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Chapter 9

**THE MEASUREMENT OF EMOTIONAL
INTELLIGENCE IN CHILDREN: THE CASE OF
REACTIVE ATTACHMENT DISORDER**

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INTRODUCTION

The present research focuses on the measurement of emotional intelligence (EI) in children, exploring how it develops, and its potential importance in understanding a recently conceptualized disorder in children: Reactive Attachment Disorder (RAD). For the current work, caregivers of children diagnosed with RAD and caregivers of children without RAD completed questionnaires regarding skills and personality characteristics that are indicative of EI, such as alexithymia, difficulty identifying feelings, difficulty describing feelings, rehearsal, and emotional impulsivity (Matthews, Zeidner, & Roberts, 2002). Measures of emotional inhibition, aggression control, empathy, externally-oriented thinking, and non-verbal communication of affect were also included. The aforementioned indices were employed because as-yet reliable and valid indices of EI for young populations have not been fully developed. Thus, the current research, and other research hoping to examine EI as a predictor of outcomes in childhood, utilizes a cocktail of EI-relevant indices to draw inferences regarding the role of EI in psychological outcomes in childhood. The present study has two goals: First, we examine the predictive utility of EI in understanding behavioral issues in childhood, and second, we assess the extent to which maladaptive attachment

patterns in childhood covary with indices of EI in predictable and meaningful ways. We are primarily interested in whether EI indices effectively discriminate between children diagnosed with RAD and the control group of children. Reactive Attachment Disorder (RAD; see Hall & Geher, 2003) is included in the DSM IV as a mental affliction of childhood. The etiology of this disorder is primarily described as rooted in a lack of attachment with a primary caregiver. Symptoms/outcomes associated with this disorder are varied and include poor impulse control, dishonest behavior, questionable moral development, and, importantly, several emotion-relevant consequences such as inappropriate expression of emotion, the inability to respond appropriately to emotionally laden stimuli, and a distorted ability to read emotions in others. The emotional components of RAD clearly speak to a variety of conceptualizations of emotional intelligence (EI). Therefore, to the extent that EI-relevant measures prove predictively useful, a case can be made for developing more specific EI measures for young populations.

EMOTIONAL INTELLIGENCE

The world we live in is dominated by social interaction. Reading and managing emotions in social contexts are clearly important for success in a variety of interpersonal as well as career-related domains (Matthews et al., 2001). According to much recent academic work, a good deal of our successes and failures in life are not attributable to our cognitive abilities as measured by tests of IQ, but, rather, are attributable to our abilities to form and maintain social relationships, portray ourselves positively, and manipulate how others perceive us (Richburg & Fletcher, 2002; Salovey & Mayer, 1990). When we “dress for success” to interview for a job, we are exhibiting an understanding that professional attire will elicit in our interviewers certain feelings or emotions, which suggest that we are competent and qualified, regardless of our true level of competence or qualification. This manipulation of perception is dependent upon a firm understanding of emotions and how emotions affect social interactions. Those who lack such understanding may be said to lack Emotional Intelligence (EI), a type of intelligence that may be more important in reaching one’s goals than traditional intelligence as measured by tests of IQ (Salovey & Mayer, 1990; Denham et al., 2003).

Emotional intelligence is defined in multiple ways by multiple researchers as evidenced in the various chapters in this volume. Mayer and his colleagues (Mayer & Salovey, 1997; Salovey & Mayer, 1990; Mayer, Salovey, & Caruso, 2003) define EI as a set of related abilities that, from their perspective, is best measured using ability or performance-based tests. The most recent index these researchers have developed is the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer, Salovey, & Caruso, 2002). This test, which provides 4 scores, is based on their revised model of EI (Mayer & Salovey, 1997), which includes four ‘branches’ or abilities that are hierarchically arranged: emotional identification/perception, use of emotions to facilitate thinking, understanding emotions, and managing emotions. Scores on the MSCEIT are interpreted such that high scores represent the degree to which participants’ answers mirror scores that are reflective of the group (or expert) consensus. See Brackett and Salovey (this volume, Chapter 8) for a detailed treatment of the MSCEIT.

Other EI frameworks conceptualize and measure this construct as a combination of mental abilities and personality traits. For instance, Bar-On (this volume, Chapter 6) conceptualizes EI as comprising multiple dispositions relevant to emotional functioning, such as optimism and empathy. His index, the Emotional Quotient Inventory (EQ-i), is designed to assess these dispositions using self-report methods.

Conceptually, the current work relies primarily on Mayer and Salovey's (1997) organization of EI in an attempt to examine the relationship between EI and attachment-related psychopathology in children. One difference is that Mayer and his colleagues have primarily focused on measuring EI in adults, whereas the current work focuses on children. Because the focus of this paper is on adults' perception of EI in children diagnosed with Reactive Attachment Disorder (RAD; Hall & Geher, 2003), ability measures of EI were not used. Instead, we used an assortment of measures tapping constructs relevant to the ability conception of EI (such as alexithymia, or an inability to effectively express one's feelings, which was measured with the Toronto Alexithymia Scale (Bagby, Taylor, & Parker, 1994). Throughout this paper, the specific methods we used to tap EI in children, in addition to the rationale for employing such methods, will be addressed.

