ABSTRACT

Title of Dissertation: ATTENTION, EMOTION UNDERSTANDING, AND SOCIAL COMPETENCE IN PRESCHOOL CHILDREN: CONSTRUCT DEFINITIONS, MEASUREMENT, AND RELATIONSHIPS

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Available literature regarding the relations between attention, emotion understanding, and social competence is limited in its utility given discrepancies in construct definitions and measurement. The current study examined the relations between attention, as defined from a temperament perspective, emotion understanding, and social competence in preschool children, emphasizing specificity in the conceptualization and assessment of constructs. Attention was measured via the Structured Temperament Interview (STI) and the Childhood Behavior Questionnaire (CBQ), parent-report measures. Emotion understanding was assessed with the Emotion Comprehension Test (ECT), a performance assessment. The ECT differentiated between a child's ability to identify emotions in others based on facial expressions, situational cues, and behavioral cues. Social competence was measured via teacher ratings on the Social Competence Behavior Evaluation questionnaire (SCBE). Exploratory factor analyses of the STI revealed a two factor solution, including factors Low Distraction from Task, High Duration of Attention and Low Distraction from Emotional Investment. The former demonstrated multiple relations with the

Effortful Control factor of the CBQ in correlational analyses, whereas the latter demonstrated multiple relations with the Negative Affect factor. Quantitative data, as well as qualitative analyses of themes emerging from parents' narrative STI responses, indicated that the STI encompasses both self-regulatory and reactive dimensions of attention, as well as features of emotionality and interest. Correlational and hierarchical regression analyses indicated that dimensions of attention including distractibility, attention span/persistence, and attentional focusing are related to a child's ability to identify emotions in others based on situational cues. Self-regulatory and reactive dimensions of attention, as assessed via the CBQ, demonstrated relationships with social competence outcomes, though no relations were evident between STI factors and SCBE scales. Ultimately, though dimensions of attention demonstrated relations with facets of both emotion understanding and social competence, in no case were dimensions of both attention and emotion understanding related to the same facet of social competence.

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Chapter I: Introduction

Dimensions of attention have long been included in conceptualizations of temperament, a construct broadly defined as biologically based differences in reactivity and self-regulation (Rothbart, 2011). Studies informed by naturalistic and laboratory based observations as well as questionnaire measures repeatedly confirmed the existence of a continuum of attention-related skill sets in typically developing populations. Despite attention's seat at the broader table of temperament and child development, many studies define attention from a clinical perspective when examining its relationship with other constructs. Others use typically developing populations, though focus heavily on performance based assessments, a measurement method which influences their definition of attention. Given this, three distinct issues arise. First, an emphasis exists on atypical and clinically significant attention dimensions as they influence broader social emotional outcomes. Limited work considers attention and its influences within the context of normal development. Second, differences in measurement and thus construct definitions make it difficult to compare outcomes between studies. Third, a dearth of literature exists which examines relations between attention, as defined from a temperament based perspective, and other variables.

These issues are distinctly evident in the literature regarding the relations between attention, emotion understanding and social competence in preschool children. Although studies have linked attention to both constructs, as well as linked emotion understanding to social competence, wide variations exist in definitions and measurement across all domains. Thus, it is difficult to know whether the same dimensions of attention are related to both emotion understanding and social competence outcomes. Moreover, limited work examines attention and emotion understanding as they are jointly related to social competence outcomes.

The following study investigated the relations between these three constructs, with an emphasis on a temperament based definition of attention, measured by parent informant questionnaires. Current definitions and measurement methods for each construct were reviewed, as was existing evidence for relations among the constructs. Exploratory factor analyses were conducted to review dimensions of attention emerging from a parent informant measure. The relations between dimensions of attention, emotion understanding, and social competence outcomes were explored in bivariate correlational analyses and hierarchical regression analyses. Consideration was given to conducting hierarchical regression analyses to determine which dimensions of attention and emotion understanding, examined together, were significantly related to social competence outcomes. Finally, narrative informant data was examined in an effort to determine themes evident in parent responses to attention related questionnaire items, thereby informing discussions of broader study findings.

Temperament

Temperament is a collection of individualized, biologically based differences that interact with the environment to inform one's perception of and response to stimuli (Rothbart, 2011; Rothbart, 2007; Sanson, Hemphill, & Smart, 2004). In the language of seminal researchers Thomas and Chess, rather than examining "what" individuals do and "how well" they do it, temperament examines "how" children approach various stimuli (1996). General consensus exists that temperament traits are moderately stable across an individual's lifetime, though their expression may be mitigated by environmental and developmental variables (Goldsmith, Buss, Plomin, Rothbart, Thomas, Chess, Hinde, & McCall, 1997; Sanson, Hemphill, & Smart, 2004). Most modern researchers agree that reactivity, self-regulation, and approach/withdrawal are key dimensions of the construct; however, variations exist in the inclusion of other dimensions, as

well as specificity of dimensions (Goldsmith et al, 1997; Putnam & Rothbart, 2006; Rothbart, 2007; Rowe & Plomin, 1977; Sanson, Hemphill, & Smart, 2004).

Temperament theory has evolved over time, keeping one foot solidly in the camp of biology. In its infancy, temperament was associated with the Vindician fourfold typology (Rothbart, 2011). In this conceptualization, individuals were categorized into four groups based on their emotional presentation (thought to stem from the internal balance of their bodily fluids). Melancholic, choleric, sanguine, and phlegmatic types were identified, with dimensions of temperament apparent within each categorization. As time progressed, researchers acknowledged that these temperament types, though useful conceptually, did not adequately capture the fine balance of dimensions evident within all individuals. As noted by Rothbart (2011), "The typology approach provides a simplified way of thinking about temperament, but it does not allow study of the conflict or balance between temperament tendencies as is possible in studying multiple temperament dimensions" (p. 16). Thus, a new age arose in which researchers argued that dimensions of temperament existed on a continuum. As such, all individuals are prone to the expression of all temperament dimensions, though an individual's placement on each might vary.

Rothbart, arguably one of the foremost modern temperament theorists, argues that dimensions of temperament may be reactive or self-regulatory in nature. Reactivity refers to ease of arousal and includes emotional, motoric, and attentional reactions. Reactivity includes latency periods (the time from stimulus to reaction), intensity of reaction, and recovery periods. Self-regulation, on the other hand, refers to an individual's tendency to modulate their reactivity. Rothbart posits that self-regulation includes approach/withdrawal, executive functioning skill sets, as well as general control of emotions and actions.

Although the definition of temperament continues to be refined, researchers examined the relationship between the broader construct, its dimensions and other variables. As reported by Sanson et al. (2004), temperament is associated with internalizing and externalizing problems, behavioral and emotional concerns, peer and parental relationships, and school readiness among other outcomes. With regard to social outcomes, dimensions including attention, self-regulation, sociability, and reactivity are all associated with the positive development of social skills. Inhibition is associated with peer withdrawal and sociability is commonly associated with popularity. Reactivity has been associated with the development of internalizing behavior problems.

Measurement of Temperament.

Two major measurement methods dominate temperament literature. Observational data and questionnaire measures have both been used to gather data regarding an individual's presentation on temperament continuums. Questionnaire measures, also known as informant measures, typically rely on parent ratings of temperament dimensions, especially in early childhood. Researchers have also made use of self-report informant measures in older populations, though with less frequency. By in large, questionnaire developers agree that ideal measures a) are limited in temporal scope (e.g. ask about behaviors occurring within a specific timeframe) b) request information regarding specific behaviors rather than general themes and c) ask about the frequency of behaviors (Rothbart, 2011). In doing so, questionnaires glean information about specific behaviors and reactions while minimizing the influence of rater bias (based on memory, peer-comparison, etc.).

Informant measures have contributed greatly to the conversation regarding the dimensions that make up temperament. Among the most famous studies is that conducted by

Thomas and Chess (1963). These researchers conducted interviews with 22 parents regarding their children's behavioral and emotional reactions. Using data from these interviews, Thomas and Chess hypothesized that temperament consists of nine dimensions including approach-withdrawal, adaptability, quality of mood, intensity of reaction, distractibility, persistence/attention span, rhythmicity, threshold of responsiveness, and activity level. From these subtypes Thomas and Chess created three broad categories of temperament. Young children were classified as difficult, easy, or slow to warm up, as indicated by their standing on a number of different dimensions (Rothbart, 2011, Thomas & Chess, 1996).

Rowe and Plomin (1977) refined the work of Thomas and Chess, suggesting that sociability, emotionality, activity, attention span-persistence, reaction to food, and soothability are all unitary dimensions subsumed under temperament. These dimensions were subsequently included as subscales of the Colorado Childhood Temperament Inventory, one of the earliest measures of temperament.

Rothbart, a modern temperament researcher, used a "rational" approach to develop a questionnaire and related theory of temperament dimensions. After scouring existing research, Rothbart created definitions for approximately 15 dimensions. She then created questionnaire items based on the definitions of each dimension to be measured. Quantitative analyses provided support for dimensions or scales of the measure, the Childhood Behavior Questionnaire (CBQ) (Rothbart, 2011). Ultimately, the CBQ contained 15 scales parsed into three overarching factors, Effortful Control, Extraversion/Surgency, and Negative Affect. Scales included Positive Anticipation, Smiling and Laughter, High Intensity Pleasure, Activity Level, Impulsivity, Shyness, Discomfort, Fear, Anger and Frustration, Sadness, Soothability, Inhibitory Control, Attentional Focusing, Low Intensity Pleasure, and Perceptual Sensitivity.

