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THE DEVELOPMENT AND VALIDATION OF THE EMOTION KNOWLEDGE

AND AWARENESS TEST

A Dissertation Presented

By

CATHERINE A. ROSSI

Submitted to the Graduate School of the
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School Psychology Program

THE DEVELOPMENT AND VALIDATION OF THE EMOTION KNOWLEDGE

AND AWARENESS TEST

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DEDICATION

Fondest regards to my family, who never stopped believing in me from day one (or the

birthday when I refused to turn nine).

ACKNOWLEDGEMENTS

"Failure is not an option." This Gene Kranz statement from *Apollo 13* has always been one of my favorite quotes; but it feels especially relevant when thinking about my dissertation and overall graduate school experience. Without the support of my professors, friends, and family I would not be in the position that I am today. However, there are certain individuals who made up the rest of my "mission control team" that deserve extra recognition.

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ABSTRACT

THE DEVELOPMENT AND VALIDATION OF THE EMOTION KNOWLEDGE

AND AWARENESS TEST

MAY 2016

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The purpose of this study was to develop, test, and pilot a general outcome measurement tool that will allow educators to test young children's knowledge of factors of emotional development: emotional identification and fluency, understanding situations where multiple emotions are present, understanding that others may feel differently in situations, and emotional regulation (CASEL, 2014). There are few assessments that reliably measure emotion knowledge in early elementary grades. The Emotion Knowledge and Awareness Test (EKAT) has been developed for kindergarten through second grade students to measure emotion awareness across two domains: knowledge and management. It was developed as a pre/posttest assessment to measure levels of emotion knowledge and strategy gains associated with social-emotional learning curricula. Practitioners will learn about the content validation processes and initial piloting of the EKAT.

The Emotion Knowledge and Awareness Test (EKAT) was developed to fill a void that currently exists in the field of social-emotional learning assessments.

Practitioners have voiced the need for specific curricula and related assessment tools that identify and measure what social-emotional skills early elementary school-aged children know and what skills still need to be taught (Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001). The current study focused on developing and validating one of the first emotion knowledge measures targeted specifically at students in grades kindergarten through second.

The development, initial pilot, and analysis of the Emotion Knowledge and Awareness Test (EKAT) took place over four distinct phases. Phase One included item development and informal content validation with practitioners. In order to develop the items, the principal investigator trained her research team on the steps for item generation. Phase Two included content validation of the EKAT from a panel of experts in the fields of child development, psychology and education as well feedback from practitioners. The third phase included a pilot study of the EKAT with a diverse population of students throughout Western Massachusetts. The final analysis phase of the EKAT included a classical test theory analysis to eliminate items with poor discrimination and an exploratory and confirmatory factor analysis to measure how the items fit into the knowledge and management domains.

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CHAPTER I

INTRODUCTION, BACKGROUND, AND PURPOSE

Social-emotional competence in childhood is complex and composed of skills and knowledge that stem from the emotional, cognitive, and behavioral domains of development (Domitrovich, Cortes, & Greenberg, 2007). To help children access such skills and knowledge, it has become increasingly common for social-emotional learning (SEL) curricula to be taught regularly within Pre-K-12 schooling. These programs have been designed to teach students how to acquire and effectively apply the knowledge, attitudes, and skills necessary to understand and manage emotions; set and achieve positive goals; feel and show empathy for others'; establish and maintain positive relationships; and make responsible decisions (Collaborative for Academic and Social Emotional Learning; CASEL, 2014). Many of the curricula being implemented particularly those that target young children do not have accompanying assessments to measure the skills being taught, such as knowledge of emotions and strategies for managing strong emotions. Furthermore, measuring such skill gains is difficult given the complexity of the content and the rapid social-emotional growth of children in early grades.

The Problem

Emotion knowledge is one's ability to define and label emotions in oneself and in others (Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001). Cole, Martin, and Dennis (2004) wrote that there is no "gold standard" methodology for measuring emotions and emotion knowledge. They do note though that it is critical for researchers in this area to ensure that constructs of measurement are articulated and well defined. Currently, there are many outcome measures and student surveys available for late elementary through high school students that reliably measure student levels of emotional awareness and development. This is done through

self-report, surveys, and other standardized measures. However, there are very few assessment tools available that reliably measure these same factors in young children, specifically those in early elementary grades.

Carter, Briggs-Gowan, and Davis (2004) identified four factors that can be attributed to the lack of research available on the emotion knowledge of young children: rapid developmental transitions and growth in early childhood; lack of guidelines for integrating multiple data sources; limited information for determining impairment levels both within the child and within the family system; and difficulty assessing the child within relevant relational contexts. Additionally, most of the current research body has been focused on the development of non-normative and pathological behaviors rather than pro-social behaviors (Caldarella & Merrell, 1997; Carlo & Randall, 2001; Cummings, Kaminski, & Merrell, 2008). Practitioners have voiced the need for specific curricula and related assessment tools that identify and measure what social-emotional skills children know and what skills still need to be taught (Izard et al., 2001).

Some of the measures currently available today have been designed specifically for early childhood (e.g. preschool children) or late elementary school and beyond, leaving a void of assessments to measure emotion knowledge in young elementary school students. A few studies have attempted to define social competence in kindergarten children by asking teachers to identify academic survival skills (Agostin & Bain, 1997; Finkelstein, 1982; Foulks & Morrow, 1989) or by studying children with behavioral problems (Vaughn, Hogan, Lancelotta, & Shapiro, 1992). There are also few measures that distinguish between the measurement of symptoms and the measurement of emotion skills for this age of students. Tools that measure symptoms are often in behavioral rating forms and are completed by parents and teachers, such as the Child Behavior Checklist (CBCL, Achenbach, 2001). A school counselor or school psychologist often

administers these measures when a student is referred for emotional or behavioral concerns. What continues to be sorely lacking are accurate, reliable, and valid assessments that measure a young elementary school student's current emotion knowledge levels. Such a tool could be used to assess student current understanding of their emotions, the emotions of others, and the management of emotions. These assessments could better inform the development and implementation of SEL interventions.

The focus of the current study is to develop a feasibly administered general outcome measure that will allow educators to accurately and reliably measure a child's emotional competency: including knowledge of emotions, both within themselves and others, across a range of situations. It will also target a child's understanding of how to manage emotions across various situations. This tool will be designed specifically for young elementary school students between grades kindergarten through second. Researchers have long been interested in measuring emotion knowledge for this age range of students but a few of the early measures were misunderstood to be measures of empathy (Borke, 1971; Iannotti, 1985). Additionally, researchers were hesitant to develop an assessment at the risk of underestimating the abilities and knowledge of young preschool and kindergarten children due to complicated instructions or reliance on a child's verbal ability (Cassidy, 1992; Gove & Keating, 1979; Reichenbach & Masters, 1983).

Emotional Competency

Emotional competency is a broad construct, which encompasses the understanding and regulation of emotions, capacity for empathy, and the ability to adapt in distressing situations (Saarni, 1999). It is also associated with attention, inhibitory control, and problem solving (Blair, 2002). Emotion knowledge and emotional competency are clearly key components of a child's

development. Through direct instruction, educators can help children develop emotion

knowledge by teaching about emotion recognition and emotion vocabulary. This can serve as a

prevention technique to prepare children to handle more complex aspects of emotional

competency and varying situations involving the experience of confusing emotions or multiple

emotions.

Emotion Knowledge

Emotion knowledge is one aspect of a student's emotional competency. Izard, and

colleagues (2001) define emotional knowledge as one's ability to define and label emotions in

oneself and in others. Researchers argue that emotion knowledge is the foundation for

developing strong social relationships and emotional communications (Bandura, 1986; Hobson,

1993; Izard, 1971; Izard et al., 2001). Constructs, such as emotion knowledge, are not directly

observed, but instead are theoretical concepts derived from research and other experiences that

have been developed to explain observable behavior patterns (Gallagher, 1998). Understanding

children's levels of emotion knowledge can help teachers, school psychologists, and counselors

target lessons and interventions to support students' further skill acquisition and practice.

Emotion knowledge can also help serve as a protective buffer against potential

internalizing and externalizing symptoms**.** Both Schultz, Izard, Ackerman, and Youngstrom

(2001) and Fine, Izard, Schultz, and Ackerman (2000) found that emotion knowledge positively

relates to social adaptive behavior and negatively relates to measures of internalizing behaviors

such as teacher reports of depression and social withdrawal, and child self-reports of anxiety,

hopelessness, and loneliness. There are few measures that actually target this construct. Once a

teacher or school support staff has identified a student or class' level of emotion knowledge,

these results can be used to create an instructional plan that aims to minimize the potential

internalizing or externalizing risk factors students might face and to increase social competency.

Teaching emotion knowledge skills can help children who enter school already having been exposed to risk factors such as poverty, abuse, or neglect (Raver, Izard, & Kopp, 2002). The National Center for Children in Poverty (NCCP) has identified seven specific risk factors as being the most prevalent in the United States: households without English speakers, teen mothers, single parents, large families, low or lack of parental education, residential mobility, and unemployed parents (Robbins, Stagman, & Smith, 2012). Exposure to such environmental risk factors may mean that students are entering school with limited emotion vocabulary or emotion knowledge skills (Pungello, Kainz, Burchinal, Wasik, Sparling, Ramey, & Campbell, 2010). These risk factors are predictors of social behavior, attentional control, academic competencies, and self-reported internalizing symptoms later in elementary school (Izard et al., 2001). Furthermore, children affected by multiple risks, considered to be three or more risk factors, are the most likely to experience school failure and other negative outcomes, including maladaptive behavior (Pungello, et al., 2010). Ideally, through early preventative teaching about emotions, students will develop strategies to minimize potential risk factors.

Teaching emotion vocabulary plays a large role in helping to develop a child's emotion knowledge skills because it sets the foundation for more complex skills (Domitrovich, Cortes, & Greenberg, 2007). These skills can potentially include: identifying multiple emotions happening simultaneously within oneself, identifying emotions in others, and knowing how to react when different emotions are occurring. It may be more difficult for children to identify emotions in others unless they can already label which emotion(s) they are feeling.

Once a child can identify basic emotions within himself/herself and others and appraise social situations, the child can use these skills to manage and regulate feelings and to develop

coping skills. These are skills that develop over time because young children (specifically

grades kindergarten through second) are still concrete thinkers, meaning they have not yet

developed the skills necessary to think abstractly or symbolically (Merrell, Parisi, & Whitcomb,

2007).

Self-Regulation

Aside from emotion knowledge, one of the biggest components of emotional competency

is self-regulation, the ability to gain control of bodily functions, manage powerful emotions, and

maintain focus and attention (Shonkoff & Phillips, 2000). Self-regulation is essential for

positive social behavior and includes skills such as the ability to take others' points of view and

think through problem situations (Raver, Blackburn, Bancroft, & Torp, 1999; Rudolph & Heller,

1997; Youngstrom et al., 2000). Children develop self-regulation skills from infancy as they

learn to self-soothe and self-distract while waiting for parental attention (Cole, Martin, & Dennis,

2004). As they grow older, children begin to learn more complex forms of self-regulation such

as emotion regulation and control.

Part of self-regulation includes skills in appraising situations as one encounters them.

Arnold first described appraisal in 1960, defining it as the process of appreciating the specific

significance of a situation, or perception or representation of a situation, for individual well-

being. Children can learn to appraise situations to identify emotions within specific contexts and

environments (Frijda, 1986). Before a child can learn to appraise a situation for particular

emotions, children must first be taught the necessary vocabulary in order to define emotions.

Most emotion theorists have agreed that there is a basic set of emotions (Izard, 1977; Shaver,

Schwartz, Kirson, & O'Connor, 1987); however, there is considerable variability within the

research as to which specific emotions are considered basic emotions (later addressed in Chapter

2). This could be attributed to how people categorize emotions. It also raises the question of, "if the research agrees that there is a select group of basic emotions, why are there hundreds of emotion names in modern lexicon (Averill, 1975)?"

This concept is important to keep in mind as one thinks about how to teach coping strategies to young children in order to handle various emotions. Teaching a range of coping skills to a child is equally as important as teaching a range of emotions. After a child has been taught the necessary vocabulary, these terms can be defined and applied to a range of coping strategies. These strategies can then be used to help aide in the development of a child's emotion regulation and self-regulation skills across settings. This is because an emotional response to one specific emotion might not be applicable across multiple settings. For example, when teaching young children about reacting to the feeling *happy,* a teacher might tell a class of students that when they are outside it is appropriate to cheer and yell, but within the classroom students can use a silent cheer by waving their hands in the air instead.

Students need to learn a range of coping skills in order to appropriately react to situations. Children may be affected differently and may feel a range of emotions in the same scenario. These situations occur frequently; for example, imagine a child who is playing on their first sports team. There are winners and losers during each game; a child would need to know how to handle the emotions associated with winning and losing in order to be prepared for either outcome of the game. Additionally, as an example, teaching a child about watching their favorite sports team lose a game might elicit different emotions than if the child was playing on the losing sports team. The same *sad* emotion might be present within both situations, but the coping strategies being used would likely be different for each scenario.

Assessing Young Children

As mentioned earlier, there are many limitations to assessing emotion knowledge and management in young children. A major limitation is that unlike academic learning, social and emotional learning is not often a linear process. While researchers such as Piaget have identified and established stages of growth and development, they are limited in what they report in regards to development of emotion knowledge. In general, assessing young children, particularly those in grades kindergarten through second, is very different from assessing older children. This is due to a number of variables including but not limited to, lack of language skills, lack of reading skills, and inability to sustain attention over long periods of time.

Academic assessments for young children are now commonplace within schools, but use of these assessments with young children still include the same challenges mentioned earlier in the chapter. In 1991 the National Association of Educators of Young Children (NAEYC) published "Guidelines for Appropriate Curriculum Content and Assessment in Programs Serving Children Ages 3 Through 8" (Bredekamp & Rosegrant, 1992). The Guidelines stated that assessments should bring benefits to children or data should not be collected at all. Specifically, this refers to data that may recommend that a child be excluded from a program, retained in a grade, or assigned to a separate or segregated group based on ability or developmental maturity. Instead, the Guidelines outline three legitimate purposes for assessing young children: to plan instruction and communicate with parents, identify children with special needs, and to evaluate programs (Bredekamp & Rosegrant, 1992; Shepard 1994). These guidelines are still in place today.

Another guiding principle was that the methods of assessment must be appropriate to the development and experiences of young children (Bredekamp & Rosegrant, 1992). Additionally, the assessment itself should be consistent with what a child of that age might have already been

exposed to or experienced. This idea is critical when creating scenarios or vignettes for children to answer questions. A child will not be able to answer a question based on an experience they might not have encountered. Specifically, this idea is important because young children age three through eight still think in a very concrete and linear fashion and might not have developed the skills to apply one emotion or skill into a different scenario (Merrell, Parisi, & Whitcomb, 2007).

If an educator has concerns about a young child's emotional development, she will often turn to the parent for potential answers before creating a plan of action. Parents can give more reliable reports of their child's needs then the actual child. Most of the current available measures for children are formatted as semi-structured interviews (see Emotion Knowledge and Emotion Intelligence Measures in Chapter 2). There are very few available assessments that measure a young child's levels of emotion knowledge that are not interview-based.

In order to create a non-interview tool to accurately assess a child's level of emotion knowledge developers must take into account the potential limitations. As mentioned earlier Carter, Briggs-Gowan, and Davis (2004) identified several challenging factors that make it difficult to measure emotion growth in young children. Three of the most relevant factors will be elaborated on here: First, the rapid developmental growth of children. Many behaviors that are considered 'clinically relevant' at older ages may be manifestations of normal development when they appear in early childhood, such as refusing to complete an assignment because they decided they did not like a specific academic topic that day. Given the rapid shifts in development in the earliest years of life, it is important both to ensure that behaviors assessed are developmentally appropriate and to test whether clusters of behaviors demonstrate age invariance or are similarly associated across the age span of interest.

Second, there are challenges to integrating multiple data sources to inform decision-making when the child is not being interviewed or assessed. It is important for those making the decisions about a child to ensure they are receiving data from accurate sources. Specifically, there might be an aspect of bias from the reporting party (either parents or a teacher) when an adult is interviewed or asked to complete a questionnaire on a child's symptoms. This is important to consider as an argument on why a stand-alone measure of emotion knowledge is needed. By speaking to the child about their levels of emotion knowledge, educators will have one data source specifically from the child's point of view as part of a multi-source assessment process.

The final challenge is to remember to look at emerging behaviors within context. There is consensus among researchers and clinicians who assess early emerging social-emotional and behavioral problems that children must be evaluated within their caregiving contexts (Clark, Tluczek, & Gallagher, 2004). This will ensure that the child's specific struggles are being observed and assessed in relation to other factors in his or her life.

<u>**Social Emotional Learning**</u>

The field of social emotional learning (SEL) evolved out of the prevention science and resiliency research as a way to meet students' mental health needs while building emotional competencies. SEL has been shown to be critical to children's success in school, both academically and socially (Greenberg et al., 2003; Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Payton et al., 2008). The Collaborative for Academic and Social-Emotional Learning (CASEL) has identified five core learning competencies of SEL: self-awareness, the ability to accurately assess personal feelings and strengths; self-management, the ability to handle emotions in a productive way; social awareness, the ability to understand others'

perspectives; relationship skills, the ability to build lasting relationships over time; and responsible decision making, learning to problem solve and understand social situations (CASEL, 2014).

Teaching SEL is especially important at the pre-school through early elementary school level. Many research studies have shown that children entering kindergarten with higher levels of social emotional competencies adjust better and develop more successful positive attitudes about school and also have higher levels of academic achievement (Birch, Ladd, & Blecher-Sass, 1997; Ladd, Birch, & Buhs, 1999; Ladd, Kochenderfer, & Coleman, 1996). When students enter school with friends and have the abilities to make friends and maintain relationships, they enjoy a more positive school experience both socially and academically. This can ensure positive social-emotional interactions with teachers and peers (Denham, 2006). Conversely, students who are victims of bullying or are having trouble transitioning to school routines may have or develop deficits within social-emotional domains that can later lead to a wide range of problems such as academic struggles, delinquency, or even possible drug abuse (Gagnon, Craig, Tremblay, Zhou, & Vitaro, 1995; Haapasalo & Tremblay, 1994; Kochenderfer & Ladd, 1996).

Social emotional learning curricula can help build and foster these core learning competencies in young children so they develop successful academic and relational skills. SEL instruction can be seamlessly fused with academic learning so the skills being taught can be coordinated and support each other (Zins, Bloodworth, Weissberg, & Walberg, 2004). By teaching these groups of skills simultaneously, students are practicing CASEL's five core learning competencies in all facets of their education. The concepts are also applicable to life outside of school, allowing parents or guardians to reinforce and practice these strategies at home with their children.

The EKAT and Strong Start

Merrell, Parisi, and Whitcomb (2007) developed the *Strong Start* social-emotional learning curriculum as the early childhood component of *Strong Kids*: *A Social and Emotional Learning Curriculum* (Merrell, Carrizales, Feuerborn, Gueldner & Tran, 2007). The program has roots in prevention theory ensuring that it is comprehensive, driven by theory, develops positive relationships between teachers and students, and has clear goals and objectives all in order to build resiliency (Nation, Crusto, Wandersman, Kumpfer, Seybolt, Morrissey-Kane, & Davino, 2003). *Strong Start* was designed to focus on the following three points: a developmentally appropriate social emotional learning curriculum to be administered by teachers and staff of pre-kindergarten through second grade students; a non-resource intensive curriculum that builds on materials teachers already have in their classrooms; and a direct and explicitly worded curriculum to teach children skills and strategies to use throughout their school day (Whitcomb & Merrell, 2012).

The curriculum is broken down into ten lessons focused on teaching young children how to understand both simple and complex emotions, ranging from happiness to anger, worry, and anxiety. Lesson objectives aim to teach emotional knowledge and management skills by showing children how to identify body, facial, and situational cues for a range of emotions in both themselves and in others (Whitcomb & Merrell, 2012). The curriculum can be universally administered to all students within a class, a method of primary prevention, or can be taught to small, targeted groups of students as a secondary level of intervention. Each lesson is designed to take approximately a half hour to teach and incorporates both reading stories to children as well as teaching a semi-structured lesson.

There have been several studies (Castro-Olive, 2014; Gueldner & Merrell, 2011; Harlacher & Merrell, 2009; Marchant, Brown, Caldarella, & Young, 2010; Nakayama, 2008) that observe the effectiveness of both the curriculum and implementation of *Strong Kids* and *Strong Teens*, the companion programs to *Strong Start* for middle and high school students (Feuerborn, 2004; Gueldner, 2007; Merrell et al., 2008) and just as few looking at similar effectiveness categories of *Strong Start* (Caldarella, Christensen, Kramer, & Kronmiller, 2009; Gunter, Caldarella, Korth, & Young, 2012; Whitcomb & Merrell, 2012).

Despite the research that has studied the effectiveness of multiple *Strong Kids* and *Strong Start* curricula, there are still limitations to the overall study of these programs. Presently, there are no assessments linked specifically to the *Strong Start* curriculum that can measure a child's growth after being taught the lessons. The current study hopes to fill this void by creating such a measure. A common limitation with many of the *Strong Start:* K-2 studies has been the lack of a skills based assessment tool to measure emotional development and knowledge. This could add to the overall program, making it more comprehensive (Merrell, Juskelis, Tran, & Buchanan, 2008). Through the addition of a skills-based assessment, educators can measure the levels of knowledge growth through using the *Strong Start* curricula.

The purpose of the Emotion Knowledge and Awareness Test (EKAT) is to both serve as a measure to track children's progress as they develop emotion knowledge and management skills and also to accompany curricula, such as *Strong Start*.

The items of the EKAT were written at a level that both allowed for kindergarten aged students to answer the questions but did not allow for a ceiling effect within second graders. The EKAT will target two different domains, emotion knowledge and emotion management of the basic set of emotions taught within the *Strong Start* curriculum: happy, sad, mad, afraid, surprise,

and disgust (Merrell, Parisi, & Whitcomb, 2007). Within the emotion knowledge domain, students will be asked to answer a variety of multiple choice that are focused on emotion identification, physical symptoms of each emotion, and synonyms to describe the presented emotion(s). Various vignettes will encompass the emotion management domain where students will be asked to identify how multiple characters are feeling within the situation and how they might respond to a specific scenario.

In order to feasibly administer and measure the emotion knowledge of children who are still learning to read, the final version of this assessment tool will be interactive and electronic based. While teachers can be reliable data collectors, it takes significant time to sit down with a classroom of children on a one to one basis and administer a survey or assessment. This will allow teachers to quickly and easily administer the tool, while not having to rely on a student's reading level or speaking ability. During the initial pilot of the tool, which was pencil-paper based, all items and answer choices were individually read aloud to students.

The Current Study

The aims of the current study are to develop, test, and pilot a general outcome measurement tool that will allow educators to test young children's knowledge of factors of emotional development: emotional identification and fluency, understanding situations where multiple emotions are present, understanding that others may feel differently in situations, and emotional regulation (CASEL, 2014). While the tool has been developed to serve as a general outcome measure, it will be aligned for use with the *Strong Start* social-emotional learning curriculum. Specifically, this study aims to answer the following research questions: Is the Emotional Knowledge and Awareness Test (EKAT) a reliable measure of early elementary children's emotion knowledge? Does the tool demonstrate content validity and developmental

appropriateness? Do items reflecting varying facets of emotion knowledge adequately factor

together?

CHAPTER II

REVIEW OF THE LITERATURE

Emotion knowledge has been a topic of interest for centuries. As a result, there are thousands of years of references to emotions within literature and almost two hundred years' worth of research on the topic. The chapter will begin by describing basic emotions and will then transition to discussing the trajectory of developing emotions. Next, the broad concept of emotional intelligence and the primary models of emotional intelligence will be described. From there the chapter will discuss measurement of emotions and emotion knowledge. This will include how to measure emotions, a review of the assessments currently available, and where there are voids in the emotional assessment field. The chapter will conclude with a description of the importance of teaching and measuring these skills within schools. By the end of the chapter, readers will be able to understand the need for the EKAT to fill a void within the assessment field and how it will benefit educators.

One of the first mentions of emotions on record was within Homer's *Illiad*, "A man who stumbles upon a viper will jump aside: as trembling takes his knees, pallor his cheeks; he backs and backs away… (c.7000 BCE, p.68 as cited in Izard, 2009)." Homer is describing a fearful situation, one of the six basic emotions, which his character is feeling at that moment. Throughout *The Iliad* there are references to different emotional situations, primarily involving fear, as the characters are experiencing the events of the Trojan War.

The seemingly simple question, "What is an emotion?" has been asked by researchers dating back as far as William James in 1884. James (1884) hypothesized that, "bodily changes follow directly the perception of the exciting fact, and that our feeling of the same changes as they occur is the emotion" (p. 218). His idea differed from the established idea of the time, that a

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mental perception of some fact excites the mental affection called the emotion, which leads to a bodily expression. James' idea has influenced the neurobiological school of thought regarding emotion. The neurobiological perspective believes that brain responses constitute sensation of the body's expression of emotion and the feeling is a consequence of neurobiological expression (Demasio, 1999). There is another school of thought where researchers believe that emotions are a phase, and not a consequence, of neurobiological activity and expression (Izard, 2009; Langer, 1974). A broad definition of emotion that takes into account all of these ideas states that an emotion is an organized mental response to an event that includes physiological, experiential, and cognitive aspects (Mayer, Salovey, Caruso, & Sitarenios, 2001). Emotions also usually occur within the context of relationships (Lazarus, 1991). A relationship can either be internal, with oneself, or external, with another person or situation.