Emotional intelligence was initially defined as "the ability to monitor one's own and other's emotions, to discriminate among them, and to use the information to guide one's thinking and actions" (Salovey & Mayer, 1990, p. 189). Recently, Mayer and Salovey (1997) refined their model to include four abilities: emotion perception, incorporating emotion into thought, emotional understanding, and emotion management. These skills enable individuals to be more adept at interacting with others and to develop satisfactory relationships (Salovey & Mayer, 1997; Park, 1994; Saarni, 1990).

The first dimension of EI pertains to the perception and expression of emotion. Accurate identification of emotions (in self and others) provides the foundation for the development of EI (Richburg & Fletcher, 2002; Izard et al., 2001). It has long been reported that the ability to distinguish emotions is associated positively with mental health and negatively with mental illness (Reik, 1952). The ability to discriminate among emotions develops early in life, within the first few days, and is a major factor in social interactions (Izard & Youngstrom, 1995). Research shows that a great deal of variance exists in emotion perception among people; some people are simply more adept than others at accurately discriminating among emotions (e.g., Geher, Warner, & Brown, 2001).

The second branch of EI pertains to the use of emotions to facilitate thinking. This branch involves the ability to use emotions to direct one's attention and thoughts and to weigh emotions against other factors. Competence in this second branch allows for prioritizing thoughts according to emotions and using emotions to aid in judgment and memory (Mayer, Salovey, & Caruso, 2000).

The third branch of EI consists of understanding and reasoning about emotions, and involves the labeling of emotions, including multifaceted emotions and emotions that occur simultaneously. Also included in this branch is the knowledge of rule-based emotions, such as anger, happiness, and fear. People who are proficient in the skills of this third branch of EI understand how relationships are affected by shifts in emotion (Mayer, Salovey, & Caruso, 2000).

The regulation of emotion is the fourth branch of EI. According to Thompson (1994, p. 27-28), "emotion regulation consists of the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions...to accomplish one's goals."

According to the Mayer and Salovey (1997), emotionally intelligent individuals are also proficient at regulating and altering affective reactions in other people, which enables such individuals to more advantageously direct their relationships to meet their needs and obtain their goals. Just as the inability to accurately identify and express emotions can cause difficulties in social functioning, a lack of proficiency in emotion regulation can have devastating effects on social interactions.

Social competence in general is impaired when one lacks emotion-regulation skills (Rogosch, Cicchetti, & Aber, 1995). People with deviant emotion-regulation patterns have difficulties developing appropriate social responsiveness, and thus experience problems with peer relations (Cicchetti & Schneider-Rosen, 1986). People do not wish to engage in relationships with those who seem unable to react appropriately in social situations. Another deterrent to social relationships for individuals who are not skilled at emotion regulation is their tendency to require more time to elevate their moods following disturbance (Salovey et al., 1993); they may remain angry or sad for extended periods of time. Chronic anger may result in hostility toward others, and persistent sadness may be confusing and unpleasant for peers (Denham et al., 2003). The extended moods of anger and/or sadness have the effect of alienating others who do not wish to engage in social relationships with people who frequently have disagreeable moods. This interplay between emotional and social competence that seems to underlie all treatments of EI can be most clearly seen in Bar-On's (2000) work which explicitly includes both social and emotional competence constructs in the model.

Adults with high EI are able to develop and maintain satisfying social relationships (Lopes, Salovey, & Strauss, 2002; Lopes, Brackett, et al., in press), and are less likely to use illegal drugs, drink alcohol excessively, or engage in deviant behavior (Brackett, Mayer, & Warner, in press). Emotional intelligence is also negatively associated with depression and anxiety (David, 2004). The effective management of relationships conducted by people with high EI enables such individuals to use their social contacts and knowledge of emotions to further their goals in life and attain that which leads to personal and social success.

DEVELOPMENT OF EMOTIONAL INTELLIGENCE ACROSS THE LIFESPAN

Infants as young as a few days old are able to perceive emotions (Mayer, Caruso, and Salovey, 2000), and development of emotional skills continues throughout childhood and into adulthood. In fact, Emotional Intelligence appears to increase with age (Mayer et al., 2000). In addition to pure and normal maturational factors, several other factors, including attachment to one's caregivers, have been implicated as having a role in the development of emotion-relevant constructs pertinent to EI. Children with healthy attachments to their caregivers are more comfortable expressing their emotions and experimenting with emotions and emotional behavior than children with insecure or avoidant attachment styles, who tend to be more rigid and limited in emotional responses (Saarni, 1997). Similarly, infants and children who are rejected by their caregivers when they try to express emotions learn to minimize their emotions when distressed or in need of comfort in order to maintain contact with their caregivers (Saarni, 1997). This pattern of emotion regulation by means of minimization or suppression is indicative of low EI, and may lead to maladaptive emotional

consequences, such as inaccurate perception of emotion in others. For example, von Salisch (2001) found that children with insecure attachments to their caregivers are more likely to inaccurately perceive the emotions of others as hostile and to consequently behave aggressively toward others.