More recently, Hedwig Teglasi developed the Structured Temperament Interview (STI). STI prompts describe constructs, rather than specific behaviors. Moreover, STI prompts are not time referenced, nor do they request specific information about the frequency of behaviors. Thus, they represent a departure from the typical format of temperament interviews. Teglasi suggests that items in standard temperament interviews are strongly reminiscent of items in behavior rating scales (e.g. social competence rating scales, attention rating scales). Item overlap yields concerns regarding whether ratings singularly measure temperament constructs (versus a combination of temperament and other behaviorally based constructs) (Sanson, 1990; Teglasi et al, 2009). Although the measure assesses common temperament domains such as activity, attention/distractibility, emotionality, reactivity threshold, approach-avoidance/sociability, and adaptability/self-regulation, it does so in a unique, construct driven manner.

The following table offers a visual comparison of the dimensions captured by these four informant measures. Notably, features of sociability/approach-withdrawal, activity level, attention, emotionality, and reactivity appear in all measures.

Table 1

Dimensions of Temperament Represented in Questionnaire Measures

New York Longitudinal Study (Thomas & Chess)	Colorado Childhood Temperament Inventory (Rowe & Plomin)	Childhood Behavior Questionnaire (Rothbart)	Structured Temperament Interview (Teglasi)
Approach-Withdrawal	Sociability	Positive Anticipation	Activity
Adaptability	Emotionality	Smiling and Laughter	Attention/Distractibility
Quality of Mood	Activity	High Intensity Pleasure	Emotionality
Intensity of Reaction	Attention Span-Persistence	Activity Level	Reactivity Threshold
Distractibility	Reaction to Food	Impulsivity	Approach-Avoidance/Sociability
Persistence/Attention Span	Soothability	Shyness	Adaptability/Self-Regulation
Rythmicity		Discomfort	
Threshold of Responsiveness		Fear	
Activity Level		Anger and Frustration	
		Sadness	
		Soothability	
		Inhibitory Control	
		Attentional Focusing	
		Low Intensity Pleasure	
		Perceptual Sensitivity	

Other measures of temperament include laboratory and naturalistic observations of children. These measures provide important information regarding children's behaviors in either every day or structured environments. Laboratory observations allow researchers to compare individual children's responses to a uniform set of stimuli. Moreover, the use of trained observers allows for specificity of data collection and coding. Naturalistic observations offer similar advantages with regards to data collection, though children are observed in their everyday home and school environments. Despite these advantages, critics note that as observers view children for only a limited amount of time, information gleaned may lack both depth and breadth (Rothbart, 2011). For example, target stimuli and temperament responses may not occur during the scheduled observation time. As parent informants spend a significantly larger amount of time with their children, they are better equipped to provide information about lower frequency temperament reactions.

Among the most famous observational measures is the Laboratory Temperament Assessment Battery (Lab-TAB). The preschool version of this measure contains 33 "episodes," meant to assess children on seven dimensions of temperament. Episodes consist of structured, examiner created play or work situations, meant to elicit specific temperament responses. Assessed dimensions include fear, distress (including subdimensions anger/frustration and sadness/disappointment), exuberance, interest/persistence, activity level, inhibitory control, and contentment.

Attention as Dimension of Temperament

The previous section alludes to attention's inclusion in the broader construct of temperament, a premise that will be discussed more completely in the coming section. First, it is important to review broad definitions of attention. Attention is generally examined from the lens

of typical development or atypical, clinically significant development. It is easy to imagine that the clinical, atypical development lens is truly an extension of the typical development lens, though with a focus on specific skill sets and deficits. Even so, differences in emphasis and thus measurement techniques make it difficult to compare outcomes between these two camps.

Cognitive psychologists suggest that attention does not exist as a single construct; instead, it is an umbrella term that captures several dimensions (Styles, 2006). In an attempt to broadly define attention, Styles (2006) states that it "is best characterized by a limited capacity for processing information and that this allocation can be intentionally controlled" (p.1). Styles notes that different types of attention exist (e.g. visual, auditory) as do multiple methods for regulating attention (e.g. selectivity, sustained attention, resource allocation). Interestingly, Styles discussion of subtypes versus methods of regulation in some way mirrors Rothbart's conceptualization of temperament. As noted previously, Rothbart (2011) splits dimensions of temperament into reactive and regulatory dimensions.

In general, temperament theorists posit that attention is a multifaceted dimension of temperament, comprised of many subsets. Attention includes alerting, orienting, and executive functioning domains. The first is reactive in nature while the second and third are regulatory. In Rothbart's conceptualization, which is of particular interest to the current study, alerting is largely subsumed under the Extraversion/Surgency factor of the CBQ. Alerting, which refers to attentional arousal rather than regulation, acts as an "accelerator toward action." Regulatory functions such as orienting and executive function are largely subsumed under the Effortful Control factor of the CBQ, and serve as inhibitors or the "brakes" (Rothbart, 2011).

Researchers who examine dimensions of attention in atypical development tend towards a much narrower focus. As will be discussed more in depth later in this paper, a great deal of available research regarding the relations between attention and emotion understanding and social competence uses a clinical definition of attention. Researchers most frequently emphasize characteristics of Attention Deficit-Hyperactivity Disorder in their work. As such, some of the most extreme patterns of placement on continuums of attention are utilized as the basis for analysis. Researchers tend to focus on intense, clinically significant (and therefore rare) levels of distractibility, impulsivity, activity level, and poor executive functioning, among other issues.

Measurement of Attention.

Temperament researchers define attention from a broad view with an emphasis on normal development, whereas many other researchers focus more specifically on clinically significant attentional presentation. The difference, perhaps, lies in placement on the continuum of multiple attention dimensions. This difference in focus influences measurement technique and ultimately the generalizability of research outcomes.

A review of the previously described measures indicates that attention has been included in multiple conceptualizations of temperament. Thomas and Chess (1963) included persistence/attention span and activity level in their conceptualization. Rowe and Plomin (1977) included activity and attention-span persistence. Most recently, Rothbart included scales such as impulsivity, attentional control, inhibitory control, activity level, and attentional focusing on the CBQ. In creating the CBQ, Rothbart relied heavily both on a rational, theory driven approach as well as statistical analyses of her measure to examine underlying constructs. Factor analyses of the CBQ as a whole, including attention related scales described above, indicated the presence of

three factors. Effortful Control, Extraversion/Surgency, and Negative Affectivity each emerged as a unique factor in analyses. Though the majority of attention scales were initially conceptualized as part of the Effortful Control factor, in analyses many cross loaded with the Extraversion/Surgency factor (Rothbart et al., 2001). Rothbart theorizes that some dimensions of attention are reactive in nature while others are self-regulatory.

Teglasi proposed that attention is best parsed into four dimensions, including attention span/persistence, external sources of distraction, internal sources of distraction, and level of interest. Notably, in keeping with more current conceptualizations, Teglasi created a separate scale for activity level, choosing to separate this dimension from attention proper. This scale includes dimensions vigor and modulation, assessing both the pace and tempo of one's physical movements as well as one's ability to regulate those movements to match the demands of the situation (Teglasi et al., 2009). As such, child characteristics including motoric energy and modulation are not measured by the attention scale of the STI. In general, the majority of attention measures include constructs such as persistence and attention span, inhibitory control, impulsivity, attentional focusing, distractibility by internal and external sources, and level of interest in their examination of attention. Laboratory based observation measures, such as the Lab-TAB, have also been used in measurement of attention, though this measure focuses largely on inhibitory control with little focus on other dimensions of attention (Gagne, Van Hulle, Aksan, Essex, & Goldsmith, 2011).

As indicated above, the vast majority of temperament based measures of attention rely heavily on informant ratings. Performance measures of attention differ significantly from informant based measures in both construct definition and mode of assessment. Such measures often focus on dimensions including sustained attention, ability to shift attention, inhibition, and

inattention, utilizing short, discrete and highly structured tasks in their measurement (Bennett-Murphy et al., 2007; Gerwitz et al., 2009; Perez-Edgar et al., 2010). Commonly used measures include the NEPSY-II (Korkman, Kirk, & Kemp, 2007) as well as multiple computer based performance tests. These measures, though valuable, examine attention in a different manner than do temperament based assessments. Temperament based, informant measures of attention tend to focus on persistence, attention span, inhibitory control, attentional focusing, distractibility by internal and external sources, and level of interest. Though it is possible to measure some of these constructs via performance assessment, informant assessments are broader in their conceptualization of skill sets, measuring constructs as they are exhibited (and perceived by others) in more natural settings.

As current conceptualizations of attention continue to evolve, it is understood that temperament based, informant measures examine different dimensions than do their performance counterparts. Informant measures themselves may differ in their scope and specificity. Given this information, how is attention best defined within the confines of temperament literature? The current study examined the relationships between corresponding scales of two parent report measures of temperament in an effort to clarify and refine definitions of the construct. Dimensions of attention within each measure were reviewed, as were the relations among dimensions both within and between scales.