Around the same time that William James was questioning the construct of emotions, Charles Darwin was researching the idea that emotional expression has evolved across species (Darwin, 1872/1965). His idea was that emotional information and the ability to read and process it was universal across human beings and some mammalian species. The cross-cultural differences seen around the world could be attributed to how specific cultures teach their members to identify and react to different emotions and emotion situations. This idea was later further researched and supported by Ekman (1973).

Basic Emotions

Regardless to which school of thought a researcher prescribes, many have dedicated their professional lives to studying how a person learns and develops emotions. Researchers have outlined several lists of the basic set of emotions, but there are many disagreements in the field as to the formal definition of 'basic,' which emotions should be on that list, and if there should

even be a list of basic emotions. Carroll Izard, one of the leading researchers in the field of

emotions and emotion knowledge defined the term 'basic emotion' twice throughout his career.

Izard wrote his first definition in 1977, stating that an emotion is assumed to be fundamental to

human mentality and adaptive behavior. However, this is a broad definition and leaves

significant room for interpretation. His second definition from 2007, will be discussed later in

this chapter.

In addition to Carroll Izard, Paul Ekman (1992) also researched the idea of basic

emotions and outlined what he believed to be the six basic emotions through his research:

happiness, sadness, anger, disgust, surprise, and fear. Ekman believed there were two conflicting

definitions of 'basic' modeled after the idea of nature versus nurture. His definitions were

influenced by the different researchers in the field, and he acknowledged that those who believed

in different schools of thought might have different opinions on what the word 'basic' meant.

The first definition is straightforward and takes sociocultural ideas into account. There

are a number of emotions that differ from each other in important ways and each have their own

sets of antecedents, behaviors, consequences, and physiological symptoms (Ekman, 1999). The

definition that falls into the category of nurture states that emotions are learned and influenced

by the environment. The second definition does not take into account these sociocultural ideas

and instead states innate factors play a role in accounting for the characteristics they share. This

is the definition that falls into the category of nature; that emotions are innate expressions that all

individuals have from birth (Ekman, 1999; Johnson-Laird & Oatley, 1992; Lazarus, 1991). The

second definition does not account for species' variable learning experiences or environments,

which can influence or effect our perceptions of how social-emotional skills are acquired or

developed. Underlying both of these definitions is the idea that emotions are designed to deal

with encounters between people or between people and animals. Ultimately, Ekman believes

that the primary function of emotions is to help mobilize a person or animal to allow them to

quickly deal with important interpersonal encounters.

While researchers such as Izard and Ekman argue that there are basic emotions,

researchers such as Ortony and Turner (1990) argue against that idea. They believe that

constraining emotions to fit within the label of 'basic emotions' assumes two things. First, that

emotions are presumed to have a biological basis, and second, that the basic emotions can be

combined to create 'complex emotions.' The main argument researchers have against this idea is

that it does not account for any cultural aspects of emotions, which might be learned through

socialization with peers.

Trajectory of Developing Emotions

Many researchers believe that emotions are rooted in relationships because they provide

information that is most meaningful in the context of social exchanges (Saarni 1999; Thompson

1991). For babies, their first social exchanges are through crying in order to gain attention from

an adult to have their needs met (Piaget, 1969/2000). Bridges (1932) hypothesized that when

babies are born they have two basic states, a negative one, for when they require basic needs, and

a positive one, when they are satiated and content. Lewis (2000) outlines the ages that different

emotions develop in babies. He supports Bridges' hypothesis and believes that from birth when

a baby is content they are showing interest in the world around them. When a baby requires

his/her needs met, crying occurs as the baby feels frustrated. Around the three-month marker, an

infant begins to show feelings of sadness and joy in relation to familiar and unfamiliar events and

people. An infant also will show signs of disgust by spitting things out of his/her mouth. One of

the last basic emotions to emerge is anger, which occurs around four to six months of age

(Stenberg, Campos, Emde, 1983). Feelings of anger follow feelings of frustration, such as when a baby is contained in a car seat and cannot move freely.

As children grow, develop, and learn how to handle and express their emotions, the understanding of emotion is associated with peer popularity. This is defined as the ability to initiate social exchanges with peers, positive conceptions of peer experiences, and pro-social and empathy-related behavior (Denham, 1986; Dunn, 1995; Garner and Estep, 2001). Adaptive social exchanges and behaviors happen more frequently once a child has learned the basic set of emotions and how to self-regulate and react within the proper settings and contexts.

Izard's later definition of basic emotions from 2007 is described as, "affective processes generated by evolutionarily old brain systems, upon sensing an ecologically valid stimulus" (p.7). In infants, it is being able to recognize joy and interest from their mother's face. These two feelings are essential to the survival of an infant because they create a bond between the mother and child and help to motivate play. As a child grows older and learns to talk, he/she begins to learn to verbally identify how he/she is feeling internally. Researchers have argued that being able to talk about emotions is one of the first steps to building emotion knowledge and awareness (Bandura, 1986; Hobson, 1993; Izard, 1971). The development and process of learning to put thoughts into words to label emotions begins around age two and continues throughout the preschool and early elementary school (Izard, 1971). This continues as children learn more about the emotion identification process, and how to apply their experiences to specific emotion words (Domitrovich & Greenberg 2004; Denham & Burton 2003; Izard, 2009).

Children begin to attach labels to their emotions when they reach approximately eighteen months of age (Bretherton, McNew, & Beeghly-Smith, 1981). At approximately twenty-eight months of age, children become capable of discussing different feelings they have experienced

(Bretherton & Beeghly, 1982). These foundational skills of being able to identify, label, and discuss their emotions allow children to develop situational knowledge of emotions. However, it is not until children are older and gain the ability to understand different cues and infer how others are feeling within a situation. All of these skills combined allow a child to develop a theory of mind that allows them to understand the perspectives of others and to use situational information to understand what is happening in the world around them (Cutting & Dunn, 1999; Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003).

By the time a child enters preschool they are proficient in emotion identification and the usage of basic emotions to understand behaviors and situations (Fabes, Eisenberg, Nyman, & Michaelieu, 1991). As a child grows older, their level of competency increases and they become more accurate in identifying and labeling emotion cues, expressions, and behaviors in various contexts (Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003; Harris, Olthof, Terwogt, & Hardman, 1987; Izard, 1971; Kurdek & Rogdon, 1975; MacQuiddy, Maise, & Hamilton, 1987). These specific age milestones are tied to periods of emotion development because of a child's verbal abilities. Research has made the connection between verbal ability and emotional understanding (Carroll & Steward, 1984; Fine, Izard, Mostow, Trentacosta, & Ackerman, 2003; Izard, Fine, Schultz, Mostow, Ackerman, Youngstrom 2001; Smith & Walden, 1998). Once language emerges in a child, they are able to develop vocabulary and apply it to their everyday lives. The larger the vocabulary a child possesses, the greater accuracy of emotion identification and expressions. It also increases his/her ability to generate strategies for how to deal with various different emotions. The inverse is true for children with smaller vocabularies (Brown & Dunn, 1996; Cutting & Dunn, 1999).

Emotional Intelligence

Emotional intelligence is the overarching construct that includes the well-established domain of emotion knowledge and also the domain of emotion management. Intelligence is a multi-faceted idea, but researchers have concluded there are a few distinct indicators of intelligence. One of the most important indicators is abstract reasoning (Sternberg, 1997). Abstract reasoning is defined as the ability to see the similarities and differences within objects and being able to analyze parts of objects to see how they relate to each other. Importantly, it is necessary to see how all these pieces fit together as a whole and applying reasoning skills across multiple content domains (Mayer, Salovey, Caruso, & Sitarenios, 2001). Other indicators of intelligence include input processing; the ability to recall pieces of information to memory, knowledge-based processing; the ability to have and remember analyses of prior stories, and meta- processing; the ability to know that application of a specific skill can help in multiple different ways. All three of these additional intelligence indicators assist in developing and refining abstract reasoning skills (Mayer & Mitchell, 1998).

A type of intelligence is defined according to what sources of information are inputted and processed. In the case of emotional intelligence, the sources of information pertain specifically to emotions and feelings. In order to develop abstract reasoning skills around emotional intelligence, an input function must occur such as being able to perceive specific emotions on a person's face. Once the brain has recognized this information, it is then applied abstractly to a person's knowledge base. This is an example of emotion knowledge. This type of specific application of intelligence is referred to as crystalized intelligence, a term originally developed by Cattell (1943). For example, a person might identify that his/her companion looked fearful because of a large vicious dog a few feet away. After recognizing the feeling of fear, the person applies a meta-cognitive strategy to the situation. In this example the person

might walk his/her companion across the street while reassuring the companion that he/she is safe because the dog is on a leash. This is happening while the person is simultaneously thinking about the future and how he/she will remember strategies to help keep his/her companion distanced from vicious looking dogs or he/she will teach her strategies to cope with being near dogs. This is an example of an emotion management strategy.

Salovey & Mayer (1990) were the first to coin the term emotional intelligence and defined it as including the following three categories of adaptive abilities: appraisal and expression of emotion, regulation of emotion and utilization of emotions in solving problems. An emotion is judged through expression. Assessment of emotions within oneself and others is broken down into two subcategories, verbal and non-verbal emotions. An example of a verbal appraisal within oneself would be saying "yuck!" after taking a sip of sour milk, and a non-verbal appraisal within oneself would be scrunching up one's face and sticking out their tongue after trying the sour milk.

Appraisal can also be applied to others through non-verbal perceptions and empathy. Non-verbal perceptions have always been important from an evolutionary standpoint, allowing someone to sense emotions in not only themselves but others as well (Salovey & Mayer, 1990). An example of a non-verbal perception would be the ability to sense that a situation was dangerous based on facial expressions of others in the vicinity. Empathy is the ability to comprehend someone else's feelings and then re-experience them in oneself. Rogers (1951) believed that striving to understand other people and to empathize with them is a prerequisite for fostering growth. An example would be sharing the feelings of excitement and happiness with a friend or family member upon their graduation from school.

Emotion regulation is defined as managing emotions in oneself; this can be thought of as the regulatory system that monitors, evaluates, and acts to change one's mood when necessary (Mayer & Gaschke, 1988). Most of these regulations happen automatically within the body, but sometimes more learning or thought needs to be put into regulating one's mood. For example, music might make someone happy automatically, but hearing your favorite song on the car radio might elevate your level of happiness. In the future, next time you are in the car you might flip through multiple radio stations to recreate that same level of happiness by hearing your favorite song.

Emotion and mood regulation can also be adjusted within oneself based on the behaviors of other people. Someone might seek out a particular person to spend time with because of the positive feelings one feels in the other person's presence. The opposite is also true; someone might actively seek to avoid someone if they are associated with negative feelings (Rapaport, 1942; Singer & Salovey, 1988).

The final category of utilization includes flexible thinking and planning, creative thinking, and the ability to redirect attention and motivation (Mayer & Salovey, 1990). One of the benefits of this broad term is that while it focuses primarily on emotions, these social and cognitive skills can be applied across social settings and functions. Flexible planning is the ability to adapt in different situations. For example, people in good moods perceive more positive than negative events will occur. The inverse is also true for people with poor moods (Bower, 1981, Johnson & Tversky, 1983; Mayer & Bremer, 1985; Mayer, Mamberg, & Volanth, 1988; Mayer & Volanth, 1985; Salovey & Birnbaum, 1989). For example, if a piece of clothing rips someone with a more positive mood might use flexible thinking to realize the clothing can

be repaired or altered. Someone with a more negative mood might see the article of clothing as ruined and might be more likely to throw it away.

Creative thinking is helpful for problem solving. Someone with a more positive mood is potentially more likely to take more creative approaches to problem solving, and to think of unique and different solutions (Isen, Daubman, & Nowicki, 1987). Mood redirection and attention is the idea that attention is directed to new problems when powerful emotions are present (Easterbrook, 1959; Mandler, 1975; Simon, 1982). An example of this would be someone who has recently experienced a death in the family. That person might be more likely to redirect more attention than usual to seemingly trivial work related problems in order distract their mind from greater personal feelings of loss.

Since this initial definition of emotional intelligence was described, many additional models of emotion intelligence have been developed. However, the Salovey and Mayer model is considered to be the basis for the majority of emotion intelligence models that have subsequently been developed.

A refined model of emotional intelligence developed by Mayer, Salovey, Caruso, & Sitarenios (2001) is framed to say that when a person's relationship with another person or object changes, so do his/her emotions towards that person or object. It does not matter whether or not the relationship is real, imagined, or remembered but they are accompanied by emotions. The specific definition of emotion intelligence is the ability to recognize meanings of emotions and relationships and to use these pieces of information to help with reasoning and problem solving.

This model has four different hierarchal skill branches. Perceiving emotions is the ability to recognize emotions in faces and pictures, and is the largest component of this model. Next is the ability to use emotional information to enhance thinking and directionality. Third, is the

understanding of emotions, the ability to comprehend emotional information about relationships, transition between emotions, and the application of linguistic information to emotions. Fourth, is the ability to manage emotions and emotional relationships to enhance personal and interpersonal growth.

Another model, developed by Cooper & Sawaf (1997), breaks down emotional intelligence into a four-component model. The first component is emotional literacy, which includes knowledge of the emotions of oneself and how they function. This concept is very similar to emotion knowledge. The second component is emotional fitness, which includes emotional hardiness and flexibility. According to the authors emotional hardiness is another term for emotional resiliency or regulation. Third is emotional depth, which includes emotional intensity and potential for growth. The final component is emotional alchemy, is defined as the ability to use emotion to inspire creativity.

In summary, while there are many different models that have been developed by researchers to target the construct of emotional intelligence, the majority of the models have the same underlying principles. Each of the models has an individual term for emotion regulation and knowledge; being able to regulate one's own emotions is critical to understanding them in others. The models also have components that allude to developing emotion resiliency to help with problem solving and comprehension. A third overlapping concept between the models is a term to describe using emotions to enhance personal growth and development. Overall, there is a fair amount of consistency between these models that aim to define a construct of intelligence that is complex.

When the questions for the EKAT were being developed several aspects of the emotional intelligence models were kept in mind during item writing. The majority of the underlying

principles were considered and as a result there were items written that ask children how a

person might manage a specific emotion in a specific situation. There were also items written

that tap into emotional resiliency, asking a child how the person in the question might handle or

remedy a specific problem. The only overlapping concept that was not as focused specifically on

was the idea of personal growth and development. Instead this was considered to be the one of

the overarching concepts of the entire measure. As a child ages, he/she will be continuing to

grow and develop emotionally, and thus able to better answer emotion intelligence questions.

Measuring Emotional Intelligence

Emotional intelligence is a difficult construct to quantify with a specific score. Roberts,

Zeidner, and Matthews (2001) posed a question about the development of tests measuring

emotional intelligence. If the ideas created for the test were thought of through a general

consensus, are the assessments measuring emotion intelligence or conformity to the consensus?

The difference is in convergent versus conventional thinking. Convergent thinking is the

capacity to identify a correct answer to a question. Conventional thinking is the limitation of

one's own perspective, similar to the colloquial term thinking "within the box." Guilford (1959)

stated that most intelligence tests aim to measure convergent thinking which an emotional

intelligence measure can do as well. However, the difference between the two is that while an

emotional intelligence measure might have predetermined answers, someone with higher

emotional intelligence would be able to apply their answers to the questions in more abstract or

unique ways then others.

Is there is a correct way measure and score an emotional intelligence assessment? When

developing a new test, a team of experts have typically agreed on the items written and what the

specific cut scores will be for the tool. When thinking about how to best utilize experts to

determine the proper scoring techniques for these measures, it is important to consider the natural differences between cognitive and emotional information and cognitive and emotional intelligence experts (Mayer, Salovey, Caruso, & Sitarenios, 2001). When writing and scoring a cognitive assessment, the answers are fairly straightforward and clear-cut because the goal of a cognitive assessment is clear. There are also specific grading rubrics for open-ended questions within these assessments. When writing and scoring an emotional assessment tool, there are not always opportunities to have dichotomous scoring methods. Oftentimes, these measures are Likert scale based or have self-reporting features (emotional intelligence measures will be discussed more in depth later within the chapter), which leads to a more polytomous or fluid scoring system.

Another reason that these assessments are difficult to score pertains directly to the psychometric properties of the emotion intelligence measures, specifically due to the lack of convergence between expert and score based assessment dimensions (Roberts, Zeidner, & Matthews, 2001). Roberts, Zeidner, and Matthews (2001) found large discrepencies between groups of experts reviewing the same questions. This implies that the experts differed in their beliefs of how questions should be answered. This raises the questions "What does the consensus score mean?" and "Which should be considered the correct answer, the experts' answer or the answer of the consensus?" Another question to consider is, "Is this form of determining an answer different from cognitive intelligence tests?" The final question is one of the most important because of how many differing opinions there are on the definitions of emotions. Is it more important to measure an individual's answers for comparison to a predetermined answer, or is it more important to compare an individual's answer to a larger population of people answering the same question?

General and Expert Consensus Scoring

There are three large differences in consensus scoring of cognitive versus emotional intelligence: domain of application, general consensus versus expert consensus convergence, and systematization of knowledge. The differences in domains of application are fairly straightforward. Emotional information focuses on the relationships between oneself and the world: people, animals, ideas, and behaviors. It is both biological and learned and has allowed humans to evolve and interact with the world around them. While people have come to a general consensus about many different emotions, it is implied and inferred that there is more then one way to interpret a feeling or situation. The general consensus about a particular feeling helps a person figure out how to react to a situation compared to previous situations of the same emotion. In contrast, cognitive information is more rule-based and is easier to apply to the broader world, such as principles of mathematics or physics (Mayer, Salovey, Caruso, & Sitarenios, 2001).

The differences between general consensus versus expert consensus convergence and the differences between cognitive and emotional intelligence is another straightforward concept. An expert is someone who has extensively studied the group consensus and can more accurately draw conclusions about groups or individuals then the average person. For example, while someone within a general group might be able to identify whether or not a person is genuinely excited to see someone, an expert can more accurately pick up subtle clues than an average person and can teach someone how to do the same. When it comes to teaching cognitive information, the conclusions are not drawn by a group consensus but by the predetermined rules (Mayer & Salovey, 2001). There is no group consensus when it comes to teaching someone calculus. There are rules that the expert knows and teaches to the group. If the group consensus is different from the expert, then the group consensus is merely wrong.

The final difference is regarding the systematization of knowledge and information, where systematization refers to the authoritative literature bases that teach on a subject matter. Emotional information has to a degree been systematized but there is not universal agreement. An example is how many different definitions there are for the word emotion. While there are several broad definitions that have been adopted by researchers, there is no one specific and canonical definition. Cognitive information does have definitive systematization processes (Mayer, Salovey, & Caruso, 2000). There are established scopes and sequences for learning education concepts like reading and math, with agreed upon basic principles. While there might be an entire industry to publish various textbooks, they all teach the same concepts in similar manners that can then be assessed using standardized measures.

General Outcome Measures

A general outcome measure (GOM) provides overall indicators of a student's competency within a given skill, and the repeated measurement of that competency enables educators to measure a student's trajectory of growth (McConnell, McEvoy, & Priest, 2002). GOMs represent an innovative approach to assessing constructs over time and have been extensively studied in the areas of academic achievement and growth for children and youth (Kaminski & Cummings, 2007). General outcomes are functional, socially sanctioned and meaningful, and accepted as developmentally meaningful and appropriate targets for intervention in child development. General outcome statements also serve an important function; explicitly articulating what constituents want, value, and expect in the development of young children (McConnell, McEvoy, & Priest, 2002).

The most well researched and well-known GOMs measure a child's skills in oral reading fluency have been studied by Deno & Fuchs (1987) and Shinn (1989) (Hosp, Hosp, & Howell,

2012; Howell & Nolet, 1999). There is considerably less research with GOMs in regard to social emotional learning when compared to academics. The majority of outcome measurement for young children has been articulated through Head Start Outcomes, the National Goals Panel, and *No Child Left Behind* (McConnell, 2000; McConnell, McEvoy, & Priest, 2002). Tools have begun to be created to address voids, such as the Individual Growth and Development Indicators (IGDIs), which focus on the developmental progress of young children (Cummings, Kaminski, & Merrell, 2008; Greenwood, Luze, Cline, Kuntz, & Leitschuh, 2002; Luze, Linebarger, Greenwood, Carta, Walker, Leitschuh, et al., 2001; McConnell, McEvoy, & Priest, 2002).

IGDIs have been developed to complement GOMs and have specifically been designed for use with young children infancy through early elementary school. One of the primary ideas behind IGDIs was to elaborate on the wealth of GOMs in order to measure the effectiveness of early childhood education (McConnell, McEvoy, & Priest, 2002). IGDIs have the same supporting features of GOMs. They are easy to use and administer, provide direct assessment of growth, are adaptable across ages, and have been evaluated to be reliable and valid measures (Deno, 1997; McConnell, 2000; McConnell, McEvoy, & Priest, 2002; McLean, Bailey, & Wolery, 1996).

Currently, there are no IDGIs or GOMs that specifically measure emotion knowledge. Research regarding emotion knowledge has primarily been limited to normative studies to show emergence and growth curves of factors pertaining to skills related to social functioning and developing emotion knowledge (Harter & Buddin, 1987; Izard et al., 2001). Denham (1998, 2006) has also developed assessment tools to measure individual differences in children's levels of emotion knowledge and development but they were not developed to show growth over time. The primary goal of the current study is to combine the factors that are measures of emotion

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knowledge which have been individually studied over time and create one unified outcome measure. These pre-identified and individually researched competencies will serve as the overall set of constructs in order to develop an assessment tool able to measure growth of emotion knowledge over time.

Emotion Intelligence, Knowledge, and Management Measures

There are many published measures that can assess a person's emotion knowledge or emotion intelligence. The number of measures that have been developed to assess a person's emotion management skills is much lower. Emotion intelligence and emotion knowledge have established definitions and researchers have studied both topics extensively. Emotion management is studied less frequently and as a result has fewer assessments focused specifically on measuring emotion management growth. Instead assessments that measure emotion knowledge often also measure emotion management as a subtest or subcategory. This is typically because emotion management is not often seen as a stand alone concept, but instead part of the larger emotion knowledge construct.

Emotion intelligence and emotion knowledge can be assessed via three types of measurement: self-report measure, observer/informant measure, and an ability conception. Ability measures have the advantage of representing an individual's performance level on a task, while self-report measures are filtered through a person's self-concept and impression management motives (Mayer, Salovey, & Caruso, 2000).

Emotion Intelligence Measures

There are also assessments available to clinicians who wish to measure a person's level of emotion knowledge or emotional intelligence. However, these assessments have primarily been developed for adolescents and adults with very few measures designed specifically for

children. Instead, researchers have taken established assessments and modified the questions to make them more developmentally appropriate for younger children. While this means some of these assessments have been modified, the modifications cannot be generalized because many of these studies have not been replicated with other populations of similar aged students.

The Mayer Salovey Caruso Emotion Intelligence Test, Version 2.0 (MSCEIT, V2.0, Mayer, Salovey, & Caruso, 2002) is a 141 item assessment that measures four branches of emotion intelligence: accurately perceived emotions, using emotions to facilitate thoughts, understanding emotions, and emotion management. The MSCEIT V2.0 evolved out of the original Mayer Emotion Intelligence Scale in order to be developed into a more statistically sound assessment tool. Each branch of the assessment has two different types of tasks; perceiving emotions is measured with faces and picture tasks; emotion facilitation is measured with sensation and facilitation tasks; understanding emotions is measured with blending and changing tasks; and emotion management includes different emotion relationship and management tasks. The questions are formatted to ask participants to assess the mood, feelings, or emotions that are present within the presented face or scenario for each question. The scoring of the test is made up of a variety of formats including both multiple choice and Likert scale items (Mayer, Salovey, Caruso, & Sitarenios, 2003).

The MSCEIT V2.0 has been developed as both a pencil and paper assessment and also has an accompanying online format. When scoring the test, there are two options for norms: expert or consensus. The normative sample drew from 2,076 participants across the country with a mean age of 26.52. A panel of 21 emotion experts reviewed the test to assess its reliability and found higher rates of convergence validity on the branches of the assessment that are more heavily based on established research; mainly emotion perception and emotion management

(Mayer, Salovey, & Caruso, 2002). Overall, the test has strong rates of reliability and validity will be established over time with repeated studies and uses.

The Emotional Skills and Competence Questionnaire (ESCQ, Takšić, Mohorić, & Duran, 2009) was developed in Croatia using the theoretical framework of the Salovey and Mayer (1990) framework of emotion intelligence. The name of the ESCQ was intentional because of its format as a self-report measure. Ciarrochi, Chan, Caputi, & Roberts (2001) said that because self-report measures do not reflect actual performance, it might be more accurate to say they are measuring emotional competency instead of intelligence.