An additional factor implicated in playing a role in the development of EI in children pertains to both the general family atmosphere fostered by parents and to parental levels of EI. The development of EI seems to be fostered by loving, secure environments, and can be promoted by such factors as emotionally supportive caregivers and stable family environments (von Salisch, 2001). It may be that emotionally intelligent parents are able to raise children who are also emotionally intelligent, perhaps because these caregivers provide emotionally supportive and stable environments for their children, and make available such materials as appropriate learning tools and books (Zeidner, Matthews, Roberts, & MacCann, 2003).

The emotional styles of caregivers influence the development of the emotional styles of children. Saarni (1999) asserts that as early as ten to twelve months of age, children model their emotional-expressive behaviors after those of their caregivers. Furthermore, the attitudes of caregivers, and the emotions they express, have profound effects on the emotional development of children, as evidenced by reports that caregivers who experience a great deal of anger have children who lack appropriate levels of empathy (Denham, 1998) and experience a great deal of anger and defiant emotions and behaviors (Kochanska, Clark, & Goleman, 1997). Further data suggest that non-responsive caregivers have children who do *not* cope adaptively with stress and who, consequently, experience reduced interaction in social situations (Zahn-Waxler et al., 1984). Likewise, caregivers who experience more positive affect and who share that positive affect with their children have children who display greater emotional skills and a more advanced sense of conscience (Kochanska & Murray, 2000).

According to learning theory, the manner in which one responds to his/her environment is due to past experiences within that environment (Lefton, 1997). By reinforcing certain emotional responses, caregivers can influence the types of emotional reactions children utilize by making the reinforced emotional responses more likely to be repeated (Zeidner, Matthews, Roberts, & MacCann, 2003). Caregivers who reinforce adaptive emotional expression encourage the development of adaptive emotional skills, whereas caregivers who reinforce suppression or minimization of emotions teach deviant emotional styles. Caregivers who are responsive to the emotional needs of children, who encourage emotional expression and labeling of emotions, who talk often with their children about emotional states, and who encourage children to engage in emotional discourse in day-to-day activities are reinforcing adaptive emotional responses, and thus have children who are more likely to have high EI skills (von Salisch, 2001). In contrast, children who are raised in homes with non-supportive emotional environments, such as those involving violence, are less likely to possess advanced emotional skills, and children who witness violence and anger tend to either over-regulate or under-regulate their emotions (Cole, Michel, & Titi, 1994). These patterns may, in fact, assist children in maintaining safety within their sub-optimal environments (Rogosch, Cicchetti, Shields, & Toth, 1995), but are not optimal patterns for the development of EI.

Children who are the victims of violence and maltreatment are at extreme risk for maladaptive emotional responses. For instance, fearfulness, anger, and sadness are exhibited at a high rate in three-month-old maltreated babies, as are increased negative emotions and a

reduced range of expression of emotion (Gaensbauer, Mrazek, & Harmon, 1981). Children who have been abused and neglected experience more problems with withdrawal, delinquent behaviors, and social problems than other children, and tend to be more aggressive and have increased levels of anxiety and depression (Maughan & Cicchetti, 2002).

Research on factors associated with the successful development of EI suggests that children require secure attachments to their caregivers, stable family environments, and shelter from violence and maltreatment in order to maximize their emotional skills. Unfortunately, of course, not all children are provided with such emotionally supportive surroundings.

The literature described in this section suggests that constructs relevant to EI may be particularly useful in understanding the normal and/or dysfunctional development of EI in children. Understanding emotional outcomes in children as resulting from different environmental climates during development seems useful in allowing for models to predict varied outcomes associated with later success (e.g., propensity for violence; Maughan & Cicchetti, 2002). To the extent that EI does in fact predict important outcomes in children, it would be useful for researchers to develop indices of EI designed explicitly for younger populations. The current research was designed largely to address this particular issue.

MEASURING EMOTIONAL INTELLIGENCE IN CHILDREN

While past researchers have addressed different aspects of EI in children (e.g., Izard et al., 2001), EI has generally been studied in the context of understanding adult functioning. Thus, the three primary models of EI represented by Mayer, Salovey, and Caruso (see Brackett & Salovey, this volume, Chapter 8), Bar-On (this volume, Chapter 6), and Boyatzsis and Goleman (see Boyatzsis and Sala, this volume, Chapter 7) are chiefly designed as ways of thinking about adults, not children. As such, most research on constructs associated with EI in children have utilized measures that are not primarily conceptualized as EI measures. For instance, in a recent study regarding the predictive utility of emotional abilities in children (studied at both the ages of five and nine years of age), Izard et al. (2001) utilized emotion-recognition and emotion-labeling tasks that the principal investigator had developed earlier (Izard, 1971). These researchers found that preschoolers' who were able to accurately detect emotions in stimuli had higher academic success at age nine, thus providing some evidence that constructs associated with EI are predictive of important life outcomes, even during childhood.