Emotion Understanding

Of particular interest to the current study is the relationship between dimensions of attention and emotion understanding. Multiple studies operationalize emotion understanding as the capacity to correctly identify another's emotions based on facial expressions, behaviors, or

situational context (though identification based on facial expressions and situational cues are most commonly utilized in preschool populations) (Denham, Blair, DeMulder, Levitas, Sawyer, Auerback-Major, Queenan, 2003; Denham, Blair, Schmidt, & DeMulder, 2002; Denham, Caverly, Schmidt, Blair, DeMulder, Caal, Hamada, Mason, 2002; Denham & Couchoud, 1990; Glanville & Nowicki, 2002; Izard, Fine, Schultz, Mostow, Ackerman, Youngstrom, 2001; Shultz, Izard, & Bear, 2004). The relative clarity of this definition is new and unfortunately infrequently relied upon in emotion understanding literature. In many studies, especially those examining emotion understanding in preschoolers, features of emotion identification based on recognition of facial expressions and identification based on situational context are mixed together in the same task (Denham, Blair, Schmidt, & DeMulder, 2002). Moreover, current literature tends to emphasize the joint influence of emotion understanding, emotion regulation, and emotion expressiveness (Denham et al., 2003). Mixing tasks and constructs in this manner makes it difficult to ascertain the relations between specific dimensions of emotion understanding and attention and social competence outcomes. The current study exercised specificity in both definition and measurement of dimensions of emotion understanding, thereby allowing for precision in examination of the links between constructs.

Social Competence

The definition of social competence is broad, which may account for some of the overlap between this construct and others in research studies. Generally, social competence is referred to as a set of skills that allow children to match their behaviors to situations and achieve social goals, while attending to broader social mores and maintaining positive relationships (Bennett Murphy, Laurie-Rose, Brinkman, & McNamara, 2007; Gerwitz, Stanton-Chapman, & Reeve, 2009; Rubin & Rose-Krasnor, 1992). Rose-Krasnor (1997) noted that social competence as a

whole may defined by general "effectiveness" of one's social capabilities, as she believes social competence to be goal oriented and context dependent. Individuals' social goals (i.e. relationship building, peer entry and acceptance) may influence the skills they choose to employ. Furthermore, skill sets may change based on their appropriateness in different social settings. One's effectiveness is measured by social skills, sociometric status, relationships, as well as the outcomes and effectiveness of their skill sets. In general, researchers report that social skills include the ability to successfully enter pre-existing peer groups, initiate interactions with others, assert one's needs, and utilize positive social behaviors (Bennett Murphy, Laurie-Rose, Brinkman, & McNamara, 2007; Gerwitz, Stanton-Chapman, & Reeve, 2009).Researchers largely agree that social competence influences one's capacity to develop positive peer relationships (Denham & Holt, 1993), mitigates the use of violent behavior (Denham, Blair, Schmidt, & DeMulder, 2002), and predicts school readiness (Pelco & Victor, 2007), among other outcomes.

A Brief Review of the Relationship between Constructs

A number of definition and measurement differences in the current literature base make it difficult to draw clear conclusions regarding the links between attention, emotion understanding, and social competence. Most importantly, attention is defined quite differently in emotion understanding literature as compared to social competence literature. The former utilizes participants who have been previously diagnosed with ADHD almost exclusively, with participants (and thus their attentional deficits) pre-identified by outside providers. Social competence literature, on the other hand, utilizes performance measures to examine constructs including ability to sustain and shift focus as well as inhibition. It is important to note that neither of these definitions and forms of measurement adequately capture attention dimensions described by temperament literature, nor is an informant based form of measurement used (as is

often done in temperament research). Moreover, a broad range of age groups is captured in studies of both constructs, with researchers reviewing attention's influence on outcomes in children from preschool through adolescence. Although age is often reported to be related to outcomes, researchers have not yet begun to investigate whether a ceiling exists in age's impact on outcomes.

Within the described constraints, several trends are clear. Children diagnosed with ADHD tend to perform worse than their typically developing peers on tasks related to all three dimensions of emotion understanding (facial recognition, situations, and behaviors) (DaFonseca et al., 2009; Sinzig, Morsch, & Lehmkuhl, 2008; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007). More specifically, children diagnosed with ADHD perform worse than typically developing peers on tasks requiring them to identify both positively and negatively valenced emotions based on facial expressions alone. However, these children are better able to identify positively valenced emotions than negatively valenced emotions on emotion understanding tasks (DaFonseca et al. 2009; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007). Several researchers have indicated that attentional variables alone do not account entirely for a child's facility with emotion understanding tasks. Among other variables, studies considered the influence intelligence may have on attention and emotion understanding outcomes (Lee et al., 1999; Yuill & Lyon, 2007; Sinzig et al. 2008). Moreover, ADHD populations are likely to include children who struggle to a clinically significant degree with impulsivity, self-regulation, and heightened motor activity. These variables may also have a significant impact on emotion understanding outcomes.

On the whole, studies suggest that many facets of attention and social competence are evident during the preschool years, wherein they continue to develop. In regression analyses a

child's ability to sustain attention was associated with gregariousness, social and reciprocal play, complexity of play schemes, and decreased aggression in preschool aged children (Bennett Murphy et al., 2007). Sustained attention is further related to adolescent children's overall levels of social comfort (e.g. smiling during interactions, comfort with entering peer groups; Perez-Edgar et al., 2010). Inhibition may explain a significant amount of the variance in preschoolers' ability to assert their needs, cooperate with others, and demonstrate adequate self-control in play (as measured by teacher ratings) (Gerwitz et al., 2009).

Emotion understanding is thought to be a precursor to social competence. Studies examining the relationships between these constructs suggest that emotion understanding is more predictive of social competence outcomes for younger children than older children, within the preschool age group (Denham et al., 2003). Moreover, emotion attribution bias mediates the relationship between emotionality and aggressive reactions in preschoolers (Shultz, Izard, & Bear, 2004). Within the early elementary school age group, results on mixed facial recognition and situation based tasks are positively related to peer ratings of likeability (Glanville & Nowicki, 2002). Social skills are thought to mediate the relationship between emotion understanding and social preference (Mostow, Izard, Fine, & Trentacosta, 2003). It is important to note that none of these studies examine the links between specific dimensions of emotion understanding and social competence. Rather, they consider dimensions in aggregate, making comparison between studies and the specific nature of relations difficult to discern.

Purpose of the Proposed Study

The current study was two pronged in its purpose. The definition of attention as it is conceptualized from a temperament framework was clarified to include multiple dimensions, in

part through analyses of two parent informant measures (one established and one newly developed). Exploratory factor analyses of the STI were conducted with a sample of preschool aged children. Afterwards, bivariate correlations were utilized to compare STI dimensions with related scales of the CBQ, an established measure of temperament. Qualitative analyses were conducted to review themes emerging from parent's narrative responses to the STI, further informing discussions regarding dimensions of attention captured by this measure.

The relations among attention, emotion understanding, and social competence were examined via bivariate correlational analyses and hierarchical regression analyses. The Emotion Comprehension Test (ECT) examined features of emotion understanding, including unique scales for facial recognition, situation, and behavior based tasks. Social competence, as measured by the Social Competence and Behavior Evaluation (SCBE), included an examination of overall competence as well as more specific skill sets. In carefully examining dimensions of attention captured by the STI and CBQ, as well as utilizing specific, clear measures of emotion understanding and social competence, the current study was precise in its examination of the relations between these three constructs.

Chapter II:

The Relationship between Attention, Emotion Understanding, and Social Competence

Attention and Emotion Understanding

The majority of studies that consider the relationship between attention and emotion understanding define attention from a deficit model, specifically reviewing attention as it is outlined in criteria for Attention Deficit Hyperactivity Disorder (ADHD). Studies that consider the relations between attention and emotion understanding focus largely on the aggregate influence of inattention, distractibility, and activity level on emotion understanding. The influence specific subsets of the ADHD diagnosis may have on emotion understanding are rarely discussed (e.g. inattention versus hyperactivity, executive functioning and planning). Instead researchers compare aggregate outcomes without considering implications of specific skill deficits related to ADHD, only the diagnosis as a whole. Other dimensions of attention which are generally subsumed under a temperament based definition have essentially remained untouched in the literature base. Comprehensive informant rating scales are not utilized; instead, attention is defined via diagnostic criteria with a reliance on a previously diagnosed participant base.

With regard to emotion understanding, most studies attend to major dimensions of that construct (identification based on facial expressions, situations, and behaviors). However, it is difficult to distinguish each dimension's individual relations with dimensions of attention, as dimensions of emotion understanding are often collapsed together during measurement. For example, facial recognition, situation, and behavior components are confounded by being collapsed into one gross task (i.e. point to the face that identifies the emotion felt by the story character), (DaFonseca et al, 2009; Lee et al., 2009; Shin et al., 2008; Singh et al. 1998; Yuill &

Lyon, 2007). On the whole, definitions and measurement of both attention and emotion understanding are vague within this research base, making analysis of specific relationships between the two constructs and their dimensions difficult.

Across almost all studies, children diagnosed with ADHD performed significantly worse than typically developing peers on any type of emotion understanding task (identification based on facial expressions, situations, behaviors, and combined tasks) (DaFonseca et al., 2009; Sinzig, Morsch, & Lehmkuhl, 2008; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007). Additionally, children diagnosed with ADHD performed worse than their Autistic peers on facial recognition tasks (Sinzig, Morsch, & Lehmkuhl, 2008). This latter finding is especially interesting given the social skills deficits apparent in children with Autism, though ADHD is marked by a number of poor social outcomes.

Children with ADHD were often better able to identify positively valenced emotions as opposed to negatively valenced emotions (e.g. happy versus mad). This outcome was similar to that of their typically developing peers. It is important to note that children in these studies ranged in age from five to fifteen, though researchers generally did not indicate whether performance stopped improving after a certain age (DaFonseca et al., 2009, Lee et al., 2009, Singh et al., 1998). Although children with ADHD and typically developing children were both better able to identify positive emotions overall, children with ADHD had more difficulty identifying these emotions than their typically developing counterparts in identification based on facial expression-situation tasks (DaFonseca et al. 2009; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007). Similarly, children with ADHD had more difficulty identifying negative emotions in identification based on facial expression-situation tasks than their typically

developing peers (DaFonseca et al. 2009; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007).