Originally published in Croatian and aimed for adolescents aged fourteen through nineteen, the ESCQ has been translated into English (Van de Vjver & Hambleton, 1996) as well as almost a dozen other languages. This measure consists of forty-five Likert Scale items across three different subscales: *Perception and Understanding Emotions*, *Expressing and Labeling Emotions,* and *Managing and Regulating Emotions*. The *Perception and Understanding* questions include items such as, "When I see how someone feels, I usually know what has happened to him/her." The *Expressing and Labeling* questions assess if a person can identify and then express the emotion they are feeling. The *Managing and Regulating* questions ask questions such as, "When I am in a good mood, every problem seems solvable" (Takšić, Mohorić, & Duran, 2009). Overall, the test has strong psychometric properties that have been duplicated and generalized across different cultures. However, the *Managing and Regulating Emotions* subscale had the weakest psychometric properties of the three and interpretation of that subscale by itself should be taken with great caution.

The Vocabulary of Emotions Test (VET, Takšić, Harambašić, & Velemir, 2003) was developed to assess a person's competency to recognize the meaning of emotionally saturated

words through the presence of verbal stimuli (Costa, Faria, & Takšić, 2011). One aspect that sets the VET apart from other emotion intelligence measures is that it more closely mirrors a test of crystallized intelligence. Shortcomings of emotional intelligence tests are the vignettes that are often included, as they can often lead to low reliability across different cultural settings (Costa, Faria, & Takšić, 2011). The VET was constructed to have the same form as a standard vocabulary test, but instead has emotion words as the target words to be defined. Another distinguishing feature of the VET is that the answers are easily available to be cross-referenced with the aide of a dictionary. The test was created by using two search criteria and a word had to fit both criteria in order to be included. When searching for the exact word of emotions: "how" do I feel and "what" do I feel had to be included in the definition. The final test was thirty-five items long and there are six different forms available. All words were initially pulled from the Croatian dictionary (Anić, 1994).

The test was developed for secondary school children aged fourteen through twenty-one and had strong reliability and validity properties across multiple samples when compared to tests of crystallized intelligence such as the California Tests of Mental Maturity- Vocabulary Test, Logical Thinking Test, and Emotional Intelligence Tests (Costa, Faria, & Takšić, 2011).

The Emotional Quotient Inventory (EQ-i) was developed by Bar-On (2004) to assess emotional and social intelligence. This assessment is intended for children aged sixteen through adult, and the 133 item self-report measure asks for the participants to rate themselves across the following domains: intrapersonal skills of self-awareness and self-expression which include emotional self-awareness, assertiveness, self-regard, self-actualization, independence; interpersonal skills of social awareness and relationships which include empathy, interpersonal relationships, social responsibility; stress management and emotion regulation skills which

include stress tolerance, impulse control, adaptability to change: problem solving, reality testing, flexibility; and general mood and self-motivation, happiness and optimism. While a self-report measure is a less direct way of measuring performance, it is easy to administer and can allow for insight on a person's internal experiences, something difficult to measure using a performance assessment. It also allows for ongoing conscious processing related to emotions during the assessment (Mayer, Salovey, & Caruso, 2000).

The EQ-i is commonly seen at workplaces and job sites and is a popular assessment used within information and organizational psychology. It has established norms and is a reliable and valid assessment that is available worldwide in a variety of languages. Much of the research conducted on EQ focuses on workforce effectiveness and behavior modification. Several studies have suggested that higher levels of EQ predict effectiveness in supervision and group interaction. When superior leaders are compared to average leaders, several competencies emerge to differentiate between the two groups (Scheusner, 2002). For example, two competencies that emerged in the superior group were self-confidence and the ability to adapt emotional expressions (Cherniss, 1998).

Emotion Knowledge Measures

As described in Chapter 1, children are too young to accurately self-report most symptoms or concerns. However, they are able to identify knowledge of emotions through the few assessments currently available. The Berkeley Puppet Interview (BPI) has been developed for children aged four and a half to seven and a half to measure child perceptions of relationships with their families, peers, teachers, and overall social and academic environment through a semi-structured interview (Ablow & Measelle, 1995). Measelle, Ablow, Cowan, & Cowan (1998) reported that children's self-perceptions of academic competence and achievement orientation in

the BPI were associated with teacher reports of children's academic competence and mastery orientation, and with standardized math and reading achievement test scores (Ablow & Measelle, 1995).

Denham (2006) also developed a similar puppet interview, the Affective Knowledge Test (AKT) specifically for early childhood students to identify feelings. Children's levels of emotion understanding are measured using puppets with detachable faces that depict four basic emotions: happy, sad, angry and afraid. They are asked to verbally and non-verbally define, recognize, and identify different emotions within different scenarios. First, children are asked to both verbally name the emotions depicted on these faces, and then to nonverbally identify them by pointing. Next, children place on the puppet the face that depicts the puppet's feeling in each situation (Denham, 1986; Denham & Couchoud, 1990; Denham, Bouril, & Belouad, 1994). While these are well-developed and technically adequate measures, they take a long time to administer to each individual student and they primarily target preschool-aged children.

Another assessment is the Assessment of Children's Emotion Skills (ACES), developed by Schultz, Trentacosta, Izard, Leaf, and Mostow (2004). The ACES also includes sections concerning social behaviors, social situations, and facial expressions. Unlike the ERQ, the ACES was validated using first and second grade students but again, takes a long time to individually administer to a class of students.

Emotion Management Measures

The Emotion Regulation Questionnaire (ERQ) was developed by Gross and John (2003) to measure the habitual use of two emotion regulation strategies, reappraisal and suppression, and is now commonly used to measure emotion regulation (Spaapen, Waters, Brummer, Stopa, & Bucks, 2013). Reappraisal of emotions is defined as changing one's thought process within an

emotional situation and suppression was defined as controlling and not expressing emotions (Gross & John, 2003). The ERQ was tested and validated using college undergraduates aged eighteen through twenty-two. More recently, a child and adolescent version of the ERQ has been released and normed for children aged ten through eighteen (Gullone & Taffe, 2012) that measures across four emotions: happiness, sadness, anger, and fear (Ribordy, Camaras, Stefani, & Spaccarelli, 1988). The ERQ was also adapted for use with kindergarten, first, and second grade students in the Fast Track study (Mahon, Greenberg, & Conduct Problems Prevention Research Group, 1995). Fast Track is a longitudinal intervention project designed to look a child development by providing academic tutoring and lessons in social skills and behavior self-regulation (Fast Track, 2011).

The Alexithymia Questionnaire for Children (AQC, Rieffe, Oosterveld, & Meerum-Terwogt, 2006) is a brief twenty-item assessment that measures three primary factors: difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking. It is based on the Toronto Alexithymia Scale 20 (TAS-20, Bagby, Parker & Taylor, 1994) that assesses alexithymia in adults. Alexithymia is most commonly seen in adults and is defined as a limited ability to recognize one's own emotions and verbalize them (Sifneos, 1996). This has been frequently studied in adults because alexithymia is a risk factor for many medical and health conditions (Bagby, Parker, & Taylor, 1994). Alexithymia has rarely been studied in children because the primary symptoms of having a limited ability to recognize and identify emotions are skill deficits common in young children that develop with age and instruction (Rieffe, Oosterveld, & Meerum-Terwogt, 2006). Studying to see how these adult symptoms manifest in children would improve knowledge of alexithymia across the lifespan.

The child assessment mirrors the TAS-20, the original questions were rephrased by the

AQC authors to make them more appropriate for school-aged children, and specifically children aged twelve through seventeen. The AQC was developed in Europe and researchers in several countries have been translating the test into their native languages to administer. Currently, while the reliability and validity of the full scale score of the assessment are strong, one of the subscales related to externally oriented thinking, has low reliability. This means that results should be interpreted using the total score instead of the subscale scores (Loas, Dugré-Lebigre, Fremaux, Verrier, Wallier, Berthoz, & Corcos, 2010).

<u>Importance of Emotion Knowledge Skills in Schools</u>

Children spend the majority of their childhood days in school learning academic skills that will allow them to be successful throughout their lives. It is almost equally as important for them to learn emotion knowledge and regulation skills alongside academic skills. This can help aid a child's development and ensure they have the necessary coping skills to become competent adults. The 1994 National Education Goals Panel identified that competence in school encompasses cognitive preparedness, attention regulation, language skills, and social emotional competence. However, the majority of research in this area has traditionally been focused on the cognitive dimension of young children's school-related developmental competence.

Studies have shown that the ability of children in the elementary grades to recognize and label expressions of emotions correlated with their social adjustment and academic achievement (Izard, 1971). Izard has conducted several follow-up studies to support this claim finding similar results. In a 2001 longitudinal study, Izard et al. found significant correlations between a preschooler's verbal ability and emotion knowledge and academic competence as rated by third grade teachers. The study showed that preschool children's abilities to recognize and interpret emotion cues in facial expressions have long-term effects on social behavior and academic

competence. Other investigators reported similar findings for preschool children (Walden &

Field, 1990).

In a longitudinal study by Fine et al. (2009), the authors reported that emotion knowledge

was significantly related to first grade vocabulary measures. This was compared to fifth grade

self-reporting measures on internalizing behaviors and supplemented by internalizing and

externalizing behavior rating scales completed by fifth grade teachers. Welsh, Parke, Widaman,

and O'Neil (2001) reported that young school children's prosocial behavior, social competence,

and academic competence reciprocally related. They also discovered connections to low peer

acceptance rates within the first year or two of school compared to poor work habits, academic

competencies, and negative attitudes towards school (Eisenberg, Sadovsky, & Spinrad, 2005;

Ladd, 2003; O'Neil et al., 1997).

Researchers in the field of emotion knowledge have broadly outlined three general

dimensions of a child's academic and emotional success in school: general classroom

competence, approaches to learning, and interpersonal classroom behaviors (Garner & Waajid,

2008). General classroom competence refers to literacy, numeracy, motor, and social skills. The

approaches to learning construct includes attention skills, motivation, and other responses to

instruction. *Interpersonal classroom behaviors* refer to the quality of children's interactions at

school (McDermott, Leigh, & Perry, 2002). The final construct, *school-related competence in*

early childhood is a multidimensional construct that includes cognitive preparedness and

behavioral readiness for participation in a classroom setting (Miller, Gouley, Shields, Seifer,

Dickstein, Magee, & Fox, 2003). Emotion knowledge seems to underscore all areas of

competence because understand and define feelings in oneself and others is critical to

understanding and relating to teachers and classmates.

Izard's studies were some of the first in the field to measure the connections between emotion knowledge and academic success. Raver (2005) conducted similar studies and reported that children who are emotionally well adjusted have a significantly greater chance of early school success, while children who experience serious emotional difficulty face grave risks of early school difficulty. For many children, academic achievement is built on a foundation of children's emotional and social skills (Ladd, Kochenderfer, & Coleman, 1997; O'Neil, Welsh, Parke, Wang, & Strand, 1997). Over time, teachers have slowly begun to incorporate teaching emotion knowledge skills into their daily curriculum. Social and emotional learning is an integral element of education in an increasing number of schools, and such instruction is consistent with teacher education standards (Fleming & Bay, 2004). Schools will be most successful in their educational mission when they integrate efforts to promote children's academic, social, and emotional learning (Elias, Zins, Weissberg, Frey, Greenberg, Hayne, Kessler, Schwab-Stone, & Shriver, 1997; Zins, Bloodworth, Weissberg, & Walberg, 2004).

Earlier in Chapter 1 some reasons to teach emotion knowledge skills were mentioned particularly as ways to minimize internalizing behaviors for children who entered school with several risk factors as identified by the National Center for Children in Poverty (NCCP, Robbins, Stagman, & Smith, 2012). In addition to helping to create a barrier against risk factors that are largely out of a child's control, teaching and fostering emotion knowledge skills can help within the day-to-day life of *all* children. Research has shown that children who act in antisocial ways are less likely to be accepted by classmates and teachers (Kupersmidt & Coie, 1990; Shores & Wehby, 1999). Children's knowledge of emotions helps them correctly interpret the emotions of others, and those interpretations are crucial in triggering appropriate emotional responses in social interactions (Fine, et al. 2003).

For example, if a child sees a friend who is upset he/she might display an appropriate gesture such as giving a hug or offering a kind word. This act of kindness will help correctly pair an emotion to an appropriate reaction which a child can later refer to when they next encounter this feeling. However, if the child misinterprets the upset feelings as those of anger or frustration, he/she might pair the wrong emotion and reaction. This could potentially lead to alienating the child from his or her peers because of an inappropriate social exchange. As a child grows older, his or her ability to navigate social interactions properly through displaying the correct emotion knowledge skills can help predict later behaviors.

If a child has deficits in his/her emotion knowledge skills he/she might not manage certain social situations well which could lead to isolation or rejection from peers. This has the potential to lead to internalizing behaviors as reported by teachers (Denham, 1998; Izard, et al., 2001; Schultz, Izard, Ackerman, Youngstrom, 2001). It is common for externalizing behaviors to be more commonly addressed by adults because of their outward visibility. However, internalizing behaviors such as anxiety, thoughts of self-harm or depression are just as important to identify (Harter, Marold, & Whitesell, 1992, Ialongo, Edelsohn, Werthamer–Larsson, Crockett, & Kellam, 1993). Internalizing behaviors can be identified as early as preschool and can lead to later challenges throughout childhood into pre-adolescence (Mesman, Bongers, Koot, 2001).

In order to develop emotion knowledge skills and utilize skills within schools, a child needs to have basic language skills. Kopp (1989, 1992) researched language skills and believed they provide important tools for children's understanding and regulating of emotions. A child uses language skills regularly within everyday life including: influencing his/her environment communication, interacting with others, and learning appropriate ways to manage emotions.

Research has also shown that preschoolers' language skills have been positively correlated with their ability to use distraction as a strategy in a frustrating situation (Stansbury & Zimmerman, 1999). A child's level of emotion understanding involves skills to be successful in attending to emotion laden language and information within their environment, experienced or expressed emotions in himself/herself or peers, understanding emotions appropriately within contexts, and causes and consequences of emotions (Eisenberg, Sadovsky, Spinrad, 2005).

Traditionally within schools, emotion knowledge and other factors related to a child's level of school competence have been measured through teacher rating scales and teacher-completed assessments. This is because children are too young to accurately self-report on these factors as described in Chapter 1. Data collected by the National Center for Education Statistics from a 1993 survey of kindergarten teachers' ratings of school readiness focused heavily on regulatory aspects of children's behavior (Heaviside & Farris, 1993; Lewit & Baker, 1995). Of the teachers surveyed, 84% of teachers endorsed that children need to be able to communicate wants, needs, and thoughts verbally, 76% endorsed that children need to be enthusiastic and curious, and 60% endorsed that children need to be able to follow directions, not be disruptive of the class, and be sensitive to others feelings. In contrast, only 21% of teachers endorsed the need for children to be able to use a pencil or paintbrush, and only 10% and 7%, respectively, endorsed knowing several letters of the alphabet and being able to count to twenty as being essential or very important to being ready to start kindergarten (Blair, 2002). This is important because it provides data to support the three general dimensions for a child's academic and emotional school success: general classroom competence, approaches to learning, and interpersonal classroom behaviors (Garner & Waajid, 2008).

In the more recent Early Childhood Longitudinal Study-Kindergarten (ELSC-K) report of

the 1998-1999 cohort of kindergarten students, teachers reported that by the end of kindergarten they saw an increase in students' abilities to accept peer ideas in cooperative play (fall 74%, spring 77%); forming friendships (fall 77%, spring 82%); comforting others (fall 52%, spring 62%). Teachers also noted that, as the year progressed, students developed an increased ability to persist at tasks, attend to tasks, and showed an eagerness to learn (West, Denton, & Reaney, 2000). The most recent findings from the 2011 cohort of kindergarten students are not yet available. Teacher reports strongly suggest that teachers feel that self-regulation and communication skills outweigh academic knowledge as indicators of kindergarten readiness and success during the kindergarten year.

These statistics align with the current research in the field indicating that the higher levels of emotion knowledge skills a child has when entering school leads towards a higher level of academic success. At the same time however, they contradict the thoughts and ideas that many parents and those in the field of education have about necessary academic skills. Today, children entering school are entering a world that has begun to be directed by high stakes testing as a method to measure academic outcomes. This places a higher level of pressure on parents and educators to ensure that basic academic skills like counting and alphabetic knowledge are mastered at an earlier age. If a child enters kindergarten lacking the basic language and emotion knowledge and regulation skills necessary to function within a classroom, how can he/she be expected to learn and focus on academic tasks?

Having an accurate and reliable assessment tool to measure a child's emotion knowledge skills during their early formal school career is critically important. The tools that are available on the market today have either been designed for young preschool aged children or older preadolescent to adolescent aged children. There very few technically adequate measures in the

assessment field that feasibly measure these emotion knowledge skills in students who are

beginning their schooling. The development of such a tool will allow teachers and educators to

identify weaknesses in students' emotion knowledge. It will also help to plan social- emotional

interventions in order to fill these voids and to better ready students for later academic and

emotional success.

CHAPTER III

METHOD

This assessment aims to measure students' awareness of emotions across two specific domains: knowledge and management (applied skills). The knowledge domain measures emotion identification and fluency and the management domain measures understanding of situations in which multiple emotions may be experienced, understanding that others may feel differently in similar situations, and the management of emotions (CASEL, 2014).

Specifically, the purpose of the Emotion Knowledge and Awareness Test (EKAT) is for use as a pre and post test assessment to measure the level of emotion knowledge and strategy gains associated with social-emotional learning curricula implementation in children in grades kindergarten through second. The test could potentially also be used as a progress monitoring tool in addition to being used as a measure to understand class wide emotion knowledge strengths and weaknesses. The EKAT has not been developed for use as a high stakes assessment or for making individualized decisions on a child. The initial pilot version of the assessment was in a pencil paper format that individual students completed with a researcher. The final version of the assessment tool will be electronic and compatible with either computers or tablets where students can complete the assessment themselves without adult assistance.

The development and initial pilot of the EKAT took place over four distinct phases. Phase One included item development and informal content validation with practitioners. In order to develop the items, the principal investigator trained her research team on the steps for item generation. The majority of the items were written by the principal investigator and advisor with assistance from the research team. Phase Two included content validation of the EKAT from a panel of experts in the fields of child development, psychology and education as well as

an informal pilot with first and second grade students. The third phase included a pilot study of

the EKAT with a diverse population of students throughout Western Massachusetts. The fourth

and final phase was the data analysis phase. During this phase, the results of the pilot were

analyzed in order to determine the items that would encompass the final version of the EKAT

and to ensure the items fit well together based on factor analysis.

Procedure

Phase One

Item Development

The first phase of the study was the item generation, which was done primarily by the

principal researcher and advisor, with assistance from the advisor's research group. Prior to the

items being generated, the domains of knowledge and management were defined and explained

in order to help the research team understand the project. Within the knowledge and

management domains there were specific objectives for each domain. In the knowledge domain,

students identified the following emotions: happiness, sadness, fear, anger, surprise, and disgust.

These specific emotions were chosen because they align with the *Strong Start* curriculum. There

were questions measuring the student's general knowledge of the emotions through observation

of body cues within themselves and through facial, physical, and verbal cues from others.

Students also had to identify synonyms for a specific emotion type, such as happiness or sadness.

Within the management section of the test, students had to determine how to communicate each

individual emotion as well as mixed emotions. Students also needed to identify appropriate

strategies for handling emotions.

In order to aid in item writing, a table of specifications was generated, which Gronlund

and Linn (1965) describe as way to define the content by instruction objectives. The purpose of

the table was to clearly identify the scope and emphasis of the assessment while linking items to the chosen objectives. This ensured that the test items both relate to the objectives as well as the initial construct areas. Traditionally, a table of specifications is set up with the objectives of the test on the vertical axis and the test construct areas on the horizontal axis. This allows for boxes to be set up by category to ensure items are specific to both constructs and objectives while trying to determine how many of each item category should be included within the assessment tool (Benson & Clark, 1982). Table 3.1 shows the matrix of specifications for the initial pilot version of the EKAT.

Table 3.1
EKAT Pilot Table of Specifications

Emotion	Emotion Knowledge	Emotion Management
Happy	4 items	3 items
Sad	3 items	3 items
Mad	4 items	3 items
Afraid	4 items	2 items
Disgust	4 items	3 items
Surprise	4 items	4 items
Mixed	3 items	7 items

The objective was to ensure the assessment remained short enough for young children to complete without losing interest; while also allowing for adequate analyses to determine if the items factor together after pilot testing. The EKAT is a thirty-six item measure with fifteen items per domain and six non-scored example items. There was a 51 item pilot study of twenty-six items in the knowledge domain and twenty-five items in the management domain. The goal for

the item generation phase was to write and develop more items than necessary to allow for experts to review the items to see if they aligned with the pre-established domains. Research suggests that at least four items per scale are needed in order to test the homogeneity of the latent construct and internal reliability and consistency can be determined with as little as three items per specification (Cook et al., 1981; Harvey, Billings, and Nilan, 1985; Hinkin, 1998).

There were two domains of multiple choice questions on the EKAT, knowledge and management. The questions within the knowledge domain ask children to identify emotions based on pictures of facial expressions, to select synonyms for presented emotions, to identify body cues associated with emotions, and to identify emotions experienced across presented situations. Questions within the management domain are based on two to three sentence vignettes to which the child listens and then answers a multiple choice question about afterwards. Students are asked questions about the appropriate way to handle the scenario, what the characters were feeling in the vignette, and if all the characters felt or reacted in the same manner.

The EKAT was developed using a universal design to assure that the items on the assessment are not too advanced for the youngest students taking the test. The overall goal of a universal design measure is to ensure that the intended assessment, in this case the EKAT, is a valid measure for the majority of those being assessed. Universal design provides students taking the assessment a fair opportunity to learn and an accurate way to measure what they have learned (Johnstone, Altman, & Thurman, 2006). Within the EKAT this means the questions assess a wide range of topics that children will be able to relate too and understand. It also means that the language was kept simple and straightforward, so students in grades kindergarten through second would be able to understand what the question is asking.

Pre-Pilot Testing

After a bank of items was generated, a draft of the EKAT was piloted on first and second grade students. The purpose of the pre-pilot process was to see if children understood the items as they were currently written and to see how long it took a child to complete the assessment. Of particular importance to the principal researcher was the length of time a child could sit and complete the assessment before fatigue and/or boredom began to affect the results. This informal piloting process helped give the researcher a time frame of how long the assessment would take.

Additionally, the pre-pilot process helped the principal investigator identify potential problems that might arise in the pilot, such as reading aloud the items to students. A primary concern between the first draft of the EKAT, as a pencil paper assessment before being transitioned into an electronic format, is the child's attention span. Will a child be able to remember a vignette and all answer choices prior to answering the question? The electronic version of the survey will allow a child to listen to a question or answer choice repeatedly if they forget what they heard.

Students for the pre-pilot were recruited through the principal investigator's advisor, who hosted an after school research session for five first and second grade students from a local school district. The students all received parental consent to participate in the testing.

The results of the 44 item pre-pilot testing showed that students were able to sit and complete the assessment in approximately fifteen to twenty minutes. Two different administration techniques were utilized with groups of three students and one on one administration. In all cases, the items were read aloud to the students to assure uniform test administration and that all students understood the questions as they were written. Test

administration in the piloting process was split in half with approximately twenty-five items delivered at a time. A break was offered to the children in between halves.

Feedback from the children included that they could have completed the assessment in one sitting. The children also had similar responses when asked about the level of difficulty of the measure. When asked, they felt that the assessment was "easy' and one student said she felt the questions were 'very easy.' The average score of the students' assessment was eighty-six percent with an average of thirty-eight items correctly. When analyzing the incorrect answers, there were varied results showing that there were no particular items that all students answered incorrectly.

Phase Two

During the second phase of the study, content validation of the EKAT items occurred. Messick (1989a) defines validity as an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationale support the adequacy and appropriateness of inferences and actions based on test scores or other modes of assessments. Measuring validity is necessary in order to ensure the measure is being applied correctly and for its intended purpose. Judgmental evidence provides evidence of content validity that supports the domain relevance and representativeness of the content of the test instrument (Messick, 1989b).

There were two content validation phases of this project, and changes to the assessment were made after each phase of validation. During the initial phase of validation, the items were reviewed by members of the principal researcher's research team using an in person think aloud process to discuss their thoughts item by item. This process was to determine if the team members felt that the items were clear and fit within the assigned domains. The forced

articulation of the think aloud process allows the investigator to discover aspects of the assessment and process that may have been overlooked (Smith, 2014).

During the second phase of validation, the item pool was reviewed by experts in the field to determine if the items appropriately measured a child's emotional awareness and knowledge. Literature has suggested that a range of two to twenty experts in the field is needed to review an instrument for validity (Gable & Wolf, 1993; Lynn, 1986; McIntosh, MacKay, Hume, Doolittle, Vincent, Horner, Ervin, 2011; Sheatsley, 1983; Walz, Strickland, & Lenz, 1991). The number of content experts depends on the needed levels of expertise and diversity of knowledge and it is also acknowledged that not all experts will be knowledgeable in all items in the assessment. In this case, experts might be asked to weigh more heavily on certain sections of the assessment than others (Davis, 1992; Grant & Davis, 1997; McIntosh et al., 2011).