While most research on EI-related constructs in children has utilized measures that are not formally conceptualized as indices of EI, Bar-On (2000) recently designed a scale explicitly designed to measure EI in children. This measure, the EQ-i:YV (the Emotional Quotient Inventory: Youth Version), was, in fact designed with the goal of measuring EI in children. This index, based on Bar-On's EQ-i, focuses on the dimensions underlying EI and Social Competence that Bar-On incorporates in his model (including self-awareness/self-expression, social awareness/interpersonal relationships, emotional management and regulation, and emotional adaptability; see Bar-On, this volume (Chapter 6), for a detailed treatment of this model). This self-report index is designed for children between the ages of seven and 18. It has been normed on more than 9,000 children, and seems to have particularly strong psychometric qualities. Further, scores on the EQ-i:YV are correlated with a variety of

relevant outcomes in predictable directions (e.g., scores on this index were found to be negatively correlated (r s between $-.51$ and $-.54$) with scores on the conduct problem subscale of the Conners-Wells Adolescent Self-Report Scale (CASS; Conners, 1997). At the time of the writing of this chapter, the authors of the MSCEIT were currently developing a youth version of the test. This test may well provide future researchers with a useful alternative for explicitly measuring childrens' ability to perceive, use, understand and regulate emotions.

CONSTRUCTS USED IN CONCEPTUALIZING EMOTIONAL INTELLIGENCE IN THE CURRENT RESEARCH

Given the preliminary nature of the development of valid indices of EI in children, in this research, EI was assessed by using an assortment of indices that pertain to different fundamental aspects of EI. The first construct is alexithymia, a psychiatric condition associated with being unable to evaluate and express emotions (Bagby, Taylor, & Parker, 1994). This construct relates to Mayer and Salovey's (1997) first and third branches of EI (emotion perception and understanding emotions). The construct of alexithymia includes many cognitive and affective characteristics, such as problems identifying and describing feelings, trouble distinguishing between emotions and somatic sensations of emotional arousal, limited imaginal abilities, and cognitive styles which are externally oriented (Nemiah, Freyberger, & Sifneos, 1976). Alexithymics not only lack words for feelings, but also lack verbal and non-verbal symbols for somatic states (Bucci, 1997). These characteristics are indicative of cognitive processing and emotional regulation deficits (Taylor, 2000), and possibly even deficits in the motor-behavioral component of emotional response (Parker, Taylor, & Bagby, 1993). The most commonly used scale for measuring alexithymia is the Toronto Alexithymia Scale, a 20-item self-report instrument that factors into three dimensions pertaining to difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking (Parker, Taylor, & Bagby, 1993).

Alexithymia most likely begins in early childhood, with an arrest in affective development (Taylor, Bagby, Ryan, & Parker, 1990; Krystal, 1988; Lane & Schwartz, 1987). It is not surprising that an association exists between alexithymia and insecure attachment styles (Schaffer, 1993; Beckendam, 1977; in Taylor, 2000), which also arise in early childhood and influence the development of emotional schemas and emotion regulation (Cassidy, 1994; Fonagy & Target, 1997).

In addition to their other difficulties with emotional information, individuals with alexithymia are also described as lacking in empathetic abilities (Parker, Taylor, & Bagby, 1993), another factor important in the measurement of EI. Empathy, the ability to understand the feelings of another person and to experience those feelings oneself, may be the most relevant factor in establishing social relationships and encouraging prosocial tendencies. All four branches of Mayer and Salovey's (1997) model of EI are important in the consideration of empathy. Individuals with high empathetic abilities relate to others in constructive ways, have greater satisfaction with life in general, and experience less stress (Salovey & Mayer, 1990), whereas individuals who have difficulty experiencing empathy may lead lives in constant conflict with others and with society in general. Gibbs (1987) reports that most juvenile offenders have limited and superficial empathetic abilities, and tend to suppress

empathy with aggression or self-centered objectives. Empathetic abilities are also lacking in individuals with a variety of psychopathological disorders (Blair, 1995). As empathy is a central characteristic of emotional intelligence (Salovey & Mayer, 1990), the measurement of empathy in some form or another is necessary for a complete understanding of emotional intelligence in an individual. We used the Mehrabian and Epstein (1972) scale of emotional empathy, which measures emotional responsiveness and is considered to be superior to other scales of empathy (Salovey & Mayer, 1990). The scale has demonstrated high reliability and discriminant validity, and has intercorrelated subscales that have also been found to be significant and reliable (Mehrabian & Epstein, 1972).

Communication of emotion, another significant factor of EI (Mayer & Salovey, 1997), is an element in the ability to experience empathy (Notarius & Levenson, 1979). Fulfilling social interaction depends on one's ability to communicate emotion effectively. An individual who is able to communicate emotions to others is more adept at establishing social relationships, advancing friendships, and promoting the impression that he or she is a very likable person (Denham et al., 1990). Further, individuals who possess the ability to accurately communicate emotion to others are more likely to receive responses from others, which meet the social, emotional, and physical needs of the individuals, producing satisfaction and fulfillment. The Affective Communication Test (ACT) (Friedman, Prince, Riggio, & DiMatteo, 1980), used in this research, measures individuals' self-rated ability to non-verbally express emotion. It has been found to display excellent reliability as a research tool, and has been shown to be valid (Friedman et al., 1980).