Only one study indicated that children with ADHD showed no statistically significant difference in their emotion understanding abilities as compared to typically developing children. Shin et al. (2008) assessed boys between the ages of 6 and 15 with ADHD as well as an age-matched control group. The authors found that children with ADHD had more difficulty than the control group on straight-forward identification based on facial expression tasks. However, when children with ADHD were asked to identify an emotion based on a short story (situation) and cartoon picture (facial expression), they performed as well as their typically developing peers. Such comparisons lend credence to the notion that relationship between attention and emotion understanding is not simplistic, and that the two variables and their relationships must be broken down in a more thorough and specific manner. Additionally, the manner in which emotion understanding is measured may have been relevant. It stands to reason that children may have differing levels of accuracy when examining pictures of real children versus cartoons, as cartoons are often exaggerated. Furthermore, the advantage of age as well as the use of combined facial expression and situational tasks may have influenced accuracy in a positive manner.

Yuill and Lyon (2007) suggested that emotion understanding outcomes in ADHD children may not be related to attention alone. These authors studied typically developing children and children with ADHD between the ages of 5-11 in a mixed facial expression and situation based task. Children were asked to point to a photograph of a child whose depicted emotion matched their desired response. Children were also asked to perform a task where they were asked to identify a blacked out object based on conceptual cues, rather than a facial expression. The children with ADHD fared worse than typically developing children on both

tasks, though the emotion task (task one) was markedly more difficult for them. Yuill and Lyon suggested that children with ADHD struggle with emotion understanding as well as with the ability to make conceptual links between context clues and missing information. Moreover, Yuill and Lyon found that when children were offered strategies for coping with inhibition difficulties they performed better on emotion understanding tasks, though still not as well as the control group. Thus, the researchers suggest that emotion understanding in children with ADHD is influenced by a poor capacity for inhibition as well as high levels of inattention. Though not discussed specifically by the authors, it is possible that children with ADHD also struggle to draw inferences when faced with emotionally loaded data as well as rote contextual data.

DaFonseca et al. (2009) assessed children ages 5-15 diagnosed with ADHD. The researchers found that children with ADHD had more difficulty using contextual cues to recognize and name emotions than they did objects (another inference based task), whereas children in the control group preformed equally well on both tasks. Additionally, children with ADHD had more difficulty with both tasks overall than did the control group. Emotion understanding was assessed via a photographic facial expression task, presented in an emotion identification format alone as well as identification supplemented by situational stories. Object naming was assessed by blocking an item in the photograph and asking children to name what was blocked (inclusive of faces and objects). DaFonseca et al. suggested that children with ADHD do not have difficulty with emotion understanding due to attentional difficulties alone, as defined by the diagnostic criteria. If that were the case, they would have exhibited equal difficulties on both the emotion and objects task. Rather, DaFonseca et al. hypothesized that another unnamed construct must be involved that impacts children's emotion understanding.

The notion that another construct must be at play is further supported by work by Lee et al. In their 1999 study Lee et al. compared children ages 6-9 with ADHD to children without ADHD. Notably, Lee et al. found no difference in the scores of the control and experimental groups on combined facial expression and situation/behavior based tasks. Additionally, Lee et al. found no difference between levels of inattention and impulsivity between the groups. Finally, no within-group differences existed between children with different subtypes of ADHD. Lee et al. did find, however, that intelligence was correlated with accuracy scores on emotion understanding tasks for both groups, suggesting yet another construct which may influence levels of emotion understanding.

Lee et al.'s work is further supported by that of Sinzig, Morsch, & Lehmkuhl (2008). In a straight forward facial recognition task the researchers found significant differences in the emotion understanding scores of children with ADHD as compared to both Autistic and typically developing groups. They also found that intelligence was positively correlated with overall emotion understanding scores across several tasks. Interestingly, intelligence was not significantly correlated with emotion understanding scores in DaFonseca et al.'s study (2009), described earlier. It should be noted that Lee et al.'s study assessed children from ages six to nine, while DaFonseca et al. and Sinzig, Morsch, & Lehmkuhl's study included teenagers as well as late elementary school children. Moreover, though all studies defined attention in terms of an ADHD diagnosis, differences exist in their definition and measurement of emotion understanding. Therefore, it is difficult to make clear comparisons, though it is important to consider the possible influence of intelligence on outcomes.

In addition to intelligence and inhibition, several researchers found that participant age mitigates emotion understanding outcomes. Sinzig et al. (2008) found a positive correlation

between age and emotion understanding scores in children ages six to eighteen, with no age ceiling noted. Shin et al. suggest that age may account for one's ability to correctly identify negative emotions in a combined facial expression and situation/behavior based task (effect size 11.6%, $P<0.01$). Notably, Sinzig et al. also failed to examine whether these differences cease to exist after a certain age. DaFonseca et al. (2009) did not find age to be a significant contributor to emotion understanding scores, again focusing on levels of inhibition as a significant factor. DaFonseca et al.'s study focused on children ages five to fifteen. In Genova-Latham's study of preschool children using three distinct measures of emotion understanding, all scales were significantly positively correlated with age (2010).

Genova-Latham (2010) examined the relationship between attention, as defined by principal component analyses of Teglasi's STI and emotion understanding, as measured by the Emotion Comprehension Test (ECT). Correlational analyses indicated that after controlling for age and gender the attention dimension High Distraction by External Stimuli demonstrated a weak correlation with situation and behavior based emotion understanding tasks.. Similarly, High Distraction by Less Relevant Information demonstrated a weak correlation with facial recognition tasks, after controlling for age and gender. Thus, distractibility in preschoolers was found to be related to all three ECT subtests. This finding is important as none of the previously reviewed studies examined relations between specific facets of attention as they are related to unique emotion understanding outcomes.

Overall, multiple studies have shown that children with ADHD tend to perform worse on all emotion understanding tasks than their typically developing peers, though as a group they are better able to identify positively valenced emotions (as compared to negatively valenced emotions). Furthermore, ability to identify emotions is thought to improve with age in both

ADHD and typically developing populations across age ranges (preschool to adolescent). Although the majority of research focuses on attention in aggregate, typically in clinical populations, research by Genova-Latham (2010) suggests that the influence of specific dimensions of attention as it is related to emotion understanding can be teased out. The current study supplemented this work by examining attention's relations with social competence outcomes, as well as the combined influence of attention and emotion understanding on social competence outcomes.

Attention and Social Competence

Social competence research tends to be more comprehensive in its treatment of attention than emotion understanding literature. This body of work focuses on typically developing populations, with an emphasis on dimensions of attention including ability to sustain and shift focus as well as inhibition (as compared to inattention). In fact, many researchers choose not to use clinical populations in their work, given concerns about co-occurring and confounding issues (i.e. behavioral issues, executive functioning concerns) (Bennet Murphy et al., 2007). This focus has given rise to a series of studies that are comprehensive and clear in their definitions and review of the relations between specific dimensions of attention and social competence. Despite their comprehensiveness, it is important to note that the majority of this research base utilizes performance measures of attention, rather than informant (or temperament based measures). Therefore, though outcomes will be discussed, the current study differed in definition and measurement of attention, thus adding to the available literature base.

Bennet Murphy et al. (2007) examined the relationship between sustained attention and social competence in preschool children. The authors defined sustained attention as the ability to

maintain attention to detail over a prolonged period of time, as measured by a computer based performance test. This measure also attended to inhibition and impulsivity. Sustained attention was measured by assessing children's ability to accurately detect target stimuli, overall perceptual sensitivity, and number of inaccurate detections (commission errors). Social competence, as measured by observational data during free play, was defined in terms of cooperation with peers, ability to successfully enter a peer group, initiate play, assert needs, and general prosocial behaviors. The authors found that all measured aspects of sustained attention accounted for a significant percentage of the variance in dimensions of social competence in regression analyses.

Gerwitz, Stanton-Chapman, & Reeve (2009) focused more specifically on inhibition, or a child's ability to withhold a response and evaluate a situation prior to deciding upon a continued reaction (Barkley, 1997). Inhibition, which continues to develop during the preschool years, has previously been associated with maladaptive social competence skills, including difficulty with evaluation and foresight and inability to accurately determine another's thoughts or assumptions (theory of mind) (Whalen & Henler, 1992; Carlson & Moses, 2001). This longitudinal study assessed inhibition via a computer based performance task as well as a Stroop task. Social competence, in this case defined as assertion, cooperation, peer competence, and self-control, was measured via parent and teacher ratings. Regression analyses suggest that inhibition in preschool accounts for a significant amount of the variance in all four types of social competence in 3rd graders, as measured by teacher ratings. Parent ratings, however, only demonstrated a significant relationship between inhibition and peer competence (general interpersonal competence).

Perez-Edgar et al. (2010) reviewed the combined influence of sustained attention and inhibition on social competence outcomes. In their longitudinal study sustained attention moderated the relationship between inhibition and social discomfort in adolescence. Social discomfort, measured in terms of smiling, clarity and volume of voice, speaking time, and general anxiety, was observed during skits in which children were asked to act out scenarios with a group of unknown children. Children were asked to give compliments to each other, invite a child to join a game, as well as to offer assistance to a same aged peer.

Unlike the majority of studies which focus on typically developing populations, Ronk, Hund, and Landau (2011) examined the links between social competence and attention among children diagnosed with ADHD. In this study, authors focused on peer group entry as an indicator of social competence. Boys ages 7 to 12 were asked to attempt to join a game being played by a group of unfamiliar youth (who were familiar to one another). Social competence was measured both observationally and via peer ratings. Researchers found that children with and without ADHD do not differ in their use of "competent entry strategies." However, observations indicate children with ADHD tend to utilize more "incompetent" strategies, including a failure to assess situational and interpersonal variables. Thus, these children tended to receive more negative peer ratings, more reported observations of "incompetent strategies" as well as poorer social competence outcomes on the whole.