Nine expert reviewers were identified and invited to participate in the review based on the following criteria: knowledge and experience with social emotional learning, knowledge of children's emotion knowledge and experience conducting and publishing research related to social emotional knowledge and children. Of the nine invited experts, six participated in the expert review process of the EKAT. All experts reviewed all items because they were considered knowledgeable in the fields of social emotional knowledge and learning and have worked extensively with children. This ensured that those with more specific subject expertise were able to provide feedback. The panel of experts reviewed items based on six criteria: the items were worded clearly and succinctly, the chosen answer seemed plausible, the wording selection was appropriate for the target age group of *Strong Start,* grammar and spelling, any apparent biases, and any potential technical item-construction flaws (Crocker & Algina, 1986).

Expert reviewers provided feedback on the EKAT via an online survey. The experts were asked to answer each question and then provide feedback on each of the items as they related overall to assessment of children's levels of emotion knowledge and awareness. Specifically, they had to answer the following three different questions for each item and were given the option to provide additional comments:

1. What is the correct answer?

2. Which emotion does this question assess?

3. Under which domain does this item fall?

Additional feedback was requested from the experts for suggestions about increasing item difficulty without making the test too difficult for kindergarten through second grade students. This question was added as a direct result of the pre-pilot testing.

In order to assess the validity of the content feedback provided by the panel of experts, the principal investigator and advisor first checked the agreement of the reviewers through a multi-step process. First, the reliability between the experts and their answers was checked. Next, the Content Validity Index (CVI) was calculated to observe the extent to which each item in the EKAT represented the total overall construct (Rubio, Berg-Wagner, Tebb, Lee, & Rauch, 2003). When checking the reliability within the panel of experts, high expert panel reliability indicated that the panel agreed on the items' importance to measuring emotion knowledge as well as their perceptions of the accuracy of the questions whereas low agreement between the members of the panel indicated the items may not be measuring the construct of interest (McIntosh et al., 2011). Agreement was calculated by sorting the item responses (Davis, 1992; Grant & Davis, 1997; Lynn, 1986; McIntosh et al., 2011; Rubio et al., 2003). The reliability was then calculated for 43 of the 51 items (experts were not asked to review the first six items of

facial identification of emotions which were non-scored example items). In addition, two questions were written into the assessment after the expert review was completed.

In order to assess the content validity from the panel of experts, two types of reliability were calculated. First, the reliability between the experts and their ratings was checked. Next, the Content Validity Index (CVI) was calculated to observe the extent to which each item in the EKAT represented the total overall construct (Rubio, Berg-Wagner, Tebb, Lee, & Rauch, 2003). The reliability was calculated six times; to measure domain, answer and emotion agreement to the researcher and between experts. When checking the reliability between the panel of experts, high expert panel reliability indicates that the panel agrees on the items' importance to measuring emotion knowledge as well as their perceptions of the accuracy of the questions. Low reliability indicates disagreement between the members of the panel (McIntosh et al., 2011). Lynn (1986) recommends this approach when the panel of experts exceeds five participants. The results of the content validity will be discussed further in Chapter 4.

After the individual item validity was calculated, the Content Validity Index was calculated (which is the extent to which each item reflects the overall aims of the EKAT to measure children's emotion knowledge; Rubio et al, 2003). The CVI was calculated by taking items with a reliability score between the experts the researcher that are over 0.80 and dividing by the total number of questions in the content validity scale (McIntosh et al., 2011); the resulting number is the proportion of experts who view the assessment tool as valid (McIntosh et al., 2003). CVI results will be discussed further in Chapter 4.

Phase Three

Settings and Participants

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The pilot testing was conducted during the 2014-2015 school year within two Western Massachusetts' school districts. There were a total of 19 classrooms that participated: seven kindergarten classes, six first grade classes, and six second grade classes. Signed teacher consent and passive parental consent were obtained for all students participating in the study. A pencil and paper method of data collection was used with the principal investigator or a trained researcher sitting down one to one with a student to administer the assessment.

Sample Size

An a priori power analysis was conducted to get an estimated sample size needed for proposed analyses using the G*Power software. The power was based on the 10:1 (subject to item ratio) rule of thumb; determined by how many items each subject answered (51) and how many were kept after the analysis (30) (Costello & Osbourne, 2011). In order to have a low to medium effect size to explain the majority of the variance, a minimum of 100 students per grade was needed to complete the EKAT. The final sample size was 329 students: 112 kindergarten students, 101 first grade students, and 116 second grade students across 19 classrooms within the two school districts. See Table 3.2 below for the specific building demographic information taken from the 2014 School Report Cards from the Massachusetts Department of Elementary and Secondary Education website (School and District Profiles, 2014).

Table 3.2
Pilot Building School Demographics

	State Average	Study Average	School A	School B	School C	School D
Size	N/A	N/A	586	275	291	482
Grades	N/A	N/A	PreK-8	K-5	K-3	K-5
Demographics						
Hispanic	17.9%	52.5%	95.4%	10.9%	86.9%	16.8%
White	63.7%	57.53%	N/A	85.1%	9.3%	78.2%
English Not First Language	18.5%	29.85%	66.7%	0.7%	50.5%	1.5%

ELL	8.5%	22.15%	45.9%	0.7%	41.2%	0.8%
Students with Disabilities	17.1%	18.65%	17.9%	20.4%	24.7%	11.6%
Low Income	35%	62.38%	98.1%	21.7%	95.4%	34.3%

Note. Demographic populations below .5% of school population were not reported. ELL = English Language Learner.

Recruitment Method

In order to recruit schools to participate in the study, the principal investigator contacted a special education coordinator and other district administrator to obtain permission to contact elementary school principals and kindergarten through second grade teachers within the two school districts. Once district consent was obtained, a letter of introduction and a description of the project was sent to building principals and vice principals. If the building administrator was interested in participating, they sent a letter explaining the project to their kindergarten through second grade teachers from the principal investigator. Interested teachers contacted the building principal or vice principal, who then forwarded the list of names to the principal investigator.

After the teacher volunteered to participate, the principal investigator contacted him or her directly and a letter was sent home to parents to inform them about their child's participation in the research project (See Appendix A). Parents were only asked to respond if they wanted to receive a copy of the results from the assessment or if they did not want their child to participate in the study. Attempts were made to recruit schools that were diverse with respect to student variables such as race/ethnicity, socioeconomic status, and location of school (Snyder & Dillow, 2012).

Incentives for Participation

Incentives were offered to all teachers who volunteered to participate in the project. Those who took part in the process received a twenty five dollar Target gift card to thank them

for their participation. Additionally, participating teachers were given a copy of the assessment

to use with additional classes and to provide feedback to the principal investigator. All

participating teachers also received a class-wide score report detailing how their class scored on

the overall measure and also within each individual emotion category (See Appendix C).

Pilot Testing

Graduate and undergraduate students were trained in data collection procedures by the

principal researcher. A team of researchers including the principal researcher, administered the

assessment in the kindergarten through second grade classrooms. The kindergarten through

second grade students took the assessment individually with the researchers. The researchers

read all the questions and answer choices aloud to students for consistency across administration.

For the final version of the tool, when it is administered as a tablet application, the student will

have the items read aloud to them. The piloted version of the EKAT was approximately one

third longer then the anticipated finalized version of the assessment to ensure as many items as

possible were being tested. In its piloted form, there were fifty-one items, twenty-six knowledge

domain and twenty-five management domain items. The assessment was administered in one

session to eliminate the potential risk for missing data and took approximately fifteen to twenty

minutes per child. If a child was unable to select the correct emotion based on the face within

the first six items with at least eighty percent accuracy and answering five of the first six items

correctly, the assessment was discontinued. This did not occur during the pilot testing.

As the student was taking the assessment, if the researcher noticed anything that might

have been affecting the testing session, they took note of it on the top of the test page. This

information included if there were shortened testing times, fire drills, and general student

distraction.   These notes were taken into account during the analysis phase if it was noted that

the child was not attentive and the answers were not an accurate representation of his or her potential knowledge.

Phase Four

Classical Item Analysis

The item analysis phase was a multi-step process that began with a classical item analysis examining item discrimination and reliability based on internal consistency within each grade. Because the EKAT is a new measure, and the research questions were focused towards ensuring that inferences drawn from the entire tool were reliable and valid as well as developmentally appropriate across three grades.

The calculations were run using the Statistical Package for the Social Sciences (SPSS). Each set of calculations was done twice, once to evaluate the items under a dichotomous scoring system and once to evaluate the items under a polytomous scoring system. With dichotomous scoring, an item could either receive a score of 1 (for a correct answer) or a 0 (for an incorrect answer). With the polytomous scoring system an item could receive one of three scores, 2 (correct answer), 1 (partially correct answer), or 0 (incorrect answer). First the coefficient alpha (α) was analyzed. The alpha value measures the expected correlation of two tests measuring the same construct. It is assumed that the average correlation of a set of items is an accurate estimate of the correlation of all the items that pertain to that construct (Nunnally, 1978).

After reliability was calculated, the item discrimination process began by calculating point biserial corrected coefficients (r_{pb}). The point biserial corrected correlation is equivalent to Pearson's *r*. It correlates each item against the total but does not include that specific item; this ensures that the total correlation does not increase unintentionally. Items with a score of 0.2 or higher were retained for further analysis and items that fell below that cutoff were eliminated.

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The principal investigator's committee and advisor determined the cutoff score of 0.2. Within each set of items, the first six items, which were already considered non-scored example items, were further removed from analysis because they fell below the discrimination cutoff.

Exploratory Factor Analysis

First the exploratory factor analysis (EFA) was conducted on the items that were not excluded based on the point-biserial correlation. The purpose of an EFA is to determine the number of latent variables underlying the item responses (Fabrigar, Wegener, MacCallum, & Strahan, 1999). When conducting an EFA the investigator has no expectations of the number or nature of the variables. It allows the researcher to explore the main dimensions to generate a theory or model from a relatively large set of latent constructs often represented by a set of items (Williams & Onsman, 2012). Within this project, the EFA was conducted with the intention that the constructs of emotion knowledge and emotion management would factor together.

Calculations were run using the Mplus software package. When running the EFA the robust weighted least squares method (WSLM) was used to estimate the parameters. The quartimin method was used to rotate the factors, which simplifies the variables by maximizing the variance with variables across factors. Factors are rotated to improve their interpretability and utility. Both a one factor and a two factor EFA were run to examine the differences between the two models. In the one factor model both domains knowledge and management were analyzed together as one combined factor. In the two factor model the domains were analyzed separately. Once the EFAs were run, the factor loadings were analyzed. These analyses indicate how each hidden factor is associated with the observable variables used in the analysis.

Model Fit Analyses

Four measures of goodness of fit of the EKAT items of both the one- and two-factor models were examined to determine if the model accurately represented the relationship among the items. These measures all used chi-square and degrees of freedom (*df*) to calculate the results. The comparative fit index (CFI) is an incremental measure that compares the fit of a target model to the fit of an independent model, a model in which the variables are assumed to be uncorrelated. Fit refers to the difference between the observed and predicted covariance matrices, as represented by the chi-square index. The Tucker Lewis Index (TLI) is another incremental measure of fit that is highly correlated with the comparative fit index (Kenny, 2015). Values over 0.90 or over 0.95 are considered acceptable for both TLI and CFI (Hu & Bentler, 1999).

The root mean square error of approximation (RMSEA) is a measure of absolute fit calculated using the chi square and *df* values. MacCallum, Browne and Sugawara (1996) have used 0.01, 0.05, and 0.08 to indicate excellent, good, and mediocre fit respectively. The standardized square root mean residual (SRMR) is another absolute measure of fit and is defined as the standardized difference between the observed correlation and the predicted correlation. Because the SRMR is an absolute measure of fit, a value of zero indicates perfect fit. A value less than 0.08 is generally considered a good fit (Hu & Bentler, 1999).

Confirmatory Factor Analysis

After the EFA was completed, a confirmatory factor analysis (CFA) was conducted on both sets of remaining items. CFA is a form of structural equation modeling where the researcher tests a proposed model. Hypothesized models are tested against actual data, and the analysis demonstrates loadings of observed variables on the latent variables and the correlation between the latent variables. The software package Mplus was used to estimate the parameters

for the CFA model and provide the same four fit indices.

CHAPTER IV

RESULTS

The aims of the current study have been to develop, test, and pilot a general outcome measurement tool that will allow educators to test young children's knowledge of factors of emotional development (CASEL, 2014). Specifically, this study aimed to answer the following research questions: Does the Emotional Knowledge and Awareness Test (EKAT) measure provide reliable scores of early elementary children's emotion knowledge? Does the tool demonstrate content validity and developmental appropriateness? Do items reflecting varying facets of emotion knowledge adequately factor together?

The item analysis process consisted of several steps to ensure both that the items analyzed were psychometrically sound and that items factored together appropriately and accurately measuring children's levels of emotion knowledge. First, the external reliability of the expert reviewers to the researcher was calculated. This was done to ensure the measure's reliability. Those data were then used to calculate the Content Validity Index to ensure that the inferences drawn from the EKAT are valid. The last phase in the analysis process was to analyze the items themselves to ensure they factor together and align with the overall measure.

Question 1: Is the Emotional Knowledge and Awareness Test (EKAT) a reliable measure of early elementary children's emotion knowledge?

This question was answered using the data that the panel of expert reviewers provided. Once the experts provided their feedback, the agreement between the experts and their answers was checked. Next, the Content Validity Index (CVI) was calculated to observe the extent to which each item in the EKAT represented the total overall construct (Rubio, Berg-Wagner, Tebb, Lee, & Rauch, 2003).

When checking the agreement between the panel of experts, high expert panel agreement indicated that the panel agreed on an item's importance in measuring emotion knowledge as well as their perceptions of the accuracy of the questions. Low agreement indicated disagreement between the members of the panel (McIntosh et al., 2011). Agreement was calculated by sorting the item responses and finding the percentage of agreement between reviewers and between reviewers and the principal investigator for each answer (Davis, 1992; Grant & Davis, 1997; Lynn, 1986; McIntosh et al., 2011; Rubio et al., 2003). The agreement was calculated for 43 of the 51 items. Experts were not asked to review the first six items of facial identification of emotions, which will serve as the non-scored example items on the final measure, and two additional items were written after the expert review. Table 6.1 (Appendix F) displays the reliability results.

The findings showed that across the majority of the items there was both internal agreement between the experts and external agreement between the experts and the researcher. An item was considered reliable if it had an agreement score of at least 0.80 across the six measured reliability domains. If an item domain fell below 0.80 that item was flagged. This ensured the principal investigator knew there were concerns with the reliability of that item as the analysis process progressed. Seven items were flagged as items of concern. With all seven items, the expert panel considered the answer to be a mixed emotions question while the principal investigator identified a single emotion to be represented. Based on feedback from the expert panel, the principal investigator and advisor revised all items in question prior to the pilot.

Question 2: Does the tool demonstrate content validity and developmental appropriateness?

Content validity of the EKAT was measured using the Content Validity Index (CVI). If an item fell below 0.80 on any of the categories of the reliability analysis it was not included in

the CVI calculations. Davis (1992) recommends a CVI score of at least 0.80 for new measures. When calculating the reliability 38 items were analyzed from the Emotions category and 43 items each from the Domain and Answer categories. The CVI scores meet the 0.80 criteria for new measures and the assessment can be considered to have strong content validity. There was perfect validity in the Domain and Answer categories (scores of 0.100). This meant that the experts and principal investigator were in agreement when deciding in which domain a question belonged: Knowledge or Management. The lowest validity score was in the Emotion category (score of 0.883). This is correlated with the previously mentioned flagged items where there were slightly lower reliability scores between the experts and principle investigator.

Developmental appropriateness was analyzed using the results from the item discrimination process described in Research Question 3. First, the reliability scores were calculated by finding alpha. The following are the alpha values for each grade reported first with the dichotomous scoring system and then the polytomous scoring system. Kindergarten: 0.853, 0.858; First Grade: 0.896, 0.888; Second Grade: 0.814, 0.804. Close alpha values show that all the students who completed this assessment answered fairly similarly, meaning students across all three grades were able to accurately and reliably complete the assessment.

Next, the individual item discrimination scores were analyzed (Appendix F). Again, these scores were fairly consistent across grade levels. Ideally, since this tool is designed to serve students across three grades, kindergarten students would show the lowest scores on the individual item discrimination and second graders would show the highest scores. This would imply that as students are growing and learning, their level of knowledge is increasing which would be reflective in the scores of the assessment. This can be seen in a few items, such as

items fourteen, twenty-two, and twenty-seven in Table 6.1 in Appendix F. Below is item 14 and the correct answer is bolded.

> Vinny was eating dinner and his mom asked him to try a new food. He took a bite and thought it tasted yucky and gross. What is an okay way for Vinny to handle his feelings?
>
> a. Spit the food all over the table.
> b. Yell at his mom for making him try a new food.
> c. **Spit the food out into a napkin.**

On item 14, using dichotomous scoring, the item discrimination scores were 0.297 in kindergarten, 0.334 in first grade, and 0.475 in second grade. This shows that as students were growing older they were becoming more aware of the more appropriate ways to handle different situations. However, since there was a limited sample size and small pilot population the results cannot yet be generalized to a broader population.

Additional analysis was used to determine developmental appropriateness by observing the specific values of the score across grades to note if scores fell close to either 0.000 or 1.00. If scores fell closer to 0.000 that would mean that the tool was too difficult for either all students or students within a specific grade. A low score would mean that students either did not understand the question or did not select the correct answer for the question, which would be interpreted through low item discrimination scores. The inverse would be true if scores fell closer to 1.00 for either all students or students within a specific grade. That would imply that the measure was too easy and all students were answering all questions correctly, which would leave no room to show growth after instruction or with age.

Question 3: Do items reflecting varying facets of emotion knowledge adequately factor together?

Item Discrimination Analyses

The item analysis phase was a multi-step process that began with a classical test theory (CTT) analysis for item discrimination and for reliability analysis. First the coefficient alpha (α) was analyzed. Table 4.3 reported the alpha values by grade. The results of the reliability analysis show that there is a high level of reliability across the grades using both scoring systems with first grade showing the highest rate of reliability in both. An alpha value of 0.80 or higher is considered strong.

Once alpha was calculated item discrimination was calculated using point biserial corrected coefficients (r_{pb}). The point biserial corrected correlation is equivalent to Pearson's r. Table 4.1 shows the results of the item discrimination process on both the dichotomously scored and polytomously scored items. If an item fell below 0.20 in one or more grades it was eliminated and not included in either the exploratory or confirmatory factor analyses. When looking at the items, certain items performed better in certain grades. For example, item 16 showed that as the students got older they began to show increasing correlation scores. This shows that the item performed better with older students then younger ones. Inversely, some items performed better with younger students. This can be seen with item 49, where kindergarten students performed the best and the score decreased with age.

Table 4.1
Point Biserial Correlation Results

Item	Kindergarten		First Grade		Second Grade	
	D	P	D	P	D	P
1: happy, EK	0.00	0.00	0.00	0.00	0.00	0.00
2: sad, EK	-0.16	-0.14	0.00	0.00	-0.05	-0.03
3: mad, EK	-0.13	-0.14	0.13	0.12	-0.09	-0.08
4: disgust, EK	-0.07	-0.08	0.11	0.12	-0.39	-0.47
5: afraid, EK	0.17	0.18	0.10	0.08	0.19	0.20
6: surprise, EK	0.10	0.11	0.19	0.18	0.15	0.15
7: happy, EK	0.13	0.10	0.37	0.25	0.27	0.17
8: afraid, EK	0.12	0.13	-0.06	0.03	-0.09	-0.02

9: sad, EK	0.28	0.32	0.38	0.33	0.26	0.21
10: surprise, EK	0.26	0.15	0.59	0.47	0.49	0.35
11: mad, EK	-0.04	-0.05	-0.11	-0.11	0.01	0.00
12: disgust, EK	0.29	0.32	0.43	0.43	0.31	0.31
13: afraid, EK	0.51	0.56	0.56	0.51	0.18	0.19
14: surprise, EM	0.29	0.22	0.33	0.26	0.47	0.37
15: mixed, EM	0.51	0.53	0.41	0.45	0.48	0.49
16: mixed, EK	-0.05	-0.05	0.26	0.22	0.33	0.41
17: happy, EM	0.49	0.43	0.36	0.37	0.48	0.47
18: disgust, EM	0.15	0.19	0.13	0.05	0.52	0.13
19: happy, EK	0.22	0.30	0.35	0.34	0.25	0.24
20: surprise, EK	0.22	0.17	0.28	0.28	0.28	0.21
21: mixed, EM	0.35	0.23	0.43	0.37	0.30	0.21
22: sad, EM	0.22	0.15	0.28	0.21	0.35	0.34
23: surprise, EM	0.47	0.56	0.53	0.56	0.39	0.41
24: disgust, EM	0.21	0.19	0.13	0.12	0.33	0.30
25: mad, EM	0.25	0.21	0.28	0.28	0.21	0.23
26: surprise, EK	0.10	0.09	0.27	0.35	-0.18	-0.18
27: mad, EK	0.18	0.15	0.35	0.30	0.46	0.43
28: afraid, EM	0.50	0.52	0.62	0.58	0.35	0.22
29: happy, EM	0.43	0.42	0.29	0.34	0.30	0.37
30: mixed, EK	0.27	0.35	0.21	0.22	0.26	0.33
31: mixed, EM	0.54	0.58	0.46	0.48	0.30	0.41
32: disgust, EK	0.19	0.18	0.33	0.31	-0.04	-0.02
33: disgust, EK	0.42	0.44	0.49	0.55	0.25	0.39
34: sad, EM	0.22	0.26	0.12	0.15	0.22	0.18
35: sad, EK	0.51	0.37	0.62	0.48	0.46	0.42
36: afraid, EK	0.38	0.44	0.42	0.49	0.25	0.39
37: mad, EK	0.24	0.37	0.47	0.45	0.20	0.24
38: mixed, EK	-0.07	0.24	0.37	0.31	0.13	0.30
39: mixed, EM	0.64	0.69	0.57	0.60	0.38	0.46
40: mad, EM	0.59	0.57	0.51	0.55	0.36	0.42
41: happy, EM	0.11	0.09	0.18	0.14	0.39	0.37
42: sad, EM	0.42	0.52	0.52	0.58	0.27	0.39
43: disgust, EM	0.43	0.22	0.45	0.28	0.33	0.28
44: mixed, EM	0.02	0.06	0.32	0.34	0.21	0.18
45: surprise, EM	0.38	0.42	0.41	0.45	0.42	0.46
46: mixed, EM	0.22	0.23	0.42	0.39	0.23	0.17
47: afraid, EM	0.57	0.61	0.59	0.58	0.58	0.62
48: mad, EM	0.33	0.30	0.33	0.34	0.12	0.18

49: mixed, EM	0.60	0.58	0.58	0.55	0.32	0.33
50: surprise, EM	0.43	0.46	0.48	0.48	-0.03	0.00
51: happy, EK	0.55	0.48	0.48	0.35	0.37	0.31

Note: Item column contains item number: emotion targeted within question, domain of question (EM stands for Emotion Management and EK stands for Emotion Knowledge). The rows list the grades, underneath the D stands for dichotomous scoring and the P stands for polytomous scoring.

After reviewing the results of the discrimination analyses items were eliminated from the measure and from further exploratory and confirmatory factor analyses. Nineteen items fell below the 0.20 discrimination cutoff value using the dichotomous scoring and 24 items were eliminated using the polytomous scoring. Within each set of items, the first six items, which were already considered non-scored example items, were further removed from analysis because they fell below the discrimination cutoff. This meant that a total of 25 items were eliminated from the dichotomous item set and thirty items were eliminated from the polytomous item set.

Prior to conducting the factor analysis, the remaining items were grouped by domain to ensure there was a representative sample from both the management and knowledge domains and to ensure there were enough items to run the factor analysis. In order to run the factor analysis there needed to be at least three items per domain. While items did not need to be evenly distributed across emotion, the items naturally were divided evenly across the seven emotion categories (happy, sad, mad, disgust, afraid, surprise, and mixed emotions).

Exploratory Factor Analysis

The 32 remaining items using the dichotomous scoring system and the 27 remaining items using the polytomous scoring system were analyzed. Both a one factor and a two factor EFA were run to examine the differences between the two models. In the one-factor model both domains: knowledge and management were analyzed together as one combined factor. In the two-factor model the domains were analyzed separately. First the eigenvalue was calculated;

Figure 4.1 visually displays the items using a scree plot to see which factors account for the majority of the variance.

Figure 4.1. Scree Plot for Dichotomous Scoring Exploratory Factor Analysis
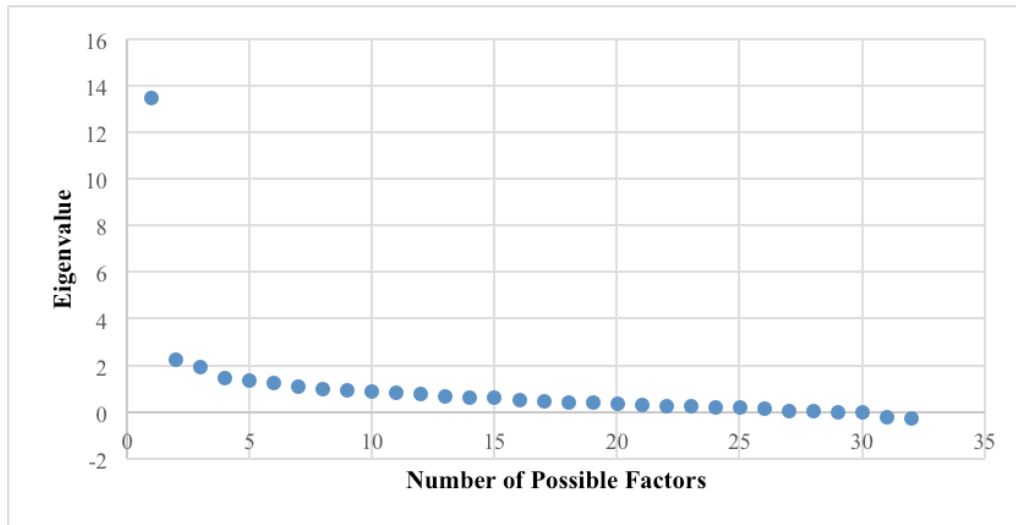
Figure 4.1. The above scree plot shows the eigenvalues for the thirty-two items analyzed in the dichotomous scoring exploratory factor analysis.