Regulation of emotion, the fourth branch of EI (Mayer & Salovey, 1997), involves the ability to modify one's own emotional reactions and those of others, and the ability to reorganize biological, emotional, and behavioral responses (Maughan & Cicchetti, 2002). Proficiency in this fundamental area of EI is vital in preventing detrimental psychological states, which may result from an inability to deal with extreme emotions. The Emotion Control Questionnaire-2 (ECQ2) (Roger & Najarian, 1989), used in the current work, is a 56-item self-report scale that measures emotion regulation. Specifically, this scale taps the four factors of rehearsal, emotional inhibition, benign control, and aggression control. This scale has been shown to be internally consistent and stable, as well as valid and reliable (Roger & Najarian, 1989) in measuring emotional regulation.

UNDERSTANDING EMOTIONAL UNDERPINNINGS OF REACTIVE ATTACHMENT DISORDER

This research is largely designed to follow up on our prior work that described a host of behavioral and dispositional qualities associated with Reactive Attachment Disorder (RAD; Hall & Geher, 2003). Our past study focused on generally non-emotional qualities associated with RAD. The primary purpose of this work is to use an EI framework to measure and describe emotional problems associated with this disorder. RAD is conceptualized as a childhood disorder characterized by a host of maladaptive emotional responses and behaviors, including the inability to form loving relationships with others (Reber, 1996). The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association,

1994) specifies that RAD has an onset occurring before the age of five years, although RAD can be diagnosed in infants as young as one year of age (Richters & Volkmar, 1994).

RAD is generally thought to be the result of pathogenic care in infancy, typically abuse or neglect. However, RAD can be preceded by other experiences in a child's life which prevent the development of a secure, loving attachment with a primary caregiver, such as severe unrelieved pain or frequent changes in primary caregiver (Reber, 1996). The lack of attachment with a primary caregiver may lead to a disruption in the processes of growth and development in children due to psychological repercussions of the absence of a secure attachment with a primary caregiver (Derivan, 1982; Tibbits-Kleber & Howell, 1985).

The maladaptive behaviors exhibited by children with RAD are the most easily recognizable features of RAD. The social-behavioral manifestations of RAD include indiscriminate affection with strangers, yet rejection of affection from family members (Reber, 1996), impairment in appropriate social responsiveness (Richters & Volkmar, 1994), chronic lying and "crazy lying," which is lying when there is no evident reason to lie (Parker & Forrest, 1993). Children with RAD also engage in destruction of property, hoarding and gorging of food, refusal to make eye contact with others, frequent and unnecessary thefts, and cruelty to animals and to other people (Parker & Forrest, 1993; Reber, 1996). These children often display an obsession with fire, blood, and gore (Parker & Forrest; Rayfield, 1990; Reber, 1996), as well as poor impulse control, overactivity, abnormal patterns of speech, developmental delays, promiscuity and inappropriate sexual activities with themselves and other children (Kirschner, 1992; Rayfield, 1990; Reber, 1996; Tibbits-Kleber & Howell, 1985). According to Magid and McKelvey (1987), children with RAD seem to lack a conscience due to the apparent inability to experience remorse or regret for their behaviors. Hall and Geher (2003) found that children with RAD clearly experience behavior and personality problems which are more violent, more intense, and more detrimental than children without RAD. For instance, social problems, withdrawal, somatic complaints, anxiety and depression, thought problems, attention problems, delinquent behavior, and aggressive behavior are found to be manifested at higher rates and higher intensities by children with RAD. Further, children with RAD are less empathetic than children without RAD (Hall & Geher, 2003).

With all of the detrimental aspects of behavioral and social functioning that are associated with RAD, one would hypothesize that children with RAD may possess fewer EI skills than children who do not have RAD. Specifically, children with RAD may have more trouble than other children recognizing emotion, communicating emotion, regulating emotion, and feeling empathy.

Goals of the Current Research

This work is designed to explore emotional skills in children with RAD using elements of Mayer, Salovey, and Caruso's (2000) conceptualization of EI as a theoretical backdrop designed to synthesize findings and provide a heuristic function by supplying future researchers with a model for examining EI to understand disorders of childhood. Past research addressing constructs related to EI in children (e.g., emotion recognition (Izard et al., 2001) has found that low scores on indices of constructs related to EI are associated with both academic and social problems across development. RAD children present a special case for

exploring such a pattern as these children are characterized as particularly deviant regarding appropriate social behaviors (Hall & Geher, 2003). Thus, studying EI indices in RAD children should provide a strong test of whether EI is, indeed, a relevant predictor of social/emotional functioning during childhood.