In general, literature has documented relations between dimensions of attention and social competence across age groups. Inhibition, sustained attention, as well as attentional difficulties inherent in children with ADHD are all shown to be related to poor social competence as a whole, as well as with specific dimensions of that construct. Children may struggle with evaluation of situations, entry strategies, assertion of needs, cooperation, and

general social discomfort. Furthermore, studies suggest that dimensions of attention tend to impact social competence outcomes in conjunction with one another, rather than independently.

Emotion Understanding and Social Competence

Researchers theorize that emotion understanding is a building block, or precursor, to social competence (Denham, Blair, DeMulder, Levitas, Sawyer, Auerback-Major, & Queenan, 2003). Although the two are assumed to be related, a continued lack of clarity regarding construct definitions make it difficult to discern specific patterns within this relationship. Despite this, several broad links are evident.

Research regarding the link between emotion understanding and social competence typically relies on preschool aged participants, as emotion understanding is thought to develop during early childhood. Elementary school aged children are occasionally studied, though less often. Emotion understanding is almost singularly measured via performance assessments, though social competence tends to be examined via informant ratings and observations. Studies have shown emotion understanding to be related to aggression in both preschoolers and early elementary school aged children (Denham, Blair, Schmidt, & DeMulder, 2002; Denham, Caverly, Schmidt, Blair, DeMulder, Caal, Hamada, & Mason, 2002; Schultz, Izard, Bear, 2004), academic competence in elementary school aged children (Izard, Fine, Schultz, Mostow, Ackerman, & Youngstrom, 2001), and popularity (Denham et al., 2003), among other social outcomes.

Denham et al. (2003) examined the links between emotion competence (and emotion understanding as a sub dimension), and social competence in a group of 3 and 4 year old preschool children. As noted earlier, Denham and her colleagues defined emotion competence as

the ability to identify emotions, regulate one's own emotions, and express emotions. The authors suggested that these variables interact simultaneously with the environment to influence social competence outcomes. Denham and her colleagues assessed emotion competence during a series of naturalistic observations (to determine emotional expression) and direct assessment performance measures (puppet scenarios to assess emotion understanding). They used maternal informant reports to assess emotion regulation. Social competence was assessed via teacher ratings. With regard to emotion expressiveness, the authors found that children who exhibited predominately happy states tended to have higher social competence ratings than their sad or angry peers. Furthermore, children who exhibited better patterns of self-regulation (ability to inhibit negative emotions) were also rated as being more socially competent.

Of particular importance is the determination regarding the link between emotion understanding and social competence. Denham et al. found that young preschoolers showed more variability than older preschoolers in emotion understanding. Subsequently, performance assessments of emotion understanding were more predictive of informant ratings of social competence for younger than for older children within the preschool age range (and was shown to develop with age). These findings imply, at the very least, that some measures of emotion understanding may become ineffective after a child reaches a certain age. It remains unclear at what age emotion understanding itself may be considered fully developed.

Although these findings remain important, Denham et al.'s conceptualization of emotion understanding is disparate from that typically utilized by researchers in the field. Denham et al. reviewed emotion understanding only as it relates to a child's ability to label emotions based on situational variables (i.e. context clues). Moreover, Denham reviewed children's responses as they were related to parents' descriptions of the child's predicted reaction. Frequently cited

literature and measures of emotion understanding suggest that emotion understanding must be defined as a child's ability to identify emotions based on facial expressions, behaviors, and situations, the three of which are typically assessed separately (Shultz, Izard, & Bear, 2004). In assessing situations alone Denham et al. may have neglected critical pieces of the emotion understanding paradigm. It is therefore uncertain whether the links reported between emotion understanding and social competence capture the complex nature of that relationship.

Other researchers have focused on the identification of emotions based on facial expressions in their research of the links between emotion understanding and social competence, or some combination of facial expressions and situations or behaviors. Glanville and Nowicki (2002) examined the influence of African-American children's assessment of facial expressions and situations on social competence outcomes. Their research reviewed these outcomes in the context of potential ethnic and racial differences in emotion understanding in an elementary school aged group. The authors hypothesized that African American children in the second, third, and fourth grades would perform equally well with stimuli involving European American and African American faces, whereas European American children would perform better with European American faces. The authors also predicted that emotion understanding would be positively associated with social competence outcomes. The hypothesis regarding racial and ethnic differences was confirmed and undoubtedly adds to the relatively small amount of literature in that area. Of particular interest, however, is the authors' use of a situation-loaded facial recognition task as a measure of emotion understanding. Children were asked to match a series of situations to a picture of a face that depicted a happy, sad, angry, or fearful expression (a mix of facial recognition and situational recognition). In another assessment, children were asked to name the emotion depicted in a picture, as well as the intensity of that emotion on a

scale from one to five. The authors also confirmed their hypothesis that emotion understanding, as measured in both tasks (facial recognition and situation combined, and facial recognition alone) were positively related to social competence outcomes, assessed by sociometric ratings.

Glanville and Nowicki's assessment of emotion understanding, though it does not capture all of the subsets of emotion understanding noted by Shultz et al., adds to the literature by reviewing the influence of facial recognition abilities on social competence (whereas Denham et al. reviewed situation recognition). The authors also suggested that performance measures of emotion understanding remain useful in predicting social competence at least through the early elementary school years, though it is possible that their utility lessens over time (moreover, it is possible that specific dimensions of emotion understanding continue to develop with age, while others do not). These factors have yet to be identified or explored in the available literature base. Furthermore, Glanville and Nowicki addressed the influence a child's capacity to identify both facial expressions and situational variables simultaneously may have on social competence.

Few studies have examined the three specific dimensions of emotion understanding. Those that do exist tend to rely on the Assessment of Children's Emotion Skills (ACES) measure, developed by Shultz, Izard, and Bear (2004). This measure differentiates between emotion identification based on facial recognition, situations, and behaviors. These authors found and that emotion attribution bias evident in ACES scores serves as a mediator between emotionality and aggressive reactions (considered to be part of social competence). In a separate study, researchers noted that in early elementary school children social skills mediate the effect of emotion knowledge on social preference scores (Mostow, Izard, Fine, & Trentacosta, 2003). Emotion knowledge was assessed via aggregate scores on ACES and social competence was assessed via teacher ratings on the Social Skills Rating System (SSRS). Importantly, although

the described studies utilized a measure that breaks down emotion understanding into its components, neither examined the direct links between individual components and social competence. Thus, work remains to be done regarding the links between dimensions of emotion understanding and other constructs, as well as how these dimensions may work in concert with one another.

Rater Agreement in Temperament Research

The current study used parent informant ratings of temperament, performance measures of emotion understanding, and teacher informant ratings of social competence. Although parents and teachers rated children on different constructs, caution must be used in interpretation. Studies that examine interrater agreement between parents and teachers on measures of temperament indicate that discrepancies often exist between ratings of the same child on the same measure (Field & Greenberg, 1982; Goldsmith et al., 1991; Victor, Halverson, & Wampler, 1988). Agreement tends to be better when rating "nonproblem" children who are confident, academically skilled, and socially adaptable (Field & Greenberg, 1982; Victor, Halverson, & Wampler, 1988). Moreover, agreement improves with age, with ratings on preschool children generally known to be more comparable than ratings on infants (Field & Greenberg, 1982), though discrepancies exist in ratings in that age group as well. Researchers contend that the context in which the child is seen, as well as rater bias and personal characteristics, and parent tendency to consider the child over his or her lifespan (versus a teachers' more brief experience base) influence ratings (Seifer, Sameroff, Barrett, & Krafchuk, 1994; Stifter, Willoughby, & Towe-Goodman, 2008), Additional studies suggest parent and teacher ratings are more likely to align when children exhibit consistent behaviors between home and school, strong home-school communication exists, and children are able to develop stable relationships (Victor, Halverson,

& Wampler, 1988).As noted earlier, the current study utilized parent informants of temperament and teacher informants of social competence, which is consistent with measurement in the literature base. Given the described research, the use of different informants for each construct is considered to be a limitation of this study.

Summary

Clear relations are evident among attention, emotion understanding, and social competence. However, differences in definition and measurement make it difficult to ascertain what relations may exist between specific dimensions of each construct, as well as what dimensions of attention may be related to both emotion understanding and social competence outcomes. In utilizing a temperament based definition of attention to examine relations with both emotion understanding and social competence, the current study provided a basis for examining relations among these constructs with specificity. Furthermore, it allowed for a comparison of dimensions of attention which may be related to facets of both emotion understanding and social competence.

Research Questions

The following research questions were examined:

1. What dimensions of attention are revealed by exploratory factor analyses of the STI? What relations exist between STI factors themselves, as well as between STI factors and all 15 scales of the CBQ?
2. What relations exist between dimensions of attention (as measured by STI factors and 15 CBQ scales), and emotion understanding (as measured by 3 ECT scales)?