The eigenvalue score of 13.459 on item one indicates strong evidence for a one a factor model because this accounts for 42% of the variance. If the eigenvalue scores of items one and two were closer together in size this would indicate evidence of a two factor model. Figure 4.2 below displays the scree plot of the polytomous item set.

Figure 4.2. Scree Plot for Polytomous Scoring Exploratory Factor Analysis
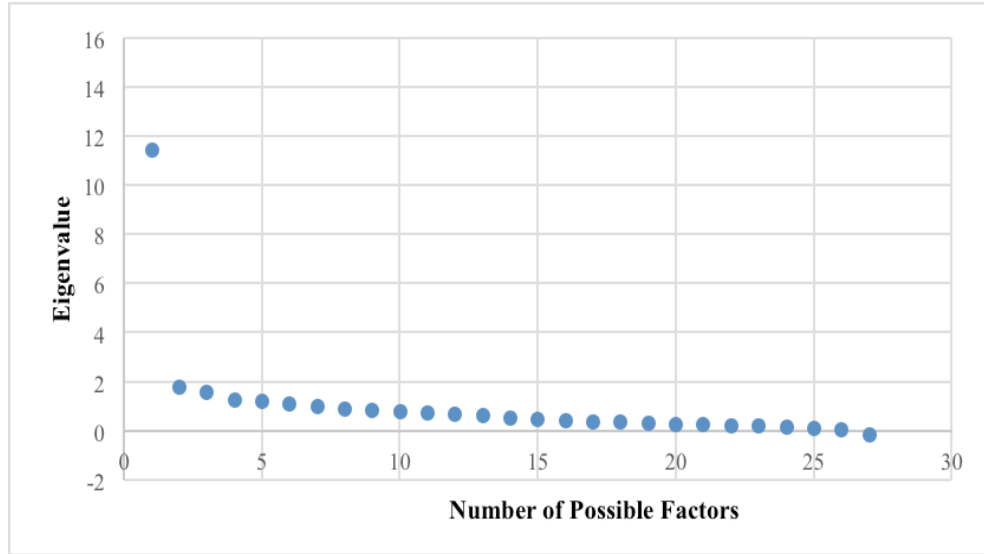
Figure 4.2. The above scree plot shows the eigenvalues for the twenty-seven items analyzed in the polytomous scoring exploratory factor analysis.

Similarly, the polytomous item set the high eigenvalue score of 11.416 on item one indicates strong evidence for a one factor model because this accounts for 42% of the variance. If the eigenvalue scores of items one and two were closer together in size this would indicate evidence of a two factor model.

To further support the evidence of a one factor model over a two factor model, selected statistical tests showing the goodness of fit of the EKAT items were calculated. Table 4.2 shows the model fit statistics for both the one and two factor models using both scoring methods.

Table 4.2
Model Fit Statistics for One and Two Factor EFA

	x^2	*df*	CFI	TLI	RMSEA	SRMR
One Factor						
Dichotomous	473.051	424	0.981	0.980	0.039	0.098
Polytomous	432.222	324	0.989	0.988	0.032	0.083

Two Factor

Dichotomous	395.494	298	0.987	0.985	0.033	0.084
Polytomous	364.217	298	0.993	0.992	0.026	0.075

Note: x^2 = chi square goodness of fit; *df* = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Square Root Mean Residual ($p < .0001$)

Results for both sets of models show the CFI scores are almost 1.0, which indicates there is acceptable fit for both the one and two factor models using both scoring systems. The TLI scores all fall above the 0.95 acceptable cutoff value. RMSEA scores all fall between 0.02 and 0.03 across all four domains, which indicates good to excellent model fit. This further supports that a one-factor model of analysis is an appropriate fit.

The only measure of fit test that did not show unanimous good results was the SRMR. Only the two factor polytomous scoring model had a score below the 0.08 cutoff value, with a score of 0.075. The other three domain scores fell slightly above the 0.08 cutoff value. The highest score of 0.098 was with the one factor dichotomous scoring system. As seen, there are not many statistical differences between the models. This implies that the EKAT is essentially only measuring one construct, an overall level of emotion knowledge, and there are not statistically significant differences between the knowledge and management domains.

The model fit statistics also show that there are not many statistical differences between the two scoring systems. While the polytomous scoring method has slightly higher results, the numbers are very close and almost all scores fell within the acceptable ranges as dictated by the individual tests of model fit. This implies that either method of scoring can be used and will be reliable on the final measure.

Table 4.3 shows the factor loadings from the exploratory factor analysis. The factor

loadings indicate how each hidden factor is associated with the observable variables used in the

analysis. The loadings in the Factor 1 column are all much larger then the Factor 2 column

loadings. This shows that not all the items loaded on the two factor model, which further

supports the one factor model.

Table 4.3
Rotated One and Two Factor Loadings: Dichotomous Scoring

Item	Factor 1	Factor 2
1	0.50	0.17
2	0.67	0.07
3	0.57	-0.01
4	0.73	0.12
5	0.24	0.09
6	0.44	0.04
7	0.48	0.01
8	0.51	0.26
9	0.68	0.30
10	0.82	0.33
11	0.67	0.31
12	0.56	0.29
13	0.71	0.45
14	0.58	0.45
15	0.76	0.24
16	0.69	0.11
17	0.59	0.22
18	0.35	0.21
19	0.75	0.42
20	0.31	0.52
21	0.44	0.96
22	0.74	0.59
23	0.62	0.26
24	0.64	0.55
25	0.79	0.45
26	0.72	0.65
27	0.62	0.17
28	0.69	0.43
29	0.61	0.39
30	0.49	0.61
31	0.80	0.44
32	0.82	0.56

Confirmatory Factor Analysis

The primary hypothesis of the EKAT CFA was that there would be few differences in scores when comparing the one and two factor models. This would support the idea that only one overall score of emotion knowledge is being reported. The secondary hypothesis was that the scoring systems would also show similar score correlations, implying that a dichotomous scoring system showed similar statistical strength as the polytomous scoring system.

Table 4.4 below reports the model fit statistics for both the one and two factor CFA models. As seen with the EFA model fit statistics the correlations between the one and two factor models are very close, which continues to imply that the EKAT is only measuring one factor despite having items divided into two separate domains. This supports the first hypothesis. When looking at the differences in scoring systems again, the polytomous scoring system shows slightly higher correlations than the dichotomous system, but both sets of results are strong. This confirms the second hypothesis of the CFA. There was perfect correlation (1.00) between the both sets of factors. This also supports evidence of the one factor model alongside the model fit statistics.

Table 4.4
Model Fit Statistics for One and Two Factor CFA

	CFI	TLI	RMSEA
One Factor			
Dichotomous	0.970	0.980	0.039
Polytomous	0.983	0.988	0.032
Two Factor			
Dichotomous	0.976	0.984	0.034

Polytomous	0.987	0.991	0.027

Note: CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation; WRMR = Weighted Root Mean Residual

Summary

The selected statistical tests used in the analysis of the EKAT items allowed the principal investigator to answer all three intended research questions. First, does the Emotional Knowledge and Awareness Test (EKAT) provide reliable scores of early elementary children's emotion knowledge? The answer to that question is yes based on the reliability analyses done. The majority of the items had both internal reliability between the experts and external reliability between the experts and the principal investigator over the three categories measured: domain, answer, and emotion.

Second, does the tool demonstrate content validity and developmental appropriateness? Again, the answer to this question is yes. The scores of the CVI all fell above the 0.8, the suggested cutoff score for new measures. To decide if the tool was developmentally appropriate for students in grades kindergarten through second, the reliability alpha value scores were analyzed. The close alpha values show that all the students who completed this assessment answered fairly similarly. This meant that students across all three grades were able to accurately and reliably complete the assessment.

To further assess developmental appropriateness, visual analysis was used to note if scores fell close to either 0.00 or 1.00. If scores fell closer to 0.00 that would signify that the tool was too difficult for either all students or students within a specific grade. A low score would mean that students either did not understand the question or did not select the correct answer for the question which would be interpreted through low item discrimination scores. The inverse would be true if scores fell closer to 1.00 for either all students or students within a specific

grade. That would imply that the measure was too easy and all students were answering all questions correctly which would leave no room to show growth after instruction or with age.

The final research question was the most complex to analyze: do items reflecting varying facets of emotion knowledge adequately factor together? This question was answered using both an exploratory and confirmatory factor analysis using both a one factor model and a two factor model. In the one factor model both domains, knowledge and management, were analyzed together as one combined factor. In the two factor model the domains were analyzed separately. The eigenvalues from both the dichotomous and polytomous one factor models had high scores and accounted for almost 50% of the total score variance. This showed strong evidence that the items on the EKAT do reflect varying facets of emotion knowledge and do factor together.

When looking at the scores of the statistical fit tests the closeness of scores points to minimal differences between the one and two factor models. This meant that while the overall assessment is reliable and inferences drawn are a valid measure of emotion knowledge, the items do not necessarily separately measure either domain knowledge or management. The statistical fit tests also show very similar scores between the polytomous and dichotomous scoring methods. This implies that there would be accurate results using either technique.

When thinking about ease of use within the classroom, a one factor dichotomously scored tool would be the easiest for teachers to evaluate test results. A teacher would be able to sum the number of correct answers and the final number would be the final score, which would then be equated to a level of emotion knowledge. This would be the most simple and straightforward method for educators, allowing them to quickly and easily score and analyze the EKAT results. Using the teacher score report (Appendix E), teachers will be able to fill in their student's scores

and calculate the percentage of correct answers across the entire tool and within each emotion category.

CHAPTER V

DISCUSSION

Measuring emotion knowledge in young children is a complex task for several reasons. Many of the social-emotional learning curricula being implemented in schools do not have accompanying assessments to measure if students are learning the skills being taught, such as knowledge of emotions and strategies for managing strong emotions. It is also difficult to measure the skill gains due to both the complex content and rapid growth seen in young children during their early years of life.

<u>Reintroduction of Problem</u>

Cole, Martin, and Dennis (2004) wrote that there is no "gold standard" methodology for measuring emotions. They do note however, that it is critical for researchers in this area to ensure that constructs of measurement are articulated and well defined. Currently, there are many outcome measures and student surveys available for late elementary through high school students that can reliably measure student levels of emotional awareness and development through self-report, surveys, and other standardized measures. However, there are very few assessment tools available that reliably measure these same factors in young children, specifically those in early elementary grades.

Most of the current research body has been focused on the development of non-normative and pathological behaviors rather than pro-social behaviors (Calderalla & Merrell, 1997; Carlo & Randall, 2001; Cummings, Kaminski, & Merrell, 2008). Practitioners have voiced the need for specific curricula and related assessment tools that identify and measure what social-emotional skills children know and what skills still need to be taught (Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001).

Some of the measures currently available today have been designed specifically for early childhood (e.g. preschool children) or late elementary school and beyond, leaving a void of assessments to measure emotion knowledge in young elementary school students. There are also few measures that distinguish between the measurement of symptoms and the measurement of emotion skills for this age of students. There continues to be an inadequacy of accurate, reliable, and valid assessments that measure a young elementary school student's current emotion knowledge levels. Such a tool, like the EKAT created in this study, could be used to assess student current understanding of their emotions, the emotions of others, and the management of emotions in order to create targeted interventions.

Study Overview

The aim of the current study was to develop and validate an emotion knowledge measure for children in grades kindergarten through second. The development, initial pilot, and analysis of the Emotion Knowledge and Awareness Test (EKAT) took place over four distinct phases. Phase One included item development and informal content validation with practitioners and a small sample of children. Phase Two included content validation of the EKAT from a panel of experts in the fields of child development, psychology and education as well feedback from practitioners. The third phase included a pilot study of the EKAT with a diverse population of students throughout Western Massachusetts. The final phase of the EKAT was the analysis, which included a classical test theory analysis to eliminate items with poor discrimination and an exploratory and confirmatory factor analysis to measure how the items fit into the knowledge and management domains.

Final Assessment

The initial pilot of the EKAT consisted of fifty-one items split equally between two domains: Knowledge and Management. The knowledge domain set out to measure emotion identification and fluency, and the management domain was designed to measure understanding situations in which multiple emotions may be experienced, understanding that others may feel differently in similar situations, and the management of emotions (CASEL, 2014). Table 5.1 shows the table of specifications for the initial 51 item pilot version of the EKAT.

Table 5.1
EKAT Pilot Table of Specifications

Emotion	Knowledge	Management
Happy	4 items	3 items
Sad	3 items	3 items
Mad	4 items	3 items
Afraid	4 items	2 items
Disgust	4 items	3 items
Surprise	4 items	4 items
Mixed	3 items	7 items

Prior to the analyses phase, the final version EKAT was hypothesized to be a thirty item measure with fifteen items per domain. This would allow the tool to remain short enough for young children to complete without losing interest, yet long enough that accurate conclusions could be made from the scores. However, the analyses showed that because there was such a high correlation between the two domains of knowledge and management, there actually was not a difference between measuring the items separately. The final version of the EKAT is thirty-six items, items are now evenly divided across emotion and only measure one domain, overall

emotion knowledge which encompasses both the originally defined knowledge and management domains. There are also six non-scored example items at the beginning of the assessment. Table 5.2 shows the table of specifications for the final version of the EKAT.

Table 5.2
EKAT Final Table of Specifications

Emotion	Emotion Knowledge
Happy	4 items
Sad	4 items
Mad	3 items
Afraid	4 items
Disgust	4 items
Surprise	5 items
Mixed	6 items

Note: The first six example items are not included in the final table of specifications.

The answers for the EKAT items were analyzed using both dichotomous and polytomous scoring systems. With dichotomous scoring, an item could either receive a score of 1 (for a correct answer) or a 0 (for an incorrect answer). With the polytomous scoring system an item could receive one of three scores, 2 (correct answer), 1 (partially correct answer), or 0 (incorrect answer). The analyses showed very similar results using both scoring systems.

A dichotomous scoring system will be used for the final version of this tool. This was chosen over the polytomous scoring system for several reasons. First, when running the classical test theory analysis, twenty-four items were eliminated from the polytomously scored set and nineteen from the dichotomous item set. This would mean that the final tool would have fewer than thirty questions if polytomous scoring were to be used. While the assessment would have

been shorter and faster to administer, there would not have been an equal representation of items across all the emotion domains.

The second reason a dichotomous scoring system was chosen for the final version of the EKAT was for ease of use. When an educator is administering the tool, it will be faster and easier to score using a dichotomous scoring system. Each item is weighted as one point and a total percentage score can be calculated by taking the number of items answered correctly and dividing that by thirty. Specific emotion percentage scores can also easily be calculated by dividing the amount of correct answers per emotion by the number of items within that domain. Teachers will be provided with a score sheet to easily compute these calculations.

One significant part of the EKAT that was not developed during the project was the scoring guide. Prior to expanding the EKAT line of research, the immediate next step for the project will be for the principal investigator and advisor to determine the scoring criteria. The EKAT pilot items were not scored because the scoring criteria would change between the pilot and final draft of the tool. This was because the item pool needed to be reduced. Now that the items on the tool have been finalized, a scoring guide and scoring criteria can be established. Currently, if a teacher was administering the tool to students they could easily calculate the percentage of correct answers on the overall measure and within each emotion category. However, there is no scoring guide yet to explain how a specific score aligns with a student or classes' current level of emotion knowledge and awareness. The future scoring guide will include scoring instructions and cut scores as well as norms for teachers to use for comparison.

Implications for Educators

Ideally the EKAT will have many positive implications for educators working with early elementary school children. A teacher who teaches social-emotional learning within

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his or her classroom will now have access to a measure to measure individual student and/or class growth throughout the school year. This will be a welcome addition for the practitioners that have voiced the need for specific curricula and related assessment tools too identify and measure what social-emotional skills children know and what skills still need to be taught (Izard et al., 2001). Most of the current research body has been focused on the development of non-normative and pathological behaviors rather than pro-social behaviors (Caldarella & Merrell, 1997; Carlo & Randall, 2001; Cummings, Kaminski, & Merrell, 2008). Teachers will ideally be able to give the EKAT multiple times throughout the year to track progress and to see which specific skills students have mastered or still need more support in learning. This will be possible once equivalent, alternate forms of the test have been developed and further examinations of technical adequacy have been completed.

Much like curriculum based measurement and other assessment scores that travel with students from grade to grade, the EKAT scores could also follow students. This would allow for a teacher to look at student scores from the previous year to see which specific emotions need more direct teaching and support. Teachers would also be able to administer the EKAT at the beginning of the school year to obtain a new baseline score for each student. This would identify any possible areas of regression or growth since their previous assessment.

School psychologists or counselors will also see positive implications from the EKAT. When a psychologist or counselor is called in to consult on a classroom or with a teacher who needs additional classroom or behavior management supports, EKAT scores may aid in directing the consultation process. If the consultant notices that student scores are low in a specific emotion, such as *mad* or *sad*, this might provide information about a contributing factor to some of the specific behavior issues a teacher is noticing. The teacher and consultant can then

collaborate on specific interventions that will help the class or specific students in order to improve the potential skill deficits.

Parents will also benefit from the EKAT via score reports on their child. A teacher might discuss these results with parents during a conference and can then give parents suggested areas to target at home. One of the benefits of the EKAT is that it measures basic emotions that have commonly agreed upon definitions and indicators. If a teacher notices that a child is struggling to understand the feeling of *surprised,* they might share this information with the parent and talk about potential strategies to reinforce teaching this emotion outside of school.

<u>**Limitations of Study**</u>

There were a few limitations to this study. The first was the sample population. While the population of students assessed was large enough to generate reliability and validity estimate, the sample population was only a small sample of the Commonwealth of Massachusetts. The demographics of the represented school districts and elementary schools were not reflective of the overall state demographics in all categories. However, they do not necessarily represent the overall national demographics. As explained within the *Future Research* section, this limitation could be remedied in later studies by expanding upon the sample population.

Expanding the sample population size and administering the assessment to more children will also gauge if students are scoring similarly to the sample population. There were no specific cut scores generated for the pilot assessment because the goal was to test the items rather then test a child's level of emotion knowledge. This is both a limitation and avenue for future research. Now that the EKAT item pool has been shortened to represent the final thirty item measure, cut scores can be generated to give educators criteria for how their students did on the test.

Another limitation was during the analyses portion of the study. The overall goal of this project was to create and validate a general outcome measure for students in grades kindergarten through second. With this goal in mind, the analyses were run together across all three grades. Individual exploratory and confirmatory factor analyses were not done for each grade; instead they were run on the whole sample population. This was intentional because it yielded reliable results and valid inferences could be drawn across the entire measure and population. However, specific grade level results would have further supported the broader results across all three grades. Again, this limitation is further explained and expanded upon in the *Future Research* section.

A final limitation of the study was administering the assessment in one language. The tool was administered in English to students and the majority of students spoke English as their first language. There was a percentage of the population who were not native English speakers and possibly would have benefitted from the tool being translated into Spanish. This did not affect the results, because all students participating in the study were able to understand and answer the questions. The first six items on the tool, the face and emotion identification items, were used to determine if a child understood the questions. If a child was unable to select the correct emotion based on the face within the first six items with at least eighty percent accuracy, answering five of the first six items correctly, the assessment would be discontinued. No students needed to discontinue the assessment. The passive parental consent letter was the only portion of the EKAT that was translated into Spanish in order to accommodate families who might not speak English at home.

Future Research

Developing and validating an emotion knowledge measure to fill a void in the assessment field was a daunting project. From the onset of the project, the principal investigator and her advisor knew that this initial study would be the beginning of a line of research and several subsequent projects. Future projects can be divided into three different branches: expanding the pilot population, additional analyses, and adaptations to the tool. Each will be discussed in further detail.

The first branch of future research would be to expand the pilot population. Within the current study over three hundred children were assessed, evenly distributed between kindergarten, first, and second grades. The sample population was large enough to yield reliable and valid statistics during the analysis phase and diverse enough to accurately represent the Commonwealth of Massachusetts demographics, but because this is a new measure, further testing is needed. Ideally, the sample population should be expanded to thousands of students in order to accurately represent the diverse demographics of the United States. Additionally, the students in the pilot received the full bank of fifty-one items. A second pilot of just the final item pool would be beneficial to ensure that the initial analyses generalize to the final shortened version of the tool.

All students who participated in the pilot were enrolled in either general education or inclusion classrooms. There were some children in the pilot receiving special education services for various developmental diagnoses, but the majority of the students assessed were considered typically developing. This is both a limitation and opportunity for future research. An additional pilot to specifically test students receiving special education services would be beneficial in order to see if the analyses generalize across populations of students.

The second branch of future research would be to expand on the analysis process. Ultimately, the goal of this study was to create and validate the items that would comprise the final version of the EKAT. Because of this focus, the only grade level analyses that were conducted were during the classical test theory (CTT) analysis. This was to check both the reliability of the items across grades and the specific item discrimination scores to measure if any items fell below the recommended cutoff value. If an item fell below the cutoff value, it was eliminated because that meant the item did not test well and students either did not possess information to answer the item or the item was worded poorly.

An additional area of analysis would be to further examine the results of the individual items within the CTT analysis by grade. By further analyzing the individual items the principal investigator can further scrutinize the specific items to observe how student scores are changing as they age. There should be an increase in the scores as students grow. This would show that over time and potentially with instruction, students are acquiring more emotion knowledge skills. A plateau in scores across the grades would show that students already had a mastery level of knowledge to answer that particular question. This was seen in the analyses from the first six items of the measure which is why they became introductory, non-scored items. They were measuring a student's ability to identify the emotion a cartoon face was portraying. Almost all the students within the pilot scored perfectly on these items, leading the principal investigator and her advisor to decide these items would serve as non-scored example items.

Additional areas of statistical analyses will include test-retest reliability to test if the EKAT is truly a general outcome measure and students can benefit from repeated uses of the tool. Students were only given the EKAT once, however this tool was envisioned to be a general outcome measure that educators could use throughout the year to track student progress. If this

tool will be used as a general outcome measure it will be important to ensure that there are no ceiling effects due to repeated uses.

Alternate forms of the test will also be developed to avoid practice effects from administering the same version of the test multiple times. One of the benefits of a general outcome measure are alternate forms of the assessment that allow for frequent retesting. This allows more sensitivity to instruction and can also be used quickly to decide when instructional changes need to occur (Hosp, Hosp & Howell, 2012). A typical normative achievement measure cannot be used to decide this type of growth because they are intended for more long term use, measuring stability over time.

To further research this idea, students could be part of a three year longitudinal study beginning in kindergarten to measure their progress throughout the age duration of the EKAT. This would show if a ceiling effect develops in students as they take the assessment regularly over the three years. If the analyses do show ceiling effects, then the EKAT will only serve as a basic assessment tool that teachers should not implement as regularly as more traditional curriculum-based measurement tools.

The third branch of future research will be the adaptation of the pencil and paper format of the EKAT to a tablet or computer based software application. When the principal investigator was envisioning the final version of the tool, it was as a standalone tablet or computer application. A teacher or other school staff member would be able to hand a child a tablet with the application loaded and the student would be able to independently complete the assessment. The application would also automatically score the assessments and generate individual and class-wide score reports.

Now that the EKAT items and dichotomous scoring system have been finalized, the principal investigator can begin researching the application development process. Features of the application would include: automated speech to read the questions aloud to students, automatic progression through the questions as students select answers, automatic scoring, and automatic score reports by both student and class. The benefits of having an automated scoring system would greatly benefit the teachers and school staff using the EKAT. Any school staff member with access to a particular class of students would be able to see the whole class score report and also individual student scores. This has the potential to be of assistance to teachers to help direct their social-emotional learning curriculum lessons. It will also allow staff to track class and student progress over time to measure emotion knowledge growth. There could also be a potential option to generate parent score reports to send home.

Another possible research study would be to create the application with and without graphics to see if having visuals accompanying the questions has an effect on student scores. During the pilot, the only non-text visuals students received were during the first six items, when they had to properly identify the emotion a cartoon face was displaying. In the preliminary phases of item generation, there were discussions of adding a visual to accompany each question vignette. They were ultimately not created for the pilot. The reason they were not included was because the principal investigator and advisor did not want students to rely on the picture for prompting or cues. Instead, they wanted students to rely on their knowledge of the emotion. A future project could design these visuals and then assess students using a between subjects quasi-experimental group design to see if there was a difference in scores with and without the visual aides.