Method

Participants

Participants included primary caregivers of 45 children with RAD and primary caregivers of 18 children without RAD. These primary caregivers completed questionnaires to measure EI skills in their children. Informed consent and debriefing were provided to each participant.

Categorization of the children as having RAD or not having RAD was based on diagnoses by professional psychologists. Children whose caregivers affirmed that the diagnosis of RAD had been made by a licensed psychologist were considered to have RAD for the purposes of this study, whereas children who had no such diagnosis were categorized as not having RAD.

The ages of the children with RAD whose caregivers participated in the current research ranged from 6 years to 17 years ($M = 10.91$, $SD = 3.09$), and the ages of children without RAD whose caregivers participated in the current research ranged from 4 years to 17 years ($M = 11.17$, $SD = 4.15$). The mean ages of the two groups of participants were not significantly different ($t(61) = .27$, *ns*). Of the children with RAD, 20 were girls and 25 were boys. Of the control participants, 11 were girls and 7 were boys.

The caregivers of the children with RAD consisted of 36 adoptive parents, five foster parents, and 1 biological parent. Of RAD caregiver responders, three reported 'other' with regard to parental status. Of the caregivers of the children without RAD, eight were adoptive parents, one was a foster parent, and nine were biological parents. This pattern of parental status as a function of RAD status was found to demonstrate significant dependence across these two categorical variables ($X^2(3) = 22.43$, $p < .05$); in other words, children with RAD were more likely than control children to come from non-traditional family backgrounds.

Recruitment

Requests for referral of potential participants were made to support groups for children with RAD, therapists, and social service agencies. Caregivers who had heard about the research also made referrals to other potential participants. All necessary documents were mailed to those who expressed interest in the research. Participants were of diverse backgrounds, and resided throughout the United States. As there was no central organization for caregivers of RAD children, this type of participant recruitment and research design was necessary, and has been utilized in previous research (e.g., Hall & Geher, 2003) with special populations.

A large majority of the caregivers who expressed interest completed the research requirements. Caregivers who had not completed the research indicated that the children had been moved to other foster/adoptive homes, or were receiving intense treatment that could affect their behaviors and make it very difficult to accurately respond to the questionnaires of this research.

Materials

Indices of EI included the Toronto Alexithymia Scale (TAS-20) (Bagby et al., 1994) which provides both a total score (with higher scores corresponding to more alexithymia) and three subscale scores including difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking. Caregivers answered 20 questions using a 5-point Likert scale (anchored at 1 corresponding to "not describing the child at all" and 5 corresponding to "describing the child very well").

Emotional Empathy (QMEE) (Mehrabian & Epstein, 1972) was used to tap caregiver perceptions of children's empathy levels. The items from the QMEE were presented on a 9-point Likert scale (anchored at -4 corresponding to "not describing the child at all" and +4 corresponding to "describing the child very well").

The Affective Communication Test (ACT; Friedman et al., 1980) was employed to assess caregivers' perception of children's ability to effectively communicate emotional stimuli. The ACT used the same 9-point response format used for the QMEE.

Finally, the Emotion Control Questionnaire 2 (ECQ2; Roger & Najarian, 1989) was employed. This scale, which uses a true/false format, has several subscales including control of aggression, benign control (i.e., control over non-aggressive, everyday behaviors), emotional inhibition, and rehearsal of emotion-relevant cognitions. The wording of the scales was modified to correspond with caregivers' perception of their children, rather than behaviors of the caregivers themselves. For example, the item on the ECQ2 which reads "If someone were to hit me, I would hit back" was modified to read "If someone were to hit your child, s/he would hit back."

Procedure

Caregivers who expressed interest in the present research were mailed packets, which contained a cover letter, informed consent, the set of questionnaires used in this research, and a sealed envelope containing the debriefing form. Completion of the questionnaires required approximately 30 minutes. Because of the extensive geographical range of the participants, the researchers did not monitor the participants while they completed the questionnaires. Participants, however, were clearly instructed to carefully and accurately respond to each item and to open the debriefing envelope only after they had finished with the questionnaires.

In this study we had the caregivers rate the EI skills in their children rather than collecting self-report data directly from the children for three key reasons: first, many of the children were very young and many lacked necessary verbal comprehension skills; second, some caregivers were not comfortable with their children participating in the data collection process; and third, results of previous research indicate that RAD children may engage, to a greater extent than children without RAD, in specific, systematic attempts to present themselves in a more socially desirable manner than their actual behaviors warrant (Hall & Geher, 2003).

Results

Analyses were generally designed to examine differences between RAD and non-RAD participants in each of these affective variables. Overall, 10 EI-relevant dependent variables were included in this research. Given the sample size, between-group t-tests for each

dependent variable (controlling for Type I Error using a Bonferroni correction) were computed to test the primary hypotheses that RAD participants would score lower in each EI-relevant outcome variable compared with non-RAD participants. We also computed effect size estimates (η^2) for each between-group contrast show how much variability in scores for each dependent variable were attributable to variability in the grouping variable.