3. What relations exist between dimensions of attention (as measured by STI factors and 15 CBQ scales) and social competence (as measured by 7 SCBE subscales and summary scales)?
4. What relations exist between emotion understanding (as measured by 3 ECT scales) and social competence (as measured by 7 SCBE subscales and summary scales)?
5. What dimensions of attention contribute to the variance in emotion understanding outcomes, after controlling for age?
6. What dimensions of attention contribute to the variance in social competence outcomes after controlling for age?
7. What dimensions of emotion understanding contribute to the variance in social competence outcomes after controlling for age?
8. What combination of attention and emotion understanding dimensions show a relationship with social competence outcomes?
9. What themes are evident in parents' qualitative responses for the STI's attention scales?
    a. What themes do parents raise when rating their child on a particular aspect of attention? How do themes differ between extremes of ratings within the same item (e.g. ratings of one as compared to ratings of five)?
    b. How do themes differ between items within the same factor?

Construct Definitions

As was noted previously, broad construct definitions of attention, emotion understanding, and social competence are as follows. Attention refers to alerting, orienting, and executive functioning skill sets. Elements of attention may be reactive or self-regulatory in nature (Rothbart, 2011). Dimensions of attention may include distractibility, inhibition, attention

span/persistence, among other elements. Emotion understanding is defined as an individual's capacity to correctly identify emotions in others based on facial expressions, behaviors, or situational context. (Denham, Blair, DeMulder, Levitas, Sawyer, Auerback-Major, Queenan, 2003; Denham, Blair, Schmidt, & DeMulder, 2002; Denham, Caverly, Schmidt, Blair, DeMulder, Caal, Hamada, Mason, 2002; Denham & Couchoud, 1990; Glanville & Nowicki, 2002; Izard, Fine, Schultz, Mostow, Ackerman, Youngstrom, 2001; Shultz, Izard, & Bear, 2004). Finally, social competence is a set of skills that allow children to match their behaviors to situations to achieve social goals, while attending to broader social mores and maintaining positive relations. (Bennett Murphy, Laurie-Rose, Brinkman, & McNamara, 2007; Gerwitz, Stanton-Chapman, & Reeve, 2009; Rubin & Rose-Krasnor, 1992). Rose-Krasnor (1997) noted that social competence as a whole may defined by general "effectiveness" of one's social capabilities, as she believes social competence to be goal oriented and context dependent.

Expected Outcomes

Given that relatively little literature exists regarding specific relations among dimensions of attention, emotion understanding, and social competence, expected outcomes were tentative. With regard to the first research question, Teglasi indicated that the STI was created to include four major dimensions of attention, including attention span/persistence, external sources of distraction, internal sources of distraction, and level of interest. Thus, these dimensions were expected to be represented within emerging factors. Despite differing formats for the measurement of attention, it was expected that STI factors would demonstrate significant relations with all scales of the CBQ's Effortful Control factor. Additional, though fewer, relations were expected with the Extraversion/Surgency factor.

Although scant, literature that reviews the relations between attention and emotion understanding in preschoolers suggests that children with attention difficulties perform worse than their peers on all dimensions of emotion understanding. Thus, it was anticipated that children with more significant attention-related difficulties would perform worse on all scales of the ECT (though literature regarding the use of the Behaviors scale of the ECT is limited within this age group) (Denham, Mckinley, Couchoud, & Holt, 1990; Izard, King, & Morgan, 2010). Research linking dimensions of attention to social competence indicates that children with longer attention spans, better attention-related persistence, and well-developed inhibition are generally rated as being more socially competent on a number of domains. These dimensions were expected to demonstrate strong, positive relations with SCBE subscales. Finally, children with strong emotion identification skill sets and thus ECT scores were also expected to demonstrate strong, positive relations with SCBE scales. Studies have shown that children with well-developed emotion identification skills are generally rated as being more likeable and less aggressive (Glanville & Nowicki, 2002). Given a significant dearth of research in this area, it was difficult to make predictions regarding the interplay of attention and emotion understanding domains as they jointly explain social competence outcomes.

Qualitative analyses were conducted to review themes evident in parents' narrative responses to STI items. Expectations for emerging themes were formulated based on existing literature regarding temperament based measures of attention, as well as outcomes from exploratory factor analyses of the STI and correlational analyses with the CBQ. Teglasi's assertions regarding the theoretical underpinnings of the STI's attention scale also served to inform expectations. More specific expectations are reviewed in the Discussion section of this

paper, following a discussion of emerging factors, relevant items, and other quantitative analyses which informed expectations.

Chapter III: Methods

Participants

Data, now considered to be archival, were collected as part of a broader research endeavor by a team of graduate students (this author included). Data for the larger study were collected to elucidate broad connections between temperament, emotion understanding, and social competence, as well as related variables such as verbal reasoning and theory of mind. The current study made use of a subset of available data, including performance evaluations of emotion understanding, parent ratings of temperament, and teacher ratings of social competence. Participants were 3 to 6 year old preschool students in the Mid-Atlantic region. The mean age of all child participants was 57.38 months (approximately 4 years, 10 months), with a range of 38 to 82 months (3 years, 2 months to 6 years, 10 months). Of the 142 students who completed at least one measure, 69 were male and 73 were female. Ethnicities of child participants are reviewed below. Parent participants were largely mothers, though several fathers participated; specific data regarding parent gender was not collected and thus is unavailable. Fourteen teachers participated in the study, serving as raters of social competence.

Table 2

Ethnicity of Participants

Ethnicity	N	%
European-American	51	35.9
African-American	13	9.2
Asian-American	14	9.9
Other	14	9.9
Not Disclosed	50	35.1

Table 3

Participant Breakdowns for Completed Measures

Measure	N
STI- quantitative	92
STI- qualitative	81
CBQ- Parent	106
Emotion Identification	115
Situations	114
Behaviors	110
SCBE	121

Measures

Structured Temperament Interview (STI).

The STI, a parent rating scale, was used to measure dimensions of attention as they manifest in young children. This temperament-based interview contains 112 items that examine several dimensions and subdimensions of temperament. Quantitative data is gathered via Likert ratings. Qualitative data is gathered in the form of parent examples of ratings as they manifest in children's everyday environments. Broad dimensions assessed include activity, attention, emotion, reactivity threshold, approach-avoidance/sociability, and self-regulation. The current study made use of only the attention dimension of the STI. This dimension is thought to include theoretically derived subdimensions, including attention span/persistence, external sources of distraction, internal sources of distraction (including selective focus and attentional shift), and level of interest.

As the STI is a relatively new, unpublished measure, limited psychometric data exists regarding its reliability and validity. Earlier principal components analyses of the Attention dimension indicated the presence of five factors, including Low Duration of Attention, High Distraction by External Stimuli, High Distraction by Less Relevant Information, Low Distraction by Internal Thoughts, and Low Range of Interest (Genova-Latham, 2010). None of the five dimensions were significantly correlated with age, though High Distraction by Less Relevant Information was positively correlated with gender. By in large, dimensions correlated as expected with one another as well as with the Effortful Control Factor of the CBQ. Fewer than expected significant relationships were evident with the Extraversion/Surgency factor of the CBQ. In an effort to secure more information regarding the properties of the STI, the present

study included additional analyses with a larger sample size. Exploratory factor analyses were conducted. Analyses reviewed the internal consistencies of emerging factors and related scales, relationships between factors, relationships between the STI and other measures of temperament, emotion understanding, and social competence. Thus, additional psychometric information is reviewed in the results section.

The STI takes approximately one hour and fifteen minutes to complete and was administered by a trained interviewer. For the purposes of this study, the STI was conducted by trained graduate level research assistants, either over the phone or in person. All interviews were recorded to facilitate note-taking for the report of qualitative data.

Childhood Behavior Questionnaire (CBQ).

The CBQ Short Form (Putnam & Rothbart, 2006) is a parent report of temperament for children 3 to 7 years of age. This 94 item measure utilizes Likert ratings to assess children's functioning across 15 scales, including Positive Anticipation, Smiling and Laughter, High Intensity Pleasure, Activity Level, Impulsivity, Shyness, Discomfort, Fear, Anger and Frustration, Sadness, Soothability, Inhibitory Control, Attentional Focusing, Low Intensity Pleasure, and Perceptual Sensitivity. Factor analyses suggest the presence of three overarching dimensions, including Effortful Control, Extraversion/Surgency, and Negative Affect. Psychometric data indicates that internal consistencies for all 15 scales range from .67 to .94, with a mean internal consistency of .77. Research suggests adequate levels of parent agreement in ratings of individual children (mean agreement of .51). The CBQ demonstrates moderately strong relationships with several laboratory observation based measures of temperament (Rothbart, Ahadi, Hershey, & Fisher, 2001). The present study utilized scores from each CBQ

scale, rather than factor scores. As a result, examinations of the nuanced relations between dimensions of attention and other constructs were conducted (rather than an examination of broad, attention related constructs).

With regard to the present study, parents completed CBQ questionnaires independently. Research assistants were made available for consultation and questions as needed, though no parents took advantage of this opportunity.

Emotion Comprehension Test (ECT).

The Emotion Comprehension Test was used to assess participants' emotion understanding. The ECT is a new, team-developed measure based on Carroll Izard's Assessment of Children's Emotion Skills (ACES). The measure is in keeping with Shultz, Izard, and Bear's (2004) definition of emotion understanding and assesses children's ability to label emotions based on facial expressions, behaviors, and situations. Modifications to the ACES measure were necessary to adapt its use for younger children. The wording in the Situations and Behaviors scales was altered to make them more appropriate to the preschool classroom. Furthermore, the ECT included the use of real-life rather than posed pictures of emotions and utilized androgynous puppets and character names in the situations and behaviors tasks.