In addition to studying the score differences of the EKAT with and without visual aides, another form of analysis would compare scores on the EKAT to vocabulary assessment scores. Teaching emotion vocabulary plays a large role in helping to develop a child's emotion knowledge skills because it sets the foundation for more complex skills (Domitrovich, Cortes, & Greenberg, 2007). The EKAT is a language based assessment. If a child does not possess a basic knowledge of language and vocabulary they might not full comprehend the measure. Vocabulary knowledge is vital in reading comprehension (Alderson, 2000; Anderson & Freebody, 1981; Mezynski, 1983; Qian, 2002; Read, 2000).

In the case of the EKAT, vocabulary knowledge is also important for listening comprehension. Mezynski (1983) noted that there can varying degrees to which a word can be known to a person. Depending on the situation, a person might be able to understand a situation with a vague idea of a word definition. However, there might be other situations where the person would struggle without knowing exactly what the word meant. This is directly related to the EKAT because if a child only has a broad understanding of a specific word used in one of answer choices that might affect how they answer the question. Studying this connection would bring insights to help direct later versions of the assessment. This can be done by giving students both a formal normed vocabulary measure such as the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 2007) as well as the EKAT to measure and their scores on both measures to see if they can be compared. If students have low vocabulary scores as well as low EKAT scores that might indicate that they are unfamiliar with many of the words being presented, which could attribute to the low scores.

The final adaptation to the EKAT will be to fully translate the tool into additional languages. For the pilot, the items were only delivered in English. Only the parent consent letter

was translated into Spanish in order to accommodate families who might not speak English as their primary language. When the EKAT was being piloted, the majority of the students being assessed spoke English as their primary language, however there were still students for whom English was their second language. While these students understood the questions being asked and were able to accurately answer the questions, it might have been beneficial to them if they could have been assessed in their native language.

The current project set a strong foundation for future research, especially because the preliminary analyses are promising and show strong reliability and valid inferences can be drawn from the measure. Future research will allow the principle investigator and advisor to further expand this project to make it marketable, accessible, and usable for educators.

Final Summary

When the EKAT was initially conceptualized, it was meant to be used as both a stand alone assessment for educators and to also accompany the *Strong Start: K-2* social-emotional learning curriculum. While the *Strong Start/Strong Kids* program has curricula for student in grades pre-kindergarten through high school there are only assessments for the programs for grades three through twelve. Teachers who use the program in early elementary school do not have a formalized rubric to measure emotion knowledge growth in their students. Further research into the field of emotion knowledge and emotion knowledge assessments for early elementary school students showed that there is a void in the assessment field for students of this age (Cole, Martin, and Dennis, 2004; Carter, Briggs-Gowan, & Davis, 2004; Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001). Some of the measures currently available today have been designed specifically for early childhood (e.g. preschool children) or late elementary school and beyond, but few designed specifically for early elementary school students.

With this idea in mind, the EKAT was developed into a broader emotion knowledge general outcome measure that could both serve as a stand alone tool, and also accompany the *Strong Start: K-2* curriculum. This would allow educators to assess their students and measure emotion knowledge growth repeatedly throughout the school year. The initial statistical analyses show that the items in the measure accurately reflect a child's level of emotion knowledge. While the initial pool of piloted items was divided into two domains: knowledge and management, the analyses indicated that these two categories were so highly correlated the assessment was actually only measuring one overall domain: emotion knowledge.

Ultimately, the creation of the EKAT filled a void within the field of emotion knowledge research and assessment. Denham (1998, 2006) and others developed assessment tools to measure individual differences in young children's levels of emotion knowledge and development, but they were not developed to show growth over time. The EKAT expands on the current research completed on emotion knowledge assessment and is designed specifically for young children to answer independently. Ideally it could also measures growth over time, this will be incorporated into the planned longitudinal studies. While further replication studies should be done to test this newly created measure; the initial results of the EKAT show that this tool will hopefully fill a void in the assessment field and provide useful information to educators teaching social-emotional learning to their students.

APPENDIX A

EMOTION KNOWLEDGE AND AWARENESS TEST RECRUITMENT LETTERS

District Administrator Emotion Knowledge and Awareness Test Recruitment Letter

Dear District Administrator,

My name is Catherine Rossi and I am a graduate student in the school psychology program at the University of Massachusetts Amherst. I am writing to you to ask permission to contact all the third grade teachers in your district to help with data collection for my dissertation research study this fall. I am currently developing an assessment tool designed to measure the emotion knowledge and awareness in early elementary school students and need to recruit teachers to reflect on their current class of students and their levels of emotion knowledge in order to help with item development.

The assessment tool being created is designed for children in grades kindergarten through second grade so it is crucial to understand young third graders' general knowledge will ensure that there will not be a ceiling effect for students, and teachers will be able to use the assessment repeatedly to measure growth. Teachers will be asked to report on their current class of students at that moment. While previous second grade teachers can be reliable data sources they will not be able to comment on any growth a child has had over the summer. The survey will take approximately ten to fifteen minutes to complete and will be available in both paper and electronic forms. Teachers will not be asked to provide any identifying information during completion.

Your assistance in helping with recruitment for this project will help to inform use of effective and efficient instructional and assessment procedures for future use of the Emotion Knowledge and Awareness Test. If you are interested in looking at the types of questions being asked in this project, I will gladly send you a copy of the survey. If you have further questions about this project, please contact me at carossi@educ.umass.edu or my advisor, Dr. Sara Whitcomb at swhitcomb@educ.umass.edu.

Sincerely,

Catherine Rossi, M.Ed

Teacher Emotion Knowledge and Awareness Test Consent Letter

Dear Kindergarten through Second Grade Teachers,

My name is Catherine Rossi and I am a graduate student in the school psychology program at the University of Massachusetts Amherst. This winter, I am planning on conducting a dissertation study with kindergarten, first, and second grade students. I have developed an assessment tool designed to measure the emotion knowledge and awareness in early elementary school students and I will be piloting the tool to measure its effectiveness, reliability, and validity. The assessment process will only be done once and will take students about fifteen minutes to complete. Graduate students from the University of Massachusetts Amherst will individually administer the assessment to students and will read the questions aloud if needed. I will work with you to find an appropriate time for the graduate students to come into your class to facilitate the assessment administration.

Additionally, I will give you a copy of the assessment along with a brief series of questions to judge the clarity of the items and directions, approximate time you think it would take a student to complete, and any further thoughts or recommendations about the tool. Once the assessment tool has been finalized you will receive a copy for your personal use. At the end of the assessment process you will be compensated with a gift card to a local area store.

The assessment encourages children to think generally about their feelings and friendships and students could potentially experience feelings of discomfort, such as stress or embarrassment. If completing the assessment is upsetting to one of your students in any way, he/she can stop answering the questions and can talk either you or me about his/her feelings.

Parental assent letters are attached to this form to be distributed to all the students within your class. If a parent does not assent to their child's participating in the study their name will not be included on the testing roster and efforts will be made to ensure that any children who are not participating do not feel excluded or isolated.

The assessment is intended to be fun, but your participation is voluntary. Your decision to participate will not affect your job, and you will not be evaluated for employment purposes. In order to maintain confidentiality throughout the study, all teacher and student data collected during will be marked with a code number and your name will be removed. If you have any questions concerning your rights as a research subject, you may contact Linda Griffin, Associate Dean for Academic Affairs, 123 Furcolo Hall University of Massachusetts Amherst, (413) 545-6985 or lgriffin@educ.umass.edu.

If you have questions about this project, please contact me at carossi@educ.umass.edu

Sincerely,

Catherine Rossi, M.Ed.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you have received a copy of this form, and that you are not waiving any legal claims, rights or remedies.

Print Name:_____
Signature:_____

Passive Parent Consent Emotion Knowledge and Awareness Test Letter: English

Dear Parents/Guardians,

My name is Catherine Rossi and I am a graduate student in the school psychology program at the University of Massachusetts Amherst. This winter, I am planning on conducting a research study with kindergarten, first, and second grade students. I have developed an assessment tool designed to measure the emotion knowledge and awareness in early elementary school students and I will be piloting the tool to measure its effectiveness, reliability, and validity. The assessment process will only be done once and will take students about fifteen minutes to complete. Graduate students from the University of Massachusetts Amherst will individually administer the assessment to students and will read the questions aloud if needed.

Your child's teacher has agreed to have his or her class participate in this project. The assessment encourages children to think generally about their feelings and friendships and students could potentially experience feelings of discomfort, such as stress or embarrassment. If completing the assessment is upsetting to your child in any way, he/she can stop answering the questions and can talk to his/her teacher or me. I will not be asking children to write any identifying information on their papers other than a subject code number. I will have a class list with corresponding code numbers during each assessment period. Once all of the assessments have been completed, I will destroy the class list. At that point, code numbers will make it so that I cannot link any data collected back to individual children.

Your child's participation and your assistance in this project will help to inform use of effective and efficient instructional and assessment procedures for future use of the Emotion Knowledge and Awareness Scale. If you are interested in looking at the types of questions being asked in this project, I will leave copies of the assessments with your child's teacher. If you have further questions about this project, please contact me at carossi@educ.umass.edu or my advisor, Dr. Sara Whitcomb at swhitcomb@educ.umass.edu. If you have any questions concerning your rights as a research subject, you may contact Linda Griffin, Associate Dean for Academic Affairs, 123 Furcolo Hall University of Massachusetts Amherst, (413) 545-6985 or lgriffin@educ.umass.edu.

Thank you for helping me to move forward with my research project.

Sincerely,

Catherine Rossi, M.Ed

Passive Parent Consent Emotion Knowledge and Awareness Test Assent Letter: Spanish

Estimados/as padres, madres y/o encargado/as,

Mi nombre es Catherine Rossi y soy una estudiante graduada del programa de psicología escolar en la Universidad de Massachusetts, Amherst. A principios de este semestre planifico conducir un proyecto de investigación con estudiantes de kindergarten, primer, y segundo grado. Para este proyecto investigativo desarrollé un instrumento con el fin de medir el nivel de conocimiento y conciencia emocional en estudiantes a nivel de escuela elemental, específicamente en lo grados previamente mencionados. El propósito de este proyecto piloto es medir la efectividad, confiabilidad y validación del instrumento. La administración del mismo se llevará a cabo una vez y le tomará a su hijo/a alrededor de quince minutos en completar. Este instrumento será administrado por varios estudiantes graduados/as de la Universidad de Massachusetts, Amherst. Incluso, de ser necesario, ellos/as le leerán a su hijo/a las preguntas en voz alta.

El/la maestro/a de salón hogar aceptó que su clase participe del proyecto, sin embargo es importante que conozca sorbe los derechos de participación. El proceso de administración del instrumento fomentará que el/la estudiante piense sobre sus emociones y la amistad de manera general. Potencialmente este proceso podría incomodar, causarle estrés o bochorno a el/la estudiante. Sin embargo, de este ser el caso, su hijo/a sabrá que puede detener su participación. También sabrán que la maestra y esta servidora estarán disponibles para hablar con el/ella. En ningún momento se le pedirá a su hijo/a que escriba información en los documentos que puedan identificar su identidad, por excepción del código numérico. Durante el periodo de administración, yo tendré una lista de la clase con los códigos numéricos. Al momento que el proceso de administración culmine, la lista será destruida por mi. De esa manera, el código numérico no se podrá utilizar para identificar individualmente a los/as estudiantes.

La cooperación de usted y su hijo/a apoyarán la toma de decisiones informadas en el proceso de evaluación e instrucción efectiva y eficiente para la futura administración de la Escala de Conocimiento y Conciencia Emocional. Si le interesa leer las preguntas de la escala puede comunicarse con el/la maestro/a de salón hogar. Ellos/as tendrán disponibles copias del instrumento. Por favor comuníquese conmigo a carossi@educ.umass.edu o con mi asesora académica, Dr. Sara Whitcomb, a swhitcomb@educ.umass.edu, de tener alguna pregunta sobre este proyecto de investigación. Si desea conocer más sobre sus derechos como participante de este proyecto investigativo o le surgen preguntas, por favor comuníquese con Linda Griffin, Decana Asociada de Asuntos Académicos, 123 Furcolo Hall, Universidad de Massachusetts Amherst, (413) 545-6985, o lgriffin@educ.umass.edu.

Gracias por permitirme proceder con mi proyecto investigativo.

Sinceramente,

Catherine Rossi, M.Ed

APPENDIX B

EMOTION KNOWLEDGE AND AWARENESS TEST: PILOT

Emotion Knowledge and Awareness Test

Directions for Items 1-6: Match the face to the correct emotion word by picking the right lettered face that goes with each word.

1. Which face looks happy?

    A.   B.   C.
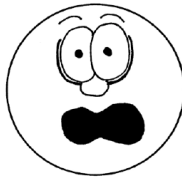
2. Which face looks sad?

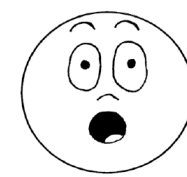   A.   B.   C.

3. Which face looks mad?

    A.   B.   C.

4. Which face looks disgusted?

    A.   B.   C.

5. Which face looks afraid?

A.

B.

C.

6. Which face looks surprised?

A.

B.

C.
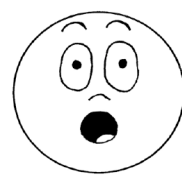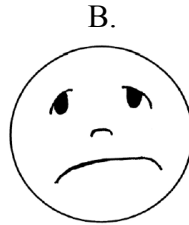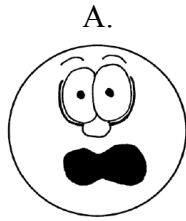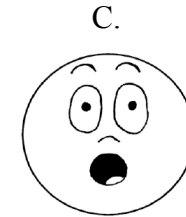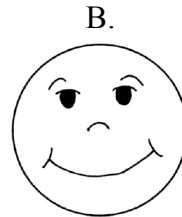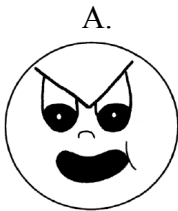
Directions for Items 7-51: Listen to the questions being read aloud to you and then select the best answer choice from the three options read aloud to you.

7. What is another word that means the same as happy?

    a. Joyful
    b. Smile
    c. Excited

8. What is another word that means the same as afraid?

    a. Nervous
    b. Shocked
    c. Scared

9. What is another word that means the same as sad?

    a. Miserable
    b. Scared
    c. Content

10. What is another word that means the same as surprise?

    a. Shocked
    b. Frightened

c. Calm

11. What is another word that means the same as mad?

    a. Frightened
    b. Steaming
    c. Angry

12. What is another word that means the same as disgusting?

    a. Yucky
    b. Loving
    c. Dirty

13. How could you tell if your friend is feeling afraid?

    a. He runs out of the room as fast as he can.
    b. He smiles and runs to give you a hug.
    c. He keeps playing the game your were both playing.

14. Rohan and his family were flying to California for vacation. Rohan felt afraid because he had never been on a plane before. What is an okay way to handle his feeling?

    a. Run up and down the aisle of the plane.
    b. Cry.
    c. Tell himself that it will be ok.

15. Shari went to get her ears pierced. She was excited and nervous. What is an okay way to handle her feelings?

    a. Squeeze her mom's hand and take some deep breaths.
    b. Cry very loudly for a long time.
    c. Run away from her mom.

16. Dennis had never spent a night away from his family and he was invited to spend the night at his friend Mac's house. What two different feelings did Dennis most likely have?

    a. Happy and Surprised
    b. Sad and Disgusted
    c. Happy and Afraid

17. When Sara got home from school she saw her favorite foods on the kitchen counter. She was going to have her favorite dinner. What is an okay way to handle her happy feelings?

    a. Knock all the foods off the counter.

b. Jump up and down and say, "yay!"
c. Yell and scream excitedly at the top of her lungs for ten minutes.

18. Ellis was watching a movie with her family one night and the main character threw up all over his friends. What is an okay way for her to handle her feelings of disgust?

a. Cover her eyes so she doesn't need to watch the scene.
b. Turn and throw up over her brother.
c. Switch off the movie.

19. Lucia studied all week for her math test. When she got the test back from her teacher she saw a smiley face on the page. How do you think Lucia most likely felt when she saw her grade?

a. Happy
b. Disgusted
c. Smart

20. How could you tell your friend is feeling surprised?

a. He is crossing his arms across his body.
b. He is opening his mouth and eyes wide.
c. He is smiling and humming to himself.

21. Every year Bailey and his parents visit his grandparents and cousins in Florida. This year his grandparents are coming to visit them at home. He is very happy and excited to show them all of his favorite places. What is an okay way for Bailey to handle his happy feelings?

a. He could make a calendar to count down the days until his family arrives.
b. He stay in his room until they come.
c. He could run around the house because of all his excited energy.

22. Martina's family was planning a trip to the beach. It was raining outside the morning of the trip and she felt sad. What is an example of an okay way for her to handle her sad feeling?

a. Stay in her bed all day.
b. Cry, give her mom a hug, and think of another way to spend the day.
c. Tell her parents the whole day is ruined.

23. Sebastian's friend gave him a piece of candy on the bus. Sebastian felt surprised and happy. What is one okay way for Sebastian to handle his feelings?

a. Tell his friend "thanks" and give him a pat on the back.
b. Yell 'wahoo' out the window.

c. Show everyone the piece of candy that he was given.

24. Vinny was eating dinner and his mom asked him to try a new food. He took a bite and thought it tasted yucky and gross. What is an okay way for Vinny to handle his feelings?

    a. Spit the food all over the table.
    b. Yell at his mom for making him try a new food.
    c. Spit the food out into a napkin.

25. Kira and her brother were playing basketball. Kira's brother threw the basketball over the fence into the neighbor's yard, which made Kira mad. What is an okay way for her to handle her feeling?

    a. Take one of her brother's toys and throw it over the fence too.
    b. Yell at her brother.
    c. Ask her brother to bring the ball back.

26. When Franklin got home, his friends jumped out from behind the furniture and yelled, "Happy Birthday Franklin!" They had planned a party for him! How do you think Franklin most likely was feeling when he saw all of his friends jump out at him?

    a. Disgusted
    b. Happy
    c. Surprised

27. How could you tell if your friend is feeling mad?

    a. He is sitting under the table.
    b. He is working at his desk.
    c. His arms are crossed and he is frowning.

28. Leona and her family were grocery shopping. She turned around and saw that her family wasn't in the same spot near the bananas and she thought she lost them. What is an okay way to handle her feelings?

    a. Ask a person who works at the store to help her find her family.
    b. Run up and down the aisles yelling her family.
    c. Sit in the corner and cry for an hour.

29. Jose scored a goal in his first soccer game. He felt so happy. What is an okay way for him to handle his happy feeling?

    a. Smile and give his teammate a high five.
    b. Stick out his tongue at the other team.
    c. Run a lap around the field in the middle of the game.

30. Abbey and Shannon got a dollhouse to share for their birthday. Their brother Jake broke many dollhouse pieces with his toy truck. How do you think Abbey and Shannon most likely felt when they saw their broken dollhouse pieces?

    a. Afraid
    b. Disgusted
    c. Sad and Mad

31. Zeke woke up very early and he is so tired but he really can't wait to have a playdate with his friend. What is an okay way for him handle his feelings?

    a. Ask his family over and over if it is time for the playdate.
    b. Relax and read a book in the morning before the playdate.
    c. Yell and fight with his brother.

32. Tina, Amy, and Jimmy were sharing some french fries. Tina sneezed on the fries and Jimmy and Amy start yelling, "Ewwwww!" What do you think Jimmy and Amy were most likely feeling as they yelled "Ewwwww!"?

    a. Happy
    b. Surprised
    c. Disgusted

33. How could you tell if your friend is feeling disgusted?

    a. She is squeezing her fists and shaking.
    b. She is crinkling her nose like she just smelled something bad.
    c. She is clapping and cheering.

34. Garran had a cupcake for dessert but it dropped on the floor. This made Garran feel sad. What is an okay way for Garran to show how sad he was feeling?

    a. Get upset with himself for dropping the cupcake on the floor.
    b. Step in the squished cupcake to spread it all over the floor.
    c. Help clean up the mess and see if there were any more cupcakes to eat.

35. How could you tell your friend is feeling sad?

    a. She looks upset and might be crying.
    b. She is laughing and giggling.
    c. She is hitting things.

36. One night there was a loud storm outside with thunder and lightning. During the day the storm didn't bother Julie but at night she couldn't fall asleep. How do you think Julie most likely was feeling because of the storm?

a. Surprised
b. Afraid
c. Happy

37. Seth and Stefon were playing basketball together. Stefon caught the ball and ran away with it. How do you think Seth was mostly likely feeling when Stefon wouldn't share the ball?

    a. Nervous
    b. Mad
    c. Happy

38. Luca was helping his mother cook dinner. He went to the fridge to get lettuce but instead stuck his hand into a bowl of squishy spaghetti. What two different feelings did Luca most likely have?

    a. Mad and Disgusted
    b. Surprised and Disgusted
    c. Surprised and Sad

39. Destiny did not get invited to her neighbor's birthday party. She feels mad and sad. What is an okay way to handle these feelings?

    a. Stay in her room all afternoon.
    b. Tell her mom that she feels disappointed.
    c. Choose to never play in the neighborhood again.

40. Terrell's brother took his video game without asking. Terrell is mad. What is an okay way for him to handle his feeling?

    a. He could take the video game out of his brother's hand.
    b. Tell his brother to ask before he plays.
    c. He could never share with his brother again.

41. Leonte felt happy because his favorite movie was on TV. What is an okay way for him to handle his happy feeling?

    a. Turn off the TV.
    b. Yell and jump on the furniture.
    c. Say "yippee!" and sit down on the sofa to watch the movie.

42. Tao arrived at school and his teacher said the class goldfish had died. What is an okay way for Tao to show how sad he was feeling?

    a. Talk to the teacher and his friends about why he would miss the class goldfish.
    b. Put his head down on his desk most of the day because he was so upset.

c. Run out of the room and down the hall.

43. Jada is disgusted by the color orange but sees her friend wearing an orange scarf. What is an okay way for Jada to handle her disgust?

   a. Tell her friend to get a new scarf.
   b. Tell herself her friend might like the color orange.
   c. Say, "Ewwwww!" when her friend isn't around.

44. Ty got tagged, he is it. He is having a hard time catching anybody and feels sad and frustrated. What is an okay way for him to handle his feelings?

   a. Run away from the game and hide under the slide.
   b. Stop running and ask for help.
   c. Keep trying and tell himself it's okay that this is hard.

45. The doorbell rang and Noemi answered the door to see her grandparents on the front steps. She felt surprised because she didn't know they were coming for dinner. What is an okay way for Noemi to handle her feeling?

   a. Close the door on their faces.
   b. Invite them inside and give them both hugs.
   c. Rudely ask them why they were at her house.

46. Catalina told Marie that they were no longer best friends. Marie felt sad and mad. What is an okay way for Marie to handle these feelings?

   a. She could tell Catalina that she doesn't care anyway.
   b. She could walk away and tell the other kids that Catalina is mean.
   c. She could walk away and tell an adult about her feelings.

47. Caeli is afraid of dogs. She sees one across the street. What is an okay way to handle her feeling?

   a. Run the other way.
   b. Tell herself that she is safe because the dog is across the street and on a leash.
   c. Run toward the dog and try to scare it back.

48. Andre was excited for his class trip to the aquarium to see the penguin exhibit. When they got there, the penguin exhibit was closed and Andre felt sad. What is an okay way to handle his feeling?

   a. Yell that he wants to go home to his teacher.
   b. Cross his arms, and stomp around the room.
   c. Tell his teacher he is upset but would like to see the other sea animals.

49. Jack wants to go ride his first roller coaster at the park. He is scared and excited at the same time. What is an okay way for him to handle these feelings?

    a. Cry really hard.
    b. Hold his dad's hand and take a deep breath.
    c. Run out of the park.

50. Ming got his spelling test back he saw his teacher made a mistake. She marked a word he spelled right wrong! What is an okay way for Ming to handle his feelings?

    a. Crumple up his paper and throw it in the garbage.
    b. Raise his hand to ask his teacher about the wrong answer.
    c. Say nothing.

51. How could you tell if your friend was feeling happy?

    a. He is crossing his arms and looking at the floor.
    b. He is skipping, walking, and smiling.
    c. He is running in circles.

APPENDIX C

EMOTION KNOWLEDGE AND AWARENESS TEST: PILOT TEACHER SCORE REPORT

Emotion Knowledge and Awareness Test
Class-Wide Score Report

Grade:
Class:

The score report below reports the total percentages of correct answers from the students in the class broken down by each emotion category within the two domains:

Emotion Knowledge:
- Measures a child's ability to identify feelings and emotion

Emotion Management:
- Measures a child's ability to respond appropriately to different emotion situations and settings where others may feel differently

The total scores below represent the class-wide average of correct answers per Emotion or Domain.

	Emotion Knowledge	Emotion Management	Total (Emotion)
Afraid	%	%	%
Disgust	%	%	%
Happy	%	%	%
Mad	%	%	%
Sad	%	%	%
Surprise	%	%	%
Mixed	%	%	%
Total (Domain)	%	%	%

Note: All percentages are out of 100%

APPENDIX D

EMOTION KNOWLEDGE AND AWARENESS TEST: FINAL

Emotion Knowledge and Awareness Test

Directions for Items 1-6: Match the face to the correct emotion word by picking the right lettered face that goes with each word.