For each dependent variable, means, standard deviations, *t* values, and effect sizes are presented in Table 1. Given the large number of contrasts, a Bonferroni correction was employed to reduce the effects of Type I Error. As 10 *t*-tests were computed, obtained *ts* needed to be associated with *p* levels of .005 or less as opposed to .05. Using this strict criterion, 9 out of 10 *t*-tests were judged to be statistically significant (see table). All effects were in the predicted direction: RAD participants scored significantly higher in each of the four indices of alexithymia and higher in the rehearsal and inhibition subscales of the ECQ-2 compared with control participants. Further, RAD participants scored lower than control participants in empathy, control of aggression, and control of impulses. No significant difference was found for scores corresponding to affective communication ability (this effect was marginally significant, corresponding to a non-corrected one-tailed *p* value of .008).

Table 1. Descriptive Statistics and Effect Size Estimates Corresponding to Scores on 10 Emotion Intelligence (EI) Indices between Participants Diagnosed with Reactive Attachment Disorder (RAD) and Control Participants

EI Indices	RAD Group ⁵		Non-RAD Group ⁶		<i>t</i>	η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Alexithymia ¹						
Total Alexithymia	81.67	11.06	39.72	13.59	12.73*	.72
Difficulty Identifying Feelings	26.87	5.61	11.83	5.23	9.79*	.61
Difficulty Describing Feelings	21.91	3.36	8.89	3.92	13.25*	.74
External Thinking	32.89	5.22	19.00	6.14	9.07*	.56
Empathy ²	139.16	43.04	238.44	41.48	8.36*	.53
Affective Communication ³	65.98	19.62	78.44	13.49	2.47	.09
Emotional Control ⁴						
Rehearsal	10.24	4.36	5.06	2.58	4.71*	.27
Emotional Inhibition	8.31	4.56	3.00	1.91	4.76*	.27
Aggression Control	2.40	3.49	9.00	4.31	6.33*	.40
Impulse Control	2.56	3.22	9.06	4.15	6.66*	.43

p < .05 using one-tailed independent means *t*-tests with a Bonferroni Correction; ¹Taylor Alexithymia Scale (Bagby, Taylor, & Parker, 1994); ²Questionnaire Measure of Emotional Empathy (Mehrabian & Epstein, 1972); ³Affective Communication Test (Friedman, Prince, Riggio, & DeMatteo, 1980); ⁴Emotional Control Questionnaire 2 (Roger & Najarian, 1989); ⁵*N* = 45; ⁶*N* = 18

In addition to demonstrating that differences between RAD and non-RAD children were significantly larger than would be expected by chance, we were interested in examining effect sizes in a more absolute manner. Thus, for each dependent variable, we computed an η^2 . This statistic provides an estimate of the percentage of variability in some dependent variable that may be attributed to differences between groups. As can be seen in the Table, several of the effects were quite large, suggesting large between-group differences in an absolute sense (mean η^2 was .46). For instance, for total scores on the alexithymia measure, η^2 was .72

suggesting that approximately 72% of variability in alexithymia scores in this sample can be attributed to whether participants were diagnosed with RAD.

Discussion

The results indicate that children with RAD differ significantly from children without RAD in the skills that underlie EI as assessed by their caregivers. Specifically, caregivers of children with RAD as opposed to caregivers of children without RAD report that their children have less control of emotional aggression, less benign control of emotions, greater alexithymia, and greater tendencies toward emotional rehearsal. Additionally, caregiver ratings indicate that RAD children are less empathetic and less competent in non-verbal expression of emotions.

These findings have implications for understanding EI in children. The results suggest that children who lack attachment with a primary caregiver, as do children with RAD by definition, may not be developing EI skills at the same level as their peers who have lasting bonds with primary caregivers. The lack of success in social, academic, and career achievement that has been found to characterize children with RAD as they grow into adults may have underpinnings in their lack of EI. The current work provides a first step in research designed to explore this relationship.

The results suggest that children who are allowed to develop bonds with caregivers have advantages in the development of EI skills, and thus an advantage in life. Children who do not develop loving attachments to others during infancy and come to develop the characteristics associated with RAD have lower levels of EI, and their achievement of life success may be thereby hindered.

The results presented here also have important implications regarding the utility of the EI construct in understanding psychological disorders. Recently, Matthews et al. (2002) argued that EI is generally too broad a construct to lead to the development of useful tools in understanding psychological disorders. These authors argue that conceptions of EI that are particularly broad are especially likely to have little power regarding the description and prediction of psychological disorders. For instance, the model of EI put forward by Boyatzis and colleagues (e.g., Boyatzis & Sala, this volume, Chapter 7) proposes 18 distinct competencies that underlie EI ranging from concepts such as self-confidence to the ability to build bonds with others. Matthews et al. (2002) suggest that narrower constructs, such as alexithymia, are in fact more likely to accurately describe the specific disorders that have been described by psychologists.

