that were different than what they usually discussed.
(c) His sister told him that she might have some bad news.
(d) **His sister told Quan some news that was not what he thought it would be.**
(e) His sister told a funny story.

19. A bully at Alfonso’s school transfers to another school. **Alfonso is most likely to feel?**
(a) Joy  (b) Hope  (c) Regret  (d) **Relief**  (e) Sadness

20. Leila has been feeling very tired lately and there are no changes in her life that might be the reason for it. **Leila is most likely to feel?**
(a) Angry  (b) Scared  (c) Sad  (d) **Distressed**  (e) Guilty

21. The new principal at Enid's school changes the hours so that school ends at four o’clock instead of three o’clock. The principal is not willing to change it. **Enid is most likely to feel?**
(a) Dislike  (b) Rage  (c) Jealousy  (d) Surprise  (e) Anxiety

22. Someone believes that another person has caused harm to them, due to that person's bad character. This person thinks that they can probably handle the situation, even though they were harmed. **The harmed person is most likely to feel?**
(a) Contempt  (b) Anger  (c) Horror  (d) Excitement  (e) Shame

23. Pete gets home late one day and has missed his favorite TV show. Pete's mother has taped the show for him. **Pete is most likely to feel?**
(a) Surprise  (b) Hope  (c) Pride  (d) Relief  (e) **Gratitude**

24. Matthew loves being part of the chess club and has been vice president of the club for six months. Something happened that caused him to feel regret. **What is most likely to have happened?**
(a) **He did not apply to be president of the club, and he found out that someone else who was in the club for less time than him got the position.**
(b) He did not apply to be president of the club, and he has started looking for another club to join.
(c) He found out that the chess club will no longer have any leadership positions.
(d) He found out that he didn't get the president position, which he thought he would get.
(e) He didn't hear about a position with another club that he could have applied for and now it is too late.

25. Penny's hockey team trained hard and won the championship. **Penny is most likely to feel?**
(a) Hope  (b) **Pride**  (c) Relief  (d) Joy  (e) Surprise
REFERENCES