1. Which face looks happy?

A.   B.   C.

2. Which face looks sad?

A.   B.   C.

3. Which face looks mad?

A.   B.   C.

4. Which face looks disgusted?

A.   B.   C.

5. Which face looks afraid?

A.   B.   C.

6. Which face looks surprised?

A.   B.   C.
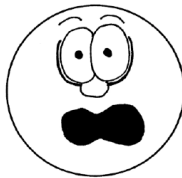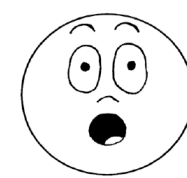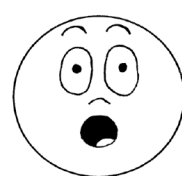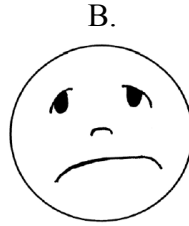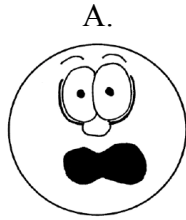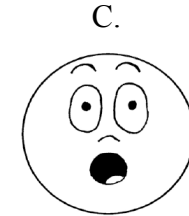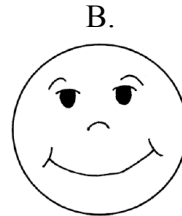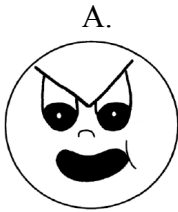
Directions for Items 7-36: Listen to the questions being read aloud to you and then select the best answer choice from the three options read aloud to you.

7. What is another word that means the same as sad?

    a. Miserable
    b. Scared
    c. Content

8. What is another word that means the same as surprise?

    a. Shocked
    b. Frightened
    c. Calm

9. What is another word that means the same as disgusting?

    a. Yucky
    b. Loving
    c. Dirty

10. How could you tell if your friend is feeling afraid?

    a. He runs out of the room as fast as he can.
    b. He smiles and runs to give you a hug.
    c. He keeps playing the game your were both playing.

11. Rohan and his family were flying to California for vacation. Rohan felt afraid because he had never been on a plane before. What is an okay way to handle his feeling?

    a. Run up and down the aisle of the plane.
    b. Cry.
    c. Tell himself that it will be ok.

12. Shari went to get her ears pierced. She was excited and nervous. What is an okay way to handle her feelings?

    a. Squeeze her mom's hand and take some deep breaths.
    b. Cry very loudly for a long time.
    c. Run away from her mom.

13. Dennis had never spent a night away from his family and he was invited to spend the night at his friend Mac's house. What two different feelings did Dennis most likely have?

    a. Happy and Surprised
    b. Sad and Disgusted
    c. Happy and Afraid

14. When Sara got home from school she saw her favorite foods on the kitchen counter. She was going to have her favorite dinner. What is an okay way to handle her happy feelings?

    a. Knock all the foods off the counter.
    b. Jump up and down and say, "yay!"
    c. Yell and scream excitedly at the top of her lungs for ten minutes.

15. Lucia studied all week for her math test. When she got the test back from her teacher she saw a smiley face on the page. How do you think Lucia most likely felt when she saw her grade?

    a. Happy
    b. Disgusted
    c. Smart

16. How could you tell your friend is feeling surprised?

    a. He is crossing his arms across his body.
    b. He is opening his mouth and eyes wide.
    c. He is smiling and humming to himself.

17. Every year Bailey and his parents visit his grandparents and cousins in Florida. This year his grandparents are coming to visit them at home. He is very happy and excited to show them all of his favorite places. What is an okay way for Bailey to handle his happy feelings?

    a. He could make a calendar to count down the days until his family arrives.
    b. He stay in his room until they come.
    c. He could run around the house because of all his excited energy.

18. Martina's family was planning a trip to the beach. It was raining outside the morning of the trip and she felt sad. What is an example of an okay way for her to handle her sad feeling?

    a. Stay in her bed all day.
    b. Cry, give her mom a hug, and think of another way to spend the day.
    c. Tell her parents the whole day is ruined.

19. Sebastian's friend gave him a piece of candy on the bus. Sebastian felt surprised and happy. What is one okay way for Sebastian to handle his feelings?

    a. Tell his friend "thanks" and give him a pat on the back.
    b. Yell 'wahoo' out the window.
    c. Show everyone the piece of candy that he was given.

20. Vinny was eating dinner and his mom asked him to try a new food. He took a bite and thought it tasted yucky and gross. What is an okay way for Vinny to handle his feelings?

    a. Spit the food all over the table.
    b. Yell at his mom for making him try a new food.
    c. Spit the food out into a napkin.

21. Kira and her brother were playing basketball. Kira's brother threw the basketball over the fence into the neighbor's yard, which made Kira mad. What is an okay way for her to handle her feeling?

    a. Take one of her brother's toys and throw it over the fence too.
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25. Zeke woke up very early and he is so tired but he really can't wait to have a playdate with his friend. What is an okay way for him handle his feelings?

    a. Ask his family over and over if it is time for the playdate.
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    c. She is hitting things.

28. One night there was a loud storm outside with thunder and lightning. During the day the storm didn't bother Julie but at night she couldn't fall asleep. How do you think Julie most likely was feeling because of the storm?

    a. Surprised
    b. Afraid
    c. Happy

29. Seth and Stefon were playing basketball together. Stefon caught the ball and ran away with it. How do you think Seth was mostly likely feeling when Stefon wouldn't share the ball?

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b. Mad
c. Happy

30. Terrell's brother took his video game without asking. Terrell is mad. What is an okay way for him to handle his feeling?

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a. Tell her friend to get a new scarf.
b. Tell herself her friend might like the color orange.
c. Say, "Ewwwww!" when her friend isn't around.

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a. Close the door on their faces.
b. Invite them inside and give them both hugs.
c. Rudely ask them why they were at her house.

34. Catalina told Marie that they were no longer best friends. Marie felt sad and mad. What is an okay way for Marie to handle these feelings?

a. She could tell Catalina that she doesn't care anyway.
b. She could walk away and tell the other kids that Catalina is mean.
c. She could walk away and tell an adult about her feelings.

35. Caeli is afraid of dogs. She sees one across the street. What is an okay way to handle her feeling?

a. Run the other way.
b. Tell herself that she is safe because the dog is across the street and on a leash.

c. Run toward the dog and try to scare it back.

36. How could you tell if your friend was feeling happy?

     a. He is crossing his arms and looking at the floor.
     b. He is skipping, walking, and smiling.
     c. He is running in circles.

APPENDIX E

EMOTION KNOWLEDGE AND AWARNESS TEST: FINAL TEACHER SCORE REPORT

Emotion Knowledge and Awareness Test Student Scoring Sheet

Student Name: _____

Date: _____

Grade: _____

Individual Item Scores

Item	Correct	
7	Y	N
8	Y	N
9	Y	N
10	Y	N
11	Y	N
12	Y	N
13	Y	N
14	Y	N
15	Y	N
16	Y	N
17	Y	N
18	Y	N
19	Y	N
20	Y	N
21	Y	N
22	Y	N
23	Y	N
24	Y	N
25	Y	N
26	Y	N
27	Y	N
28	Y	N
29	Y	N
30	Y	N
31	Y	N
32	Y	N
33	Y	N
34	Y	N
35	Y	N
36	Y	N
Percent Correct		

Score Summary

Emotion Domain Scores

Happy	
Item 14	
Item 15	
Item 23	
Item 36	
Percent Correct	

Sad	
Item 7	
Item 18	
Item 27	
Item 31	
Percent Correct	

Mad	
Item 21	
Item 29	
Item 30	
Percent Correct	

Afraid	
Item 10	
Item 22	
Item 28	
Item 35	
Percent Correct	

Disgust	
Item 9	
Item 20	
Item 26	
Item 32	
Percent Correct	

Mixed	
Item 12	
Item 13	
Item 17	
Item 24	
Item 25	
Item 34	
Percent Correct	

Surprise	
Item 8	
Item 11	
Item 16	
Item 19	
Item 33	
Percent Correct	

Total	
Happy	
Mad	
Disgust	
Surprise	
Sad	
Afraid	
Mixed	

APPENDIX F

EKAT EXPERT REVIEW RELIABILITY RESULTS

Table 6.1
EKAT Expert Review Reliability Results

Item	Emotion Agreement to Researcher	Emotion Agreement Between Experts	Domain Agreement to Researcher	Domain Agreement Between Experts	Answer Agreement to Researcher	Answer Agreement Between Experts
7	1.0	1.0	1.0	1.0	1.0	1.0
8	1.0	1.0	1.0	1.0	1.0	1.0
9	1.0	1.0	1.0	1.0	1.0	1.0
10	1.0	1.0	1.0	1.0	1.0	1.0
11	1.0	1.0	1.0	1.0	1.0	1.0
12	1.0	1.0	1.0	1.0	1.0	1.0
13	1.0	1.0	1.0	1.0	1.0	1.0
14	1.0	1.0	1.0	1.0	1.0	1.0
15	1.0	1.0	1.0	1.0	1.0	1.0
16	1.0	1.0	1.0	1.0	1.0	1.0
17	.67	.67	1.0	1.0	1.0	1.0
18	1.0	1.0	1.0	1.0	1.0	1.0
19	1.0	1.0	1.0	1.0	1.0	1.0
20	1.0	1.0	1.0	1.0	1.0	1.0
21	.67	.67	1.0	1.0	1.0	1.0
22	.83	.83	1.0	1.0	1.0	1.0
23	.67	.67	1.0	1.0	.83	.83
25	1.0	1.0	1.0	1.0	1.0	1.0
26	.33	.67	1.0	1.0	1.0	1.0
27	1.0	1.0	1.0	1.0	1.0	1.0
28	.83	1.0	1.0	1.0	1.0	1.0
29	1.0	1.0	1.0	1.0	1.0	1.0
30	.33	.67	1.0	1.0	1.0	1.0
31	.83	.83	1.0	1.0	1.0	1.0
32	1.0	1.0	1.0	1.0	1.0	1.0
33	1.0	1.0	1.0	1.0	1.0	1.0
34	1.0	1.0	.83	.83	1.0	1.0
35	1.0	1.0	1.0	1.0	1.0	1.0
37	1.0	1.0	1.0	1.0	1.0	1.0
38	1.0	1.0	1.0	1.0	1.0	1.0
39	1.0	1.0	1.0	1.0	1.0	1.0
40	1.0	1.0	1.0	1.0	1.0	1.0
41	1.0	1.0	.83	.83	1.0	1.0
42	1.0	1.0	1.0	1.0	1.0	1.0
43	1.0	1.0	1.0	1.0	1.0	1.0
44	1.0	1.0	1.0	1.0	1.0	1.0

45	.83	.83	1.0	1.0	1.0	1.0
46	1.0	1.0	.83	.83	1.0	1.0
47	1.0	1.0	.83	.83	1.0	1.0
48	.33	.83	1.0	1.0	1.0	1.0
49	1.0	1.0	1.0	1.0	1.0	1.0
50	0.0	.67	1.0	1.0	1.0	1.0
51	1.0	1.0	1.0	1.0	1.0	1.0

Note: Experts were not asked to review the first six items of facial identification of emotions and two additional items were written after the expert review.

APPENDIX G

DICHOTOMOUS AND POLYTOMOUS EIGENVALUES

Table 6.2

Eigenvalues for Dichotomous Item Set

Item	Eigenvalue
1	13.459
2	2.248
3	1.912
4	1.481
5	1.341
6	1.265
7	1.077
8	0.959
9	0.942
10	0.888
11	0.836
12	0.754
13	0.659
14	0.620
15	0.589
16	0.517
17	0.452
18	0.407
19	0.388
20	0.340

21	0.307
22	0.260
23	0.231
24	0.185
25	0.173
26	0.129
27	0.060
28	0.032
29	0.011
30	-0.026
31	-0.210
32	-0.290

Table 6.3
Eigenvalues for Polytomous Item Set

Item	Eigenvalue
1	11.416
2	1.751
3	1.547
4	1.236
5	1.204
6	1.090
7	1.005
8	0.889

9	0.843
10	0.783
11	0.709
12	0.673
13	0.595
14	0.519
15	0.452
16	0.410
17	0.375
18	0.332
19	0.281
20	0.262
21	0.229
22	0.172
23	0.170
24	0.142
25	0.065
26	0.030
27	-0.183

REFERENCES

Ablow, J. C., & Measelle, J. R. (1995). The Berkeley Puppet Interview: Children as informants on family and self. In *Our cup runneth over: Spillover from marital to parent-child relationships to children's school adaptation.* Paper symposium conducted at the biennial meeting of the Society for Research in Child Development, Indianapolis, IN.

Achenbach, T. (2001). ASEBA School-Age Assessments. *ASEBA School-Age Assessments*. Retrieved April 12, 2014, from http://www.aseba.org/schoolage.html

Agostin, T. M., & Bain, S. K. (1997). Predicting early school success with developmental and social skills screeners. Psychology in the Schools, 34, 219–228.

Alderson, J. C. (2000). Assessing reading. Cambridge, England: Cambridge University Press.

Anderson, R.C., & Freebody, P. (1981). Vocabulary knowledge. In J.T. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 77–117). Newark, DE: International Reading Association.

Arnold, M. (1960). Emotion and personality. *Vol. 1 Psychological Aspects*. New York: Columbia University Press.

Averill, J. R. (1975). A semantic atlas of emotional concepts. *JSAS: Catalog of Selected Documents in Psychology*, 5, 330.

Bagby, R.M., Parker, J.D.A. & Taylor, G.J. (1994). The twenty-item Toronto Alexithymia Scale: Part I, Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research, 38*, 23-32.

Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ: Prentice-Hall.

Barker, E.S., Marcotte, A.M., & Whitcomb, S.A. (2015). Promoting positive teacher–child interactions through implementation of a social emotional learning curriculum with performance feedback. (Unpublished doctoral dissertation). University of Massachusetts, Amherst.

Bar-On, R. (2004). The Bar-On Emotional Quotient Inventory (EQ-i): Rationale, description and psychometric properties. In G. Geher (Ed.), *Measuring emotional intelligence: Common ground and controversy.* Hauppauge, NY: Nova Science.

Bensen, J., & Clark, F. (1982). A guide for instrument development and validation. *The American Journal of Occupational Therapy*, *36*(12), 789-800.

Birch, S. H., Ladd, G. W., & Blecher-Sass, H. (1997). The teacher-child relationship and children's early school adjustment: Good-byes can build trust. *Journal of School Psychology*, 35, 61–79.

Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of children's functioning at school entry. *American Psychologist,* 57, 111–127.

Bredekamp, S., & Copple, C. (1997). Developmentally appropriate practice in early childhood programs. Washington, DC: NAEYC.

Bredekamp, S., & Rosegrant, T. (1992). Guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. *Reaching potentials: Appropriate curriculum and assessment for young children*, *1*, 9-27.

Bretherton, I., & Beeghly, M. (1982). Talking about internal states: The acquisition of an explicit theory of mind. *Developmental Psychology,* 18, 906–921.

Bretherton, I., McNew, S., & Beeghly–Smith, M. (1981). Early person knowledge as expressed in gestural and adjustment with internalizing and externalizing verbal communication: When do infants acquire a "theory of mind"? In M. E. Lamb & L. R. Sherods (Eds.), Infant social cognition (pp. 333–373). Hillsdale, NJ: Erlbaum**.**

Bridges, K. M. B. (1932). Emotional development in early infancy. *Child development*, 324-341.

Bridges, L., Denham, S. A., & Ganiban, J. (2004). Definitional issues in emotion regulation research. *Child Development*, 75, 340–345.

Brown, J. R., & Dunn, J. (1996). Continuities in emotion understanding from three to six years. *Child Development, 67,* 789–802.

Borke, H. (1971). Interpersonal perception of young children: Egocentrism or empathy? *Developmental Psychol*ogy, 5, 263–269.

Bower, G. H. (1981). Mood and memory. *American psychologist*, *36*(2), 129.

Caldarella, P., Christensen, L., Kramer, T. J., & Kronmiller, K. (2009). Promoting social and emotional learning in second grade students: A study of the strong start curriculum. *Early Childhood Education Journal*, *37*, 51-56.

Caldarella, P., & Merrell, K. W. (1997). Common dimensions of social skills of children and adolescents: Taxonomy of positive behaviors. *School Psychology Review,* 26(2), 264 – 278.

Carlo, G., & Randall, B. A. (2001). Are all prosocial behaviors equal? A socioecological developmental conception of prosocial behavior. In F. Columbus (Ed.), *Advances in psychology research* (Vol. 3, pp. 151 – 170). Huntington, NY: Nova Science.

Carroll, J., & Steward, M. (1984). The role of cognitive development in children's understandings of their own feelings. *Child Development, 55,* 1486–1492.

Carter, A. S., Briggs-Gowan, M. J., & Davis, N. O. (2004). Assessment of young children's social-emotional development and psychopathology: recent advances and recommendations for practice. *Journal of Child Psychology and Psychiatry*, *45*(1), 109-134.

Cassidy, J. (1992). Family-Peer connections: The roles of emotional expressiveness within the family and children's understanding of emotions. *Child Development*, 63, 603–618.

Castro-Olivo, S. (2014). Promoting social-emotional learning in adolescent Latino ELLs: A study of the culturally adapted Strong Teens program. *School Psychology Quarterly, 29*, 567–577.

Cattell, R. B. (1943). The measurement of adult intelligence. *Psychological Bulletin*, *40*(3), 153.

Cherniss, C. (1998). Social and emotional learning for leaders. Educational Leadership, 55, 26-29.

Ciarrochi, J., Chan, A., Caputi, P., & Roberts, R. (2001). Measuring emotional intelligence. In J. Ciarrochi, J. P. Forgas, & J. D. Mayer, Emotional intelligence in everyday life: A scientific inquiry. (pp. 25–45). Psychology Press, Taylor & Frances Group.

Clark, R., Tluczek, A., & Gallagher, K. C. (2004). Assessment of parent-child early relational disturbances. *Assessment of mental health disorders in infants and toddlers*, 25-60.

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological bulletin*, *52*(4), 281.

Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development*, *75*(2), 317-333.

Collaborative for Academic, Social, and Emotional Learning. (2014). What is SEL? Skills and competencies. Retrieved March 18, 2014, from http://www.casel.org/basics/skills.php

Cook, J. D., Hepworth, S. J., Wall, T. D., & Warr, P. B. (1981). The experience of work. Academic Press. *New York*.

Cooper, R. K., & Sawaf, A. (1997). Executive EQ: Emotional intelligence in leadership and organizations. New York: Grosset/Putnam.

Costa, A., Faria, L., & Takšić, V. (2011). Vocabulary of emotions test (VET): A cross-cultural validation in Portuguese and Croatian contexts. *Psihologijske teme*, *20*(3), 413-424.

Costello, A. B., & Osborne, J. W. (2011). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment Research and Evaluation, 10*, (7), 2-10.

Crocker, L. M., & Algina, J. (1986). *Introduction to classical and modern test theory*. New York: Holt, Rinehart, and Winston.

Cummings, K. D., Kaminski, R. A., & Merrell, K. W. (2008). Advances in the assessment of social competence: Findings from a preliminary investigation of a general outcome measure for social behavior. *Psychology in the Schools*, *45*(10), 930-946.

Cutting, A., & Dunn, J. (1999). Theory of mind, emotional understanding, language, and family background: Individual differences and interrelations. *Child Development, 70,* 853-865.

Damasio A. (2003). The person within. *Nature*, 423(6937):227.

Darwin, C. (1965). *The expression of the emotions in man and animals* (Vol. 526). University of Chicago press. (Original work published in 1872.)

Davis, L. (1992). Instrument review: Getting the most from your panel of experts. *Applied Nursing Research*, 5, 104–107.

Denham, S. A. (1986). Social cognition, social behavior, and emotion in preschoolers: Contextual validation. *Child Development*, 57, 194–201.

Denham, S.A. (1998). Emotional development in young children. New York: Guilford.

Denham, S. A. (2006). Social-emotional competence as support for school readiness: What is it and how do we assess it?. *Early Education and Development*, *17*(1), 57-89.

Denham, S. A., Bouril, B., & Belouad, F. (1994). Preschoolers' affect and cognition about challenging peer situations. *Child Study Journal*, 24, 1–21.

Denham, S. A., & Burton, R. (2003). *Social and emotional prevention and intervention programming for preschoolers*. New York: Kluwer Academic/Plenum.

Denham, S. A., & Couchoud, E. A. (1990). Young preschoolers' understanding of emotion. *Child Study Journal*, 20, 171–192.

Denham, S. A., Ji, P., & Hamre, B. (2010). *Compendium of preschool through elementary school social‑emotional learning and associated assessment measures*. Chicago: Collaborative for Academic and Social Emotional Learning.

Deno, S. L. (1997). Whether thou goest… Perspectives on progress monitoring. *Issues in educating students with disabilities*, *16*, 213-235.

Deno, S. L., & Fuchs, L. S. (1987). Developing Curriculum-Based Measurement Systems for Data-Based Special Education Problem Solving. *Focus on Exceptional Children*, *19*(8), 1-16.

Domitrovich, C. E., Cortes, R. C., & Greenberg, M. T. (2007). Improving young children's social and emotional competence: A randomized trial of the preschool "PATHS" curriculum. *The Journal of Primary Prevention*, *28*(2), 67-91.

Domitrovich, C. E. & Greenberg, MT (2004). Preventive interventions with young children: Building on the foundation of early intervention programs. *Early Education and Development*, *15*, 365-370.

Dunn, J. (1995). Children as psychologists: The later correlates of individual differences in understanding of emotions and other minds. *Cognition and Emotion*, 9, 187–201.

Dunn, L. M., & Dunn, L. M. (2007). *PPVT-IV: Peabody picture vocabulary test*. Circle Pines, MN: American Guidance Service.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta‑analysis of school‑based universal interventions. *Child development*, *82*(1), 405-432.

Early Childhood Research Institute on Measuring Growth and Development. (1998). Theoretical foundations of the early childhood research institute on measuring growth and development: An early childhood problem-solving model (Vol. 6). Minneapolis: University of Minnesota, Center for Early Education and Development.

Easterbrook, J. A. (1959). The effect of emotion on cue utilization and the organization of behavior. *Psychological review*, *66*(3), 183.

Ebel, R. L. (1972). Essentials of educational measurement.

Eisenberg, N., Sadovsky, A., & Spinrad, T. L. (2005). Associations of emotion-related regulation with language skills, emotion knowledge, and academic outcomes. *New directions for child and adolescent development*, (109), 109.

Ejman, P. (1973). *Darwin and facial expression: A century of research in review.* New York: Academic Press.

Ekman, P. (1992). Are there basic emotions? *Psychological Review, 99*(3), 550-553.

Ekman, P. (1999). Basic emotions. *Handbook of cognition and emotion*, *98*, 45-60.

Elias, M. J., Zins, J. E., Weissberg, R. P., Frey, K. S., Greenberg, M. T., Haynes, N.M., Kessler, R., Schwab-Stone, M. E., & Shriver, T. P. (1997). Promoting social and emotional learning: Guidelines for educators. Alexandria, VA: Association for Supervision and Curriculum Development.

Fabes, R. A., Eisenberg, N., Nyman, M., & Michealieu, Q. (1991). Young children's appraisals of others' spontaneous emotional reactions. *Developmental Psychology, 27,* 858–866.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological methods*, *4*(3), 272.

Fan, X., Thompson, B., & Wang, L. (1999). Effects of sample size, estimation methods, and model specification on structural equation modeling fit indexes. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 56-83.

Fast Track Overview. (2011). Retrieved February 5, 2016, from http://www.fasttrackproject.org/overview

Fine, S. E., Izard, C. E., Mostow, A. J., Trentacosta, C. J., & Ackerman, B. P. (2003). First grade emotion knowledge as a predictor of fifth grade self-reported internalizing behaviors in children from economically disadvantaged families. *Development and Psychopathology*, *15*(02), 331-342.

Fine, S., Izard, I., Schultz, D., & Ackerman, B. (2000). Emotion knowledge as a predictor of children's self-reports of internalizing. Unpublished manuscript, University of Delaware, Newark.

Finkelstein, N. W. (1982). Aggression: Is it stimulated by day care? *Young Children*, 37, 3–9.

Fleming, J. E., & Bay, M. (2004). Social and emotional learning in teacher preparation standards. *Building academic success on social and emotional learning: What does the research say*, 94-110.

Foulks, B., & Morrow, R. D. (1989). Academic survival skills for the child at risk for school failure. *Journal of Educational Research*, 82, 158–165.

Frijda, N. H. (1986). The emotions. New York: Cambridge University Press.

Gable, R. K., & Wolf, J. W. (1993). Instrument development in the affective domain: Measuring attitudes and values in corporate and school settings. Boston, MA: Kluwer Academic.

Gagnon, C., Craig, W. M., Tremblay, R. E., Zhou, R. M., & Vitaro, F. A. (1995). Kindergarten predictors of boys' stable behavior problems at the end of elementary school. *Journal of Abnormal Child Psychology*, 23, 751–766.

Gallagher, A. (1998). Gender and antecedents of performance in mathematics testing. *The Teachers College Record*, *100*(2), 297-314.