The Emotion Identification (facial recognition) task is given first, wherein children are asked to tell if pictured children feel "happy, sad, mad, scared, or no feeling." The Emotion Identification task is followed by the Behavior task. In this task children are read a series of vignettes which describe various behaviors acted out by androgynous child characters. Behaviors include looking down, walking slowly, skipping, etc. The vignettes are read by the examiner, who simultaneously acts out the behaviors with a puppet. Again, children are asked to tell whether the character feels "happy, sad, mad, scared, or no feeling." The Situations task is

presented last, wherein the vignettes describe situations rather than behaviors. Vignettes are again acted out by puppets and children are asked to choose between five possible emotion options. In both the Behaviors task and Situations tasks items are included wherein there could feasibly be more than one correct response (mad or sad, for example). For these items, children are asked to explain why they chose the response they did with the prompt "You said Puppet feels X. Tell me more about Puppet feeling X." These qualitative responses were not utilized in the present study.

As the Emotion Comprehension Test is a new measure, more work must be done to examine its psychometric properties. A review of previous studies indicates that internal consistencies for each scale are adequate and range from .614 to .805 (Gustafson, 2009). ECT scales demonstrated expected relationships with one another (Genova-Latham, 2010; Teglasi, Gustafson, Genova, & Schussler, 2008). Correlational analyses from a previous study indicated that the ECT demonstrates few relationships with CBQ scales, though this may have been partially attributed to limited sample size (Genova-Latham, 2010). Analyses were conducted as part of the current study to examine the ECT's relationship with age, gender, as well as measures of temperament and social competence.

The ECT took approximately 90 minutes to administer, although some variability was evident. Testing was completed during the school day by a trained graduate assistant, typically across multiple evaluation sessions. In most cases, the graduate assistant was known to the student; graduate assistants visited preschool classes repeatedly to engage in informal play and foster positive relationships with children prior to beginning the assessment process. Graduate assistants only assessed children who gave verbal assent in addition to having parental consent. Researchers allowed children to return to their classroom prior to finishing the assessment if they

asked to return or showed signs of distress or preoccupation that resulted in inability to focus on test material (separate from inattention). In these cases, testing was attempted again on a separate day.

Social Competence and Behavior Evaluation (SCBE).

The SCBE is a brief survey of social competence for children 2.5 through 6 years of age (inclusive). Published by LaFreniere and Dumas in 1995, it is commercially available from Western Psychological Services. The SCBE requires teachers to rate the quality a child's interactions with peers and adults, as well as the quality of that child's emotional expression and overall social competence. Ratings are made on a Likert Scale. The SCBE is comprised of 8 basic scales, including Depressive-Joyful, Anxious-Secure, Angry-Tolerant, Isolated-Integrated, Aggressive-Calm, Egotistical-Prosocial, Oppositional-Cooperative, and Dependent-Autonomous. These scales are merged into 4 summary scales. The Social Competence scale represents ratings from the positive poles of all 8 basic scales. The Internalizing Problems scale represents ratings from the negative poles of the Depressive-Joyful, Anxious-Secure, Isolated-Integrated, and Dependent-Autonomous scales. The Externalizing Problems scale represents ratings from the negative poles of remaining scales, including the Angry-Tolerant, Aggressive-Calm, Egotistical-Prosocial, and Oppositional-Cooperative scales. The General Adaptation scale summarizes responses for all 80 items. This scale was not used in the current study as more highly nuanced information is captured by the 8 basic scales and three broad summary scales.

Psychometric data suggests that the SCBE is a well-built instrument. Internal consistencies for the eight basic scales range from .80 to .89. Factor analyses by the authors confirmed the presence of three major factors, including social competence, externalizing, and internalizing dimensions (LaFreniere & Dumas, 2003). Researchers found adequate levels of

convergent validity with the Achenbach Childhood Behavior Checklist, though data regarding discriminant validity was less strong. Age was not found to be significantly correlated with SCBE outcomes within the standardization population (LaFreniere, Dumas, Capuano, & Dubeau, 1992). Construct validity is thought to be sound, as the SCBE showed expected relationships with measures of peer sociometrics and classroom participation (LaFreniere & Dumas, 2003).

Teachers who participated in data collection for the proposed study completed SCBEs independently. One teacher per child completed a questionnaire. Research assistants were made available for questions and consultation, as well as to assist in classrooms so that teachers could complete measures in a quiet area.

Procedures

Participants were recruited via two methods. The research team made presentations to parents attending Back to School night, explaining the purpose of the study, potential benefits to the research base, as well as requirements of parents and children who chose to participate. In the following weeks, a letter explaining the study itself, including Institutional Review Board information, as well as a consent form was placed in the parent mailbox of children attending the preschool. Families who had already completed the study were not asked to participate a second time. After consenting to participate, parents and research team members worked together to schedule the STI. The CBQ was left for participating parents in their children's mailboxes. The SCBE was left in the mailbox of each participating child's teacher. Teachers were made aware of the parameters of the study via presentation, letter, and independent conversations.

Graduate research assistants underwent training in administration of both the STI and ECT prior to working with parents and children. Research assistants were asked to review STI

instructions, descriptions, items, and responses in conjunction with an experienced research assistant or Hedwig Teglasi. After doing so, research assistants observed an experienced assistant as they administered an interview to a parent participant. Finally, research assistants administered the interview independently. Research assistants collected Likert Scale data and also transcribed parent's qualitative responses verbatim for use in other studies. As the interview is heavily scripted (and does not require the interviewer to prompt for more information dependent on parent response), limited concerns exist regarding the influence of interviewer style or training on parent response.

Similarly, research assistants reviewed ECT instructions, items, responses, and stimulus materials in conjunction with an experienced research assistant prior to assessing child participants. Researchers then conducted a practice "administration," with another assistant acting in the role of a child to be assessed. Research assistants then observed an experienced researcher administering the assessment to a child participant, prior to administering the assessment independently. All ECT administrations were conducted in a quiet, well-lit room within the preschool, wherein the researcher and child were able to work without interruption. As all examiners were trained and the ECT is also heavily scripted, requiring the use of universal prompts and requests for more information, limited concerns exist regarding variation in examiner style as it may have influenced child responses.

Data Analyses

Quantitative Analyses.

Exploratory factor analyses were conducted using STI data to determine the specific dimensions of attention encompassed by that measure. The relationships between emerging

factors in the STI attention scales and the subscales of the CBQ's Effortful Control, Extraversion/Surgency, and Negative Affectivity factors were examined via bivariate correlational analyses. Afterwards, the relations among attention (as dually defined by the STI and CBQ), emotion understanding (as measured by the ECT), and social competence (as measured by the Social Comprehension and Behavior Evaluation assessment) were briefly examined in further bivariate correlational analyses.

A series of hierarchical regression analyses were conducted to clarify the relations between the three major constructs and dimensions of each. Age was controlled in all analyses by entering this variable as the first level of each model, as age has been shown to be related to both emotion understanding and social competence outcomes (Denham et al., 2003, Lee et al., 2009; Shin et al., 2008; Singh et al., 1998; Sinzig et al., 2008). The second level of each model was comprised of selected dimensions of the relevant independent variable. Outcomes from initial correlational and regression analyses were used in conjunction with theoretical knowledge regarding variable relationships to determine the specific make up of additional analyses. Tests were done to determine the presence of multicollinearity and consideration was given to aggregating variables that were found to be too highly correlated. Variables were reviewed for the possible presence of outliers. Consideration was given excluding extreme outliers, and retaining non-extreme outliers (less than 3 standard deviations).

Importantly, regression analyses were limited by the number of participants who completed all measures for each set of analyses. Power analyses using G*Power (Buchner, Erdfelder & Faul, 2009) indicated that in order to obtain a power of at least .80 with an effect size of 0.15 for each analysis, the analyses should be restricted to the following number of predictors.

Table 4

Sample Size and Number of Predictors for Combinations of Measures

Measures	N	Number of Predictors
CBQ & ECT	86	5
STI & ECT	73	3
CBQ & SCBE	91	5
STI & SCBE	74	3
ECT & SCBE	91	5
All Measures	55	2

Qualitative Analyses.

An additional goal of this study was the examination of themes evident in parents' narrative responses to STI items. The current study maintained dual interest in the differences between themes at the extremes of ratings within items, as well as differences across themes between items within the same factor. In undertaking such an examination, valuable information regarding parent interpretation of items was gleaned, as was information about the theoretical underpinnings of individual items.

Qualitative STI data were available for 81 participants. Major constructs within the STI were determined via previously described Exploratory Factor Analyses. Frequency of quantitative responses for the two highest loading items for each factor was calculated. A coding system was developed, attending to dimensions of attention evident in literature, dimensions of attention thought to underlie STI scales and items, and dimensions (attention-related and otherwise) emerging from qualitative responses themselves. Codes were initially created for each numerical rating within an item. However, in many cases common codes were evident between

neighboring numerical ratings. In these cases, ratings and thus codes were grouped together (e.g. codes for numerical ratings of 4 and 5 were grouped). Given the length and complexity of parent responses, the coding system was created to allow one response to be classified into multiple codes. This method enabled a comprehensive review of all themes within narrative data.

Qualitative responses were first reviewed by a single rater, who compared responses to available codes, adding to and revising codes until all themes within each response could be completely coded. A second rater reviewed responses and codes, providing initial agreement regarding the utility of created codes. One rater then classified all qualitative responses; a second rater classified a subset of 20 STI responses per item (80 total items), in order to examine inter-rater agreement.