Mayer et al.'s (2000) conception of EI, on the other hand, is considerably narrower than that of Boyatzis, while concurrently being broad enough so as to include multiple inter-related facets (e.g., 'emotional understanding' and 'emotion management'). The current work, which uses indices of multiple constructs that ultimately tie into Mayer et al.'s (2000) framework, suggests that EI as conceptualized here is in fact a useful predictor of the particular disorder being addressed in the current work (RAD). In fact, all EI-relevant facets included in the current work (not exclusively the factors associated with alexithymia) discriminated between RAD and control children. This fact suggests that this construct, operationally defined as it is in the current work, may in fact be conceptualized at an optimal (and useful) level of breadth. More generally, the predictive utility of the relatively broad EI construct in the current work

suggests that EI may in fact be a more useful construct for understanding psychological disorders than critics of EI, such as Matthews et al. (2002) would lead readers to believe.

IMPLICATIONS FOR THE MEASUREMENT OF EMOTIONAL INTELLIGENCE IN CHILDREN

The findings presented here have clear implications regarding the utility of methods to assess EI in children. Simply, these data indicate that measures of psychological facets of children that pertain to EI have the potential to yield rich and important findings regarding psychological outcomes of children. The findings also suggest that the battery of tests used in this research to operationally define elements of EI had extraordinary predictive power in determining which participants were RAD versus non-RAD individuals. With that said, we must acknowledge that these tests likely fall short in their predictive utility compared with potential future tests of EI in children. The tests here had at least two qualities that could dramatically be improved upon in future research. First, the tests were perception-based (i.e., self-report) as opposed to performance-based. Further, while these tests in combination serve to tap several features of EI (e.g., affective expression), these tests were not explicitly *designed* with current conceptualizations of EI in mind. An advantage of this study, however, is that observer reports of individuals who are close to the targets (i.e., the caregivers of the children), were employed as opposed to the children's self-reports.

As indicated prior, measures of EI in children are largely still in the development phase. Thus far, Bar-On's (2000) EQ-i:YV serves as perhaps the most thoroughly examined index of EI designed explicitly for younger populations. While this test has demonstrated clear reliability and validity in a number of regards, it is still a self-report index and, as such, it may not be able to capitalize on the benefits of ability-based measures such as objective measurement and freedom from social desirability response bias. It seems that it would be beneficial to future researchers to develop effective ability-based indices of EI for children; such ability-based measures in particular seem to be absent with regard to measuring EI in children.

A potential example of an ability-based measure of EI in children can be seen in recent work by Izard et al. (2001). These researchers provided strong evidence regarding the utility of an emotion knowledge test developed by Izard (1971) earlier for research on emotional understanding in children. This test requires children to point to pictures of facial expressions that match examiners' descriptions of targets' emotions. *Correct* answers in this test are uniform and objective and are not consensus-based as are *correct* answers with the MSCEIT. Such a scoring procedure may well reduce the likelihood that responses covary with general consensual response tendencies. Perhaps tests of EI in children would benefit from adapting such measurement techniques that include objective answers, are ability-based, and are not necessarily as directly based on the often-used consensus scoring method.

LIMITATIONS AND ISSUES PERTAINING TO FUTURE RESEARCH

This research was designed to examine the perception of emotional abilities in children across a wide range of ages, to examine the utility of indices of EI in children as a predictor of

the diagnosis of RAD, and to discuss general issues regarding the measurement of EI in children. The benefit of inclusion of the wide age range in the sample included here is a relatively comprehensive assessment of emotional intelligence across stages of childhood. However, limitations exist in that it is not possible to research specific EI skills at the age in which they are developing. A more narrow age range would allow researchers to determine if EI skills in children of a certain age are developing at different rates for children with RAD versus children without RAD.

This research described differences between children with RAD and children without RAD in terms of emotional abilities associated with current conceptions of EI. The actual causes of the differences are yet to be determined. Children with RAD tend to not be living with their biological parents due to abusive and/or neglectful situations, whereas children without RAD by and large reside with at least one of their biological parents and have not experienced abuse or neglect. The current research is unable to determine whether poor emotional skills found in children with RAD are the result of the abuse/neglect they have experienced, the non-traditional living arrangements (living with foster and/or adoptive families who are at one point strangers to the children, and must learn to know and to love them, as opposed to families whose children are born to them who know their children from birth and love them from an early age), the stress of abuse/neglect and having had multiple caregivers, or any of a number of other possible differential factors between children with RAD and children without RAD.

The role of developmentally appropriate materials in the environment of the children as they are growing is not addressed by the present research, nor is the type of parenting to which the children have been exposed. Books, emotionally appropriate learning situations, and EI of the caregivers may all contribute to the EI of the children. Future research should address these issues to further our understanding of EI as a predictor of outcomes associated with childhood.

The present research also did not address potential caregiver biases. It is possible that caregivers of children with RAD perceive their children as having poor emotional skills due to their knowledge of the disorder and the usual symptoms, rather than due to the actual behaviors or emotional functioning of the children. Assessment of possible caregiver bias would have provided greater confidence in the results we obtained. With the development of more valid, comprehensive, and developmentally appropriate indices of EI in childhood, future research should be able to more fully exploit the utility of EI as a predictor of important outcomes in childhood.

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