Garner, P. W., & Estep, K. M. (2001). Emotional competence, emotion socialization, and young children's peer-related social competence. *Early Education and Education*, 12, 29–48.

Gove, F. L., & Keating, D. P. (1979). Empathic role-taking precursors. *Developmental Psychology*, 15, 594–600.

Grant, J. S., & Davis, L. L. (1997). Selection and use of content experts for instrument development. *Research in Nursing & Health*, 20, 269–274.

Greenberg, M. T., Weissberg, R.P., O'Brien, M.U., Zins, J. E., Fredericks, L., Resnik, H., & Elias, M. J. (2003). School-based prevention: Promoting positive social development through social and emotional learning. *American Psychologist*, 58(6/7), 466-474.

Greenwood, C. R., Luze, G. J., Cline, G., Kuntz, S., & Leitschuh, C. (2002). Developing a general outcome measure of growth in movement for infants and toddlers. *Topics in Early Childhood Special Education*, 22(3), 143 – 157.

Gronlund, N. E., & Linn, R. L. (1965). *Measurement and evaluation in teaching* (Vol. 4). Macmillan.

Gross, J.J., & John, O.P. (2003). Individual difference in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85, 348-362.

Gueldner, B.A., & Merrell, K.W. (2011). The effectiveness of a social and emotional learning program with middle school students in the general education setting and the effect of consultation on student outcomes. *Journal of Educational and Psychological Consultation, 21,* 1–27.

Guilford, J.P., (1959). *Personality.* New York: McGraw-Hill.

Gullone, E., & Taffe, J. (2012). The Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA): A psychometric evaluation. *Psychological assessment*, *24*(2), 409.

Gunter, L., Caldarella, P., Korth, B. B., & Young, K. R. (2012). Promoting social and emotional learning in preschool students: A study of strong start pre-k. *Early Childhood Education Journal*, *40*, 151-159.

Haapasalo, J., & Tremblay, R. E. (1994). Physically aggressive boys from ages 6 to 12: Family background, parenting behavior, and prediction of delinquency. *Journal of Consulting and Clinical Psychology*, 62, 1044–1052.

Harlacher, J.E., & Merrell, K.W. (2009). Social and emotional learning as a universal level of support: Evaluating the follow-up effect of Strong Kids on social and emotional outcomes. *Journal of Applied School Psychology*, *26*(3), 212–229.

Harris, P. L., Olthof, T., Terwogt, M. M., & Hardman, C. E. (1987). Children's knowledge of the situations that provoke emotion. *International Journal of Behavioral Development, 10,* 319–343.

Harter, S., & Buddin, B.J. (1987). Children's understanding of the simultaneity of two emotions: A five-stage developmental acquisition sequence. *Developmental Psychology*, 21, 388–399.

Harvey, R. J., Billings, R. S., & Nilan, K. J. (1985). Confirmatory factor analysis of the Job Diagnostic Survey: Good news and bad news. *Journal of Applied Psychology*, *70*(3), 461.

Heaviside, S., & Farris, E. (1993). Public school kindergarten teachers' views on children's readiness for school (NCES No. 93–410) US Department of Education. *Office of Educational Research and Improvement, Washington, DC.*

Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational research methods*, *1*(1), 104-121.

Hobson, P. (1993). The emotional origins of social understanding. *Philosophical Psychology*, 6, 227–249.

Hosp, M. K., Hosp, J. L., & Howell, K. W. (2012). *The ABCs of CBM: A practical guide to curriculum-based measurement*. Guilford Press.

Howell, K., & Nolet, V. (1999). *Curriculum-based evaluation: Teaching and decision making* (3rd ed.). Belmont, CA.: Wadsworth.

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3,* 424–453.

Iannotti, R. J. (1985). Naturalistic and structured assessments of prosocial behavior in preschool children: The influence of empathy and perspective taking. *Developmental Psychology*, 21, 46–55.

Isen, A. M., Daubman, K. A., & Nowicki, G. P. (1987). Positive affect facilitates creative problem solving. *Journal of personality and social psychology*, *52*(6), 1122.

Izard, C.E. (1971). The face of emotion. New York: Appleton-Century-Crofts.

Izard, C. E. (1977). Human emotions. New York: Plenum Press.

Izard, C. E. (2009). Emotion theory and research: Highlights, unanswered questions, and emerging issues. *Annual review of psychology*, *60*, 1.

Izard, C., Fine, S., Schultz, D., Mostow, A., Ackerman, B., & Youngstrom, E. (2001). Emotion knowledge as a predictor of social behavior and academic competence in children at risk. *Psychological Science*, 12, 18–23.

James, W. (1884). II. What is an emotion?. *Mind*, (34), 188-205.

Johnson, E. J., & Tversky, A. (1983). Affect, generalization, and the perception of risk. *Journal of personality and social psychology*, *45*(1), 20.

Johnson-Laird, P. N., & Oatley, K. (1992). Basic emotions, rationality, and folk theory. *Cognition & Emotion*, *6*(3-4), 201-223.

Johnstone, C. J., Altman, J., & Thurlow, M. (2006). *A state guide to the development of universally designed assessments*. Minneapolis, MN: University of Minnesota, National Center on Educational Outcomes.

Kaminski, R. A., &Cummings, K. D. (2007). Assessment for learning: Using general Outcomes measures. Threshold, Winter, 2007, 26 – 28. Available at: http://ciconline.org/threshold.

Kenny, D. (2015). SEM: Fit. Retrieved December 20, 2015, from http://davidakenny.net/cm/fit.htm.

Kerlinger, F. N. (1973). Foundations of Behavioral Research. New York, NY: Holt, Rinehart and Winston.

Kochenderfer, B. J., & Ladd, G.W. (1996). Peer victimization: Cause or consequence of school maladjustment? *Child Development*, 67, 1305–1317.

Kramer, T.J., Caldarella, P., Young, R., Fischer, L., & Warren, J.S. (2014). Implementing Strong Kids school-wide to reduce internalizing behaviors and increase prosocial behaviors. *Education and Treatment of Children, 37,* 659–680.

Kupersmidt, J. B., & Coie, J. D. (1990). Preadolescent peer status, aggression, and school adjustment as predictors of externalizing problems in adolescence. *Child Development,* 61(5), 1350-1362.

Kurdek, L. A., & Rogdon, M. M. (1975). Perceptual, cognitive, and affective perspective taking in kindergarten through sixth-grade children. *Developmental Psychology, 11,* 643–650.

Ladd G. W. (2003) Probing the adaptive significance of children's behavior and relationships in the school context: A child by environment perspective. In R. Kail (Ed.), Advances in Child Development and Behavior, 31, 43–103.

Ladd, G.W., Birch, S. H., & Buhs, E. S. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development*, 70, 1373–1400.

Ladd, G.W., Kochenderfer, B. J., & Coleman, C. C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development*, 67, 1103–1118.

Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1997). Classroom peer acceptance, friendship, and victimization: Distinct relational systems that contribute uniquely to children's school adjustment. *Child Development*, 68(6), 1181-1197.

Langer, S. K. (1974). *Mind: An essay on human feeling* (Vol. 2). JHU Press.

Loas, G., Dugré-Lebigre, C., Fremaux, D., Verrier, A., Wallier, J., Berthoz, S., & Corcos, M. (2010). The Alexithymia Questionnaire for Children (AQC): French translation and validation study in a convenience sample of 80 children. *L'Encephale*, *36*(4), 302-306.

Lazarus, R. (1991). *Emotions and adaptation*. New York: Oxford University Press.

Lewis, M. (2000). The emergence of human emotions. *Handbook of emotions*, *2*, 265-280.

Lewit, E. M., & Baker, L. S. (1995). School readiness. *The future of children*, 128-139.
Linn, R. L., & Gronlund, N. E. (1995). Measuring and assessment in teaching.

Luze, G. J., Linebarger, D. L., Greenwood, C. R., Carta, J. J., Walker, D., Leitschuh, C., et al. (2001). Developing a general outcome measure of growth in the expressive communication of infants and toddlers. *School Psychology Review*, 30(3), 383 – 406.

Lynn, M. (1986). Determination and quantification of content validity. *Nursing Research*, 35, 382–385.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods*, *1*, 130-149.

MacQuiddy, S. L., Maise, S. J., & Hamilton, S. B. (1987). Empathy and affective perspective-taking skills in parent-identified conduct-disordered boys. *Journal of Clinical Child Psychology, 16,* 260–268.

McConnell, S. R. (2000). Assessment in Early Intervention and Early Childhood Special Education Building on the Past to Project Into Our Future. *Topics in Early Childhood Special Education*, *20*(1), 43-48.

McConnell, S. R., McEvoy, M. A., & Priest, J. S. (2002). "Growing" measures for monitoring progress in early childhood education: A research and development process for individual growth and development indicators. *Assessment for Effective Instruction*, 27, 3-14.

McIntosh, K., MacKay, L. D., Hume, A. E., Doolittle, J., Vincent, C. G., Horner, R. H., & Ervin, R. A. (2011). Development and initial validation of a measure to assess factors related to sustainability of school-wide positive behavior support. *Journal of Positive Behavior Interventions*, *13*(4), 208-218.

McLean, M., Bailey, D. B., & Wolery, M. (1996). Assessing infants and preschoolers with special needs (2nd ed.). Columbus OH: Merrill.

Mahon, R.J., Greenberg, M.T., and the Conduct Problems Prevention Research Group. (1995). The Fast Track Program: A developmentally focused intervention for children with conduct problems. *Clinician's Research Digest*, *Supplemental Bulletin, 13*.

Mandler, G. (1975). *Mind and emotion*. Krieger Publishing Company.

Marchant, M., Brown, M., Caldarella, P., & Young, E. (2010). Effects of Strong Kids curriculum on students at risk for internalizing disorders: A pilot study. *Journal of Empirically Based Practices in Schools*, *11*(2), 123–143.

Marsh, H. W., Balla, J. R., & Hau, K. T. (1996). An evaluation of incremental fit indices: A clarification of mathematical and empirical properties. *Advanced structural equation modeling: Issues and techniques*, 315-353.

Mayer, J. D., & Bremer, D. (1985). Assessing mood with affect-sensitive tasks. *Journal of Personality Assessment*, *49*(1), 95-99.

Mayer, J.D., & Caruso, D. R. (1997). What is emotional intelligence? In P. Salovey & D. Sluyter (Eds.) *Emotional development and emotional intelligence: Implications for educators* (pp. 3-31). New York: Basic Books.

Mayer, J. D., & Gaschke, Y. N. (1988). The experience and meta-experience of mood. *Journal of personality and social psychology*, *55*(1), 102.

Mayer, J. D., Mamberg, M. H., & Volanth, A. J. (1988). Cognitive domains of the mood system. *Journal of Personality*, *56*(3), 453-486.

Mayer, J. D., & Mitchell, D. C. (1998). Intelligence as a subsystem of personality: From Spearman's g to contemporary models of hot processing. *Advances in cognition and educational practice*, *5*, 43-75.

Mayer, J. D., & Volanth, A. J. (1985). Cognitive involvement in the mood response system. *Motivation and Emotion*, *9*(3), 261-275.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2000). Emotional intelligence as zeitgeist, as personality, and as a mental ability. In R. Bar-On & J.D.A. Parker (Eds.) *Handbook of emotional intelligence* (pp. 92-117). New York: Jossey-Bass.

Mayer, J. D., Salovey, P., & Caruso, D. R. (2002). Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT) item booklet. Toronto, Ontario, Canada: MHS Publishers.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2001). Emotional intelligence as a standard intelligence. *Emotion. 1*(3), 232-242.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2. 0. *Emotion*, *3*(1), 97.

Measelle, J. R., Ablow, J. C., Cowan, P. A., & Cowan, C. P. (1998). Assessing young children's views of their academic, social, and emotional lives: An evaluation of the self-perception scales of the Berkeley Puppet Interview. *Child Development, 69*(6), 1556-1576.

Merrell, K. W., Carrizales, D., Feuerborn, L., Gueldner, B. A., & Tran, O. K. (2007). *Strong Kids—grades 3-5: A social and emotional learning curriculum.* Baltimore: Paul H. Brookes Publishing.

Merrell, K. W., Carrizales, D., & Walker, H. M. (2007). *Strong teens: a social & emotional learning curriculum : grades 9-12*. Baltimore: Paul H. Brookes Pub. Co..

Merrell, K. W., Juskelis, M. P., Tran, O. K., & Buchanan, R. (2008). Social and emotional learning in the classroom: Evaluation of strong kids and strong teens on students' social-emotional knowledge and symptoms. *Journal of Applied School Psychology*, *24*(2), 209-224.

Merrell, K. W., Parisi, D.M., & Whitcomb, S. A. (2007). *Strong Start—Grades K-2: A social and emotional learning curriculum*. Baltimore: Paul H. Brookes Publishing.

Merrell, K. W., Whitcomb, S. A., & Parisi, D. M. (2009). *Strong Start—Pre-K: A social and emotional learning curriculum.* Baltimore: Paul H. Brookes Publishing.

Messick, S. (1989a). Validity. In R. L. Linn (Ed.), Educational measurement (3rd ed., pp. 13-103). New York: Macmillan.

Messick, S. (1989b). Meaning and values in test validation: The science and ethics of assessment. *Educational researcher*, *18*(2), 5-11.

Meyer, K.M. (2014). *Program evaluation of the Strong Start curriculum as a selected intervention for early elementary students* (Unpublished doctoral dissertation). University of Massachusetts, Amherst.

Mezynski, K. (1983). Issues concerning the acquisition of knowledge: Effects of vocabulary training on reading comprehension. *Review of educational research*, *53*(2), 253-279.

Nakayama, N.J. (2008). *An investigation of the impact of the Strong Kids curriculum on social-emotional knowledge and symptoms of elementary aged students in a self-contained special education setting* (Unpublished doctoral dissertation). University of Oregon, Eugene.

Nation, M., Crusto, C., Wandersman, A., Kumpfer, K.L., Seybolt, D., Morrissey-Kane, E., & Davino, K. (2003). What works in preventions: Principles of effective prevention programs. *American Psychologist, 58,* 449-456.

Nunnally, J. C. (1978). Psychometric Theory (2nd Edit.) McGraw-Hill. *Hillsdale, NJ.*

O'Neil, R., Welsh, M., Parke, R. D., Wang, S., & Strand, C. (1997). A longitudinal assessment of the academic correlates of early peer acceptance and rejection. *Journal of Clinical Child Psychology*, 26(3), 290-303.

Oregon Resiliency Project. (2013). Assessment Tools. Retrieved March 18, 2014, from http://strongkids.uoregon.edu/tools.html

Ortony, A., & Turner, T. J. (1990). What's basic about basic emotions? *Psychological Review.* 97, 315-331

Payton, J., Weissberg, R.P., Durlak, J.A., Dymnicki, A.B., Taylor, R.D., Schellinger, K.B., & Pachan, M. (2008). The positive impact of social and emotional learning for kindergarten to eighth‐grade students: Findings from three scientific reviews. Chicago, IL: Collaborative for Academic, Social, and Emotional Learning.

Peter, J. P. (1981). Construct validity: A review of basic issues and marketing practices. *Journal of Marketing Research (JMR)*, *18*(2).

Piaget, J. & Inhelder, B. (1969/2000). *The Psychology of the Child, 2nd Ed*. New York: Basic Books.

Pungello, E. P., Kainz, K., Burchinal, M., Wasik, B. H., Sparling, J. J., Ramey, C. T., Campbell, F. A. (2010). Early educational intervention, early cumulative risk, and the early home environment as predictors of young adult outcomes within a high-risk sample. *Child Development*, 81(1), 410-426.

Qian, D. D. (2002). Investigating the relationship between vocabulary knowledge and academic reading performance: An assessment perspective. *Language learning*, *52*(3), 513-536.

Rapaport, D. (1942). *Emotions and memory*, 2nd Ed. Baltimore: Williams & Williams.

Raver, C. C. (2005). Emotions matter: Making the case for the role of young children's emotional development for early school readiness. *Social Policy Report*. 2002; 16 (3): 3-18.

Raver, C. C., Blackburn, E. K., Bancroft, M., & Torp, N. (1999). Relations between effective emotional self-regulation, attentional control, and low-income preschoolers' social competence with peers. *Early Education & Development*, 10(3), 333–350.

Raver, C. C., Izard, C. E.,& Kopp, C. B. (2002). Emotions matter: Making the case for the role of young children's emotional development for early school readiness. Social Policy Report: Giving Child and Youth Development Knowledge Away, 16(3), 3–18. Retrieved from http://harrisschool.uchicago.edu/about/publications/working-papers/pdf/wp_02_06.pdf.

Read, J. (2000). *Assessing vocabulary*. Cambridge University Press.

Reichenbach, L., & Masters, J. C. (1983). Children's use of expressive and contextual cues in judgments of emotion. *Child Development*, 54, 993–1004.

Ribordy, S. C., Camaras, L. A., Stefani, R., & Spaccarelli, S. (1988). Vignettes for emotion recognition research and affective therapy with children. *Journal of Clinic Child Psychology,* 17, 322-325.

Rieffe, C., Oosterveld, P., & Meerum Terwogt, M. (2006). An alexithymia questionnaire for children: Factorial and concurrent validation results. *Personality and Individual Differences, 40*, 123-133.

Robbins, T., Stagman, S., & Smith, S. (2012). Young Children at Risk: National and State Prevalence Factors . *National Center for Children in Poverty*. Retrieved April 12, 2014, from http://www.nccp.org/publications/pub_1073.

Roberts, R. D., Zeidner, M., & Matthews, G. (2001). Does emotional intelligence meet traditional standards for an intelligence? Some new data and conclusions. *Emotion*, *1*(3), 196.

Rogers, C. R. (1951). *Client-centered therapy: Its current practice, implications and theory*. Boston: Houghton Mifflin.

Rubio, D. M., Berg-Wagner, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social Work Research*, 27, 94–104.

Rudolph, K. D., & Heller, T. l. (1997). Interpersonal problem solving, external behavior, and social competence in preschoolers: A knowledge-performance discrepancy? *Journal of Applied Developmental Psychology*, 18, 107–118.

Saarni, C. (1999). The development of emotional competence. New York: The Guilford Press.

Salovey, P., & Birnbaum, D. (1989). Influence of mood on health-relevant cognitions. *Journal of Personality and social Psychology*, *57*(3), 539.

Salovey, P. & Mayer, J. D. (1990). Emotional intelligence. Imagination, Cognition and Personality, 9, 185-211.

Scheusner, H. (2002). *Emotional intelligence among leaders and non-leaders in campus organizations*. (Master's Thesis). Retrieved September 30, 2015 from https://vtechworks.lib.vt.edu/.

School and District Profiles. Massachusetts Department of Elementary and Secondary Information (2014). Retrieved May 26, 2015, from http://profiles.doe.mass.edu.

Schultz, D., Izard, C. E., & Bear, G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology*, *16*(02), 371-387.

Schultz, D., Izard, C.E., Ackerman, B.P., & Youngstrom, E.A. (2001). Emotion knowledge in economically disadvantaged children: Self-regulatory antecedents and relations to social maladjustment. *Development and Psychopathology*. *13*(01), 53-67.

Schultz, D., Trentacosta, C., Izard, C. E., Leaf, P., & Mostow, A. (2004). Children's emotion processing: The development of the Assessment of Children's Emotion Skills (ACES).

Shaver, P., Schwartz, J., Kirson, D., & O'Connor, C. (1987). Emotion knowledge: further exploration of a prototype approach. *Journal of personality and social psychology*, *52*(6), 1061.

Sheatsley, P. B. (1983). Questionnaire construction and item writing. In P. Rossi, J. D. Wright, & A. B. Anderson (Eds.), The handbook of survey research (pp. 195–230). New York, NY: Academic Press.

Shepard, L. A. (1994). The challenges of assessing young children appropriately. *Phi Delta Kappan*, 206-212.

Shinn, M. R. (Ed.). (1989). *Curriculum-based measurement: Assessing special children.* Guilford Press.

Shinn, M.R (2002). Best practices in using curriculum-based measurement in a problem solving model. In A. Thomas & J. Grimes (Eds.), Best Practices in School Psychology IV (pp. 671-693). Bethesda, MD: National Association of School Psychologists.

Shores, R. E., & Wehby, J. H. (1999). Analyzing the classroom social behavior of students with EBD. *Journal of Emotional and Behavioral Disorders,* 7(4), 194-199.

Shonkoff, J., & Phillips, D. Eds., (2000). *From neurons to neighborhoods: The science of early childhood development.* A report of the National Research Council. Washington, DC: National Academies Press.

Sicotte, J.L. (2013). *Effects of Strong Start curriculum on internalizing, externalizing behaviors, and emotion knowledge among kindergarten and first grade students* (Unpublished doctoral dissertation). University of Massachusetts, Amherst.

Simon, H.A., (1982) Comments, In M. S. Clark and S. T. Fiske (Eds.), Affect and Cognition. (pp. 333-342). Hillsdale, New Jersey: Erlbaum.

Singer, J. A., & Salovey, P. (1988). Mood and memory: Evaluating the network theory of affect. *Clinical Psychology Review*, 8(2), 211-251.

Smith, A. (2014). Think aloud protocols: Viable for teaching, learning, and professional development in interpreting. *Translation & Interpreting*, 6(1).

Smith, M., & Walden, T. (1998). Developmental trends in emotion understanding among a diverse sample of African–American preschool children. *Journal of Applied Developmental Psychology, 19,* 177–197.

Snyder, T. D., & Dillow, S. A. (2012). *Digest of education statistics 2011.* National Center for Education Statistics.

Spaapen, D. L., Waters, F., Brummer, L., Stopa, L., & Bucks, R. S. (2013). The Emotion Regulation Questionnaire: Validation of the ERQ-9 in Two Community Samples.

Stenberg, C. R., Campos, J. J., & Emde, R. N. (1983). The facial expression of anger in seven-month-old infants. *Child development*, 178-184.

Sternberg, R.J. (1997). The concept of intelligence and its role in lifelong learning and success. *American Psychologist, 52*, 1030-1045.

Takšić, V., Harambašić, D., & Velemir, B.(2003).*Vocabulary of Emotions Test*. Rijeka: Authors' edition.

Takšić, V., Mohorić, T., & Duran, M. (2009). Emotional Skills and Competence Questionnaire (ESCQ) as a self-report measure of emotional intelligence. *Horizons of Psychology*, *18*, 7-21.

Thompson, R. A. (1991). Emotional regulation and emotional development. *Educational Psychology Review,* 3, 269–307.

Trentacosta, C. J., Izard, C. E., Mostow, A. J., & Fine, S. E. (2006). Children's emotional competence and attentional competence in early elementary school. *School Psychology Quarterly*, *21*(2), 148.

Van de Vjever, F., & Hambleton, R. K. (1996) Translating tests: Some practical guidelines. *European Psychologist*, 1, 89–99.

Varni, J. W., Limbers, C. A., & Burwinkle, T. M. (2007). How young can children reliably and validly self-report their health-related quality of life?: An analysis of 8,591 children across age subgroups with the PedsQL™ 4.0 Generic Core Scales. *Health and quality of life outcomes*, *5*(1), 1.

Vaughn, S., Hogan, A., Lancelotta, G., & Shapiro, S. (1992). Subgroups of children with severe and mild behavior problems: Social competence and reading achievement. *Journal of Clinical Child Psychology*, 21, 98–106.

Walden, T.A., & Field, T.M. (1990). Preschool children's social competence and production and discrimination of affective expressions. *British Journal of Developmental Psychology,* 8, 65–76

Walz, C. F., Strickland, O., & Lenz, E. (1991). *Measurement in nursing research* (Vol. 2). Philadelphia, PA: F.A. Davis.

Welsh, M., Parke, R. D., Widaman, K., & O'Neil, R. (2001). Linkages between children's social and academic competence: A longitudinal analysis. *Journal of School Psychology*, *39*(6), 463-482.

Whitcomb, S. A. (2009). Strong Start: Impact of direct teaching of a social-emotional learning curriculum and infusion of skills on emotion knowledge of first grade students. Unpublished doctoral dissertation, University of Oregon, Eugene.

Whitcomb, S. A., & Merrell, K. W. (2012). Understanding Implementation and Effectiveness of Strong Start K-2 on Social-Emotional Behavior. *Early Childhood Education Journal*, *40*(1), 63-71.

West, J., Denton, K., & Reaney, L. M. (2000). The Kindergarten Year: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99.

Williams, B., Brown, T., & Onsman, A. (2012). Exploratory factor analysis: A five-step guide for novices. *Australasian Journal of Paramedicine*, *8*(3), 1.

Youngstrom, E., Wolpaw, J., Kogos, J., Schoff, K., Ackerman, B., & Izard, C. (2000). Interpersonal problem solving in preschool and first grade: Developmental change and ecological validity. *Journal of Clinical Child Psychology*, 29(4), 589–602.

Zins, J. E., Bloodworth, M. R., Weissberg, R. P., & Walberg, H. J. (2004). The scientific base linking social and emotional learning to school success. In J. E. Zins, R. P. Weissberg, M. C. Wang, & H. J. Walberg (Eds.), *Building academic success on social and emotional learning: What does the research say* (pp. 189-205)*?* New York: Teachers College Press.

Zins, J. E., & Elias, M. J. (2006). Social and emotional learning: Promoting the development of all students. *Journal of Educational and Psychological Consultation*, *17*(2-3), 233-255.