Percentages for inter-rater agreement were calculated for each group of codes (e.g. STI Item 9, ratings of 4 and 5) as well as for the subset as a whole. Codes that both raters either a) agreed were applicable to a response or b) agreed were inapplicable to a response were considered to be points of agreement. For each response, any code that was endorsed by only one rater was considered to be a point of disagreement. Hence, any difference between two raters was reflected as two points of disagreement (e.g. Rater One chose code A, Rater Two chose code B). Percentage of inter-rater agreement was calculated for each group of codes (e.g. STI Item 9, ratings of 4 and 5) by dividing the number of agreed upon codes (codes endorsed by both raters as applicable or inapplicable) by the total number of opportunities for agreement (number of codes per group of ratings multiplied by number of responses in the sample), multiplied by 100. To illustrate the case of STI Item 9, ratings of 4 and 5: (64 points of agreement/ 70 opportunities for agreement) X 100 = 94.12% agreement

Percentage of inter-rater agreement for the entire subset was calculated by dividing the total number of agreed upon codes across all coding groups by the total number of opportunities for agreement across all groups, multiplied by 100. Inter-rater agreement of 90.16% was achieved for the entire subset of items. Agreement for each group of ratings ranged from 96.66% to 85.71%. It is important to note that in the case of percentages for each group of ratings calculations are influenced by the number of available codes per group.

Chapter IV: Results

A series of correlational, hierarchical regression, and qualitative analyses were conducted to explore the relations among attention, emotion understanding, and social competence. Exploratory factor analyses were conducted to identify viable dimensions of the STI's Attention scale; emerging factors were used in subsequent quantitative and qualitative analyses. Bivariate correlational analyses examined scale relationships between measures. Hierarchical regressions determined the contribution dimensions of attention had on emotion understanding outcomes, as well as the relations among attention, emotion understanding, and social competence.

Preliminary examinations of the data set are described below, including an inspection of outliers and assumptions of normality, as well as steps for the creation of scales for each measure. Bivariate correlations are presented to review how scales from the same measure were related to one another, as well as how they were related to age and gender. Afterwards, research questions and related analyses and results are presented.

Preliminary Data Analyses

Creation of Scale Scores.

STI scale scores were created following an exploratory factor analysis of the Attention dimension of that measure. Scales represent the mean of all items within a particular factor. Items were reversed as appropriate to ensure that all items within each scale loaded in a positive or negative direction, thus providing a cohesive scale. CBQ scale scores were calculated as recommended by the measure's authors and represent the mean of all items within each scale (specific items were reversed per scoring guidelines).

Likert scale responses for the ECT were originally developed to capture a child's response (e.g. identified emotion), without indicating the accuracy of that response. As accuracy is of interest in this study, participant items were recoded to reflect whether a child had correctly

identified emotions represented in each item. The original five point Likert scale was collapsed into a three point scale. Entirely inaccurate responses were recoded as "1." Responses that were inaccurate, though still of the correct valence (e.g. responses of "sad" wherein "scared" was the correct answer) were recoded as "2."Correct responses were recoded as "3." After recoding all responses in this manner, scale scores were created for the Emotion Identification, Situations, and Behaviors scales. As in the case of the CBQ and STI, scale scores represent the mean of responses from all applicable items. Internal consistencies for each scale were adequate (Emotion Identification, α=.687; Situations, α= .787; Behaviors, α=.765) and largely commensurate with that found by Gustafson (2009).

SCBE protocols were hand-scored per manual specifications prior to their entry into SPSS. Thus, additional manipulation of SCBE scores was not necessary. SCBE scales each have a positive and negative pole (e.g. Depressive-Joyful). High scores represent more positive and socially competent behaviors. In the case of summary scales (Internalizing Problems, Externalizing Problems, Social Competence), high scores continue to represent more positive and socially competent behaviors, whereas low scores represent more maladaptive behaviors.

Outliers.

The presence of outliers (outside 1.5 standard deviations) and extreme outliers (outside 3 standard deviations) was examined for each variable. Using this method, no extreme outliers were noted for any variable. Non-extreme outliers were apparent for several variables (though notably for no SCBE scales). As these outliers were not extreme and data points are representative of actual scores for a broad-ranging variable, outliers were retained in the data set.

Normality of Data.

Following the creation of scale scores, scales from each measure were evaluated to determine whether concerns existed regarding normality. A review of boxplots and histograms suggested no serious violations of the normality assumption for any measure. As a result, additional analyses proceeded as planned without transformation or elimination of variables.

Correlational Relationships with Age and Gender.

Pearson correlations examined the relationships between the CBQ, ECT, SCBE, and age. Point biserial correlations examined relationships between all scales and gender (related analyses for the STI will be reviewed following a discussion of factor analyses). As shown in the following tables, no measures or related scales were significantly correlated with gender. Falling Reactivity/Soothability, a scale from the Negative Affect factor of the CBQ, was significantly negatively correlated with age. Sadness, another scale from the Negative Affect scale of the CBQ, was significantly positively correlated with age. These relationships suggest that as children grow older, parents view them as simultaneously more sad and less open to soothing.

As expected, all three scales of the ECT both demonstrated significant positive correlations with age, indicating that older children are better able to identify others' emotions based on facial expressions, situational and behavioral cues than younger children.

Finally, the Aggressive-Calm, Egotistical-Prosocial, Oppositional-Cooperative, and Externalizing Problems scales of the SCBE were all significantly negatively correlated with age. This indicates that teachers view older children as more socially competent on a number of domains.

Table 5

CBQ: Correlations with Age and Gender

CBQ Scale	Age	Gender
Effortful Control		
Perceptual Sensitivity	.050	.107
Smiling and Laughter	-.028	.081
Low Intensity Pleasure	.091	.091
Inhibitory Control	.000	.017
Attentional Focusing	.103	-.088
Extraversion/Surgency		
Impulsivity	.013	-.153
Activity Level	.041	-.109
High Intensity Pleasure	.043	-.153
Shyness	-.016	.033
Approach/Positive Anticipation	.129	.087
Negative Affect		
Sadness	.226*	.070
Anger/Frustration	.063	.002
Fear	.077	-.044
Discomfort	.173	.178
Falling Reactivity/Soothability	-.210*	.051

** p<.01, *p<.05. N=106.

Table 6

ECT: Correlations with Age and Gender

ECT Scale	Age	Gender
Emotion Identification (pictures)	.334**	-.087
Situations	.382**	.002
Behaviors	.353**	-.064

** p<.01, *p<.05. Emotion Identification, N= 115, Situations, N= 114, Behaviors, N=110

Table 7

SCBE: Correlations with Age and Gender

SCBE Scale	Age	Gender
Depressive-Joyful	.081	-.022
Anxious-Secure	.035	-.076
Angry-Tolerant	-.149	.015
Isolated-Integrated	.104	-.022
Aggressive-Calm	-.218*	.038
Egotistical-Prosocial	-.300**	.073
Oppositional-Cooperative	-.198*	.024
Dependent-Autonomous	.001	-.132
Social-Competence	-.047	.003
Externalizing Problems	-.251**	.003
Internalizing Problems	.058	-.137

** p<.01, *p<.05. Items in italics denote summary scales. N=121.

Correlational Relationships within Measures.

Pearson correlations indicated that the vast majority of significant correlations between CBQ scales emerged as would be expected given previous research and theoretical underpinnings. Only the significant positive correlations between the Approach/Positive Anticipation scale and the Sadness, Anger/Frustration, and Fear scales were unanticipated. This

scale demonstrated moderately strong correlations with the Sadness and Anger/Frustration scales and a weak correlation with the Fear scale. It is unclear why this scale, which in part examines sociability and extraversion, demonstrated positive relationships with a variety of more negatively themed scales. The relationships suggest that a tipping point may exist within the Approach/Positive Anticipation dimension. Children who are sociable and eager to a potentially excessive degree may experience higher levels of negative emotions, including sadness and anger.

All ECT scales were significantly positively correlated with one another. The Situations scale demonstrated a moderately strong relationship with the Emotion Identification and Behaviors scales. The relationship between the Emotion Identification and Behaviors scales themselves was weak. Children who are able to accurately identify emotions based on facial expressions, for example, show similar facility in identifying emotions based on situational and behavioral clues.

Nearly all SCBE scales were significantly positively correlated with one another. Thus, correlational patterns represented here indicate a positive relationship between adaptive patterns of social competence across nearly all measured sub-dimensions, as would be expected.

Table 8

Intercorrelations of the CBQ Scales

CBQ Scale	PS	S&L	LIP	FR/S	IC	AF	I	AL	HIP	SHY	A/PA	SAD	A/F	FEAR	DIS
Perceptual Sensitivity (PS)	1	.315**	.373**	.470**	.317**	-.031	-.018	-.013	.050	-.120	.164	.161	-.158	.065	-.005
Smiling and Laughter (S&L)		1	.408**	.335**	.187	.176	.217*	.193	.088	-.245*	.208*	.072	-.077	-.140	.058
Low Intensity Pleasure (LIP)			1	.318**	.222*	.206*	-.017	-.019	.092	-.066	.151	-.022	-.085	-.110	.073
Falling Reactivity/Soothability (FR/S)				1	.454**	.120	-.030	-.094	-.051	-.237*	-.072	-.381*	.500**	-.158	-.331**
Inhibitory Control (IC)					1	.246*	-.365**	-.368**	-.289**	-.130	-.028	-.139	-.353**	-.244*	-.058
Attentional Focusing (AF)						1	-.082	-.125	.001	-.158	-.044	.028	-.197*	-.252*	-.043
Impulsivity (I)							1	.547**	.505**	-.535**	.303**	.086	.153	.056	-.037
Activity Level (AL)								1	.485**	-.189	.361**	.058	.324**	.134	-.054
High Intensity Pleasure (HIP)									1	.008	.141	-.058	.052	.042	.002
Shyness (SHY)										1	-.182	.025	.213*	.275*	.197
Approach/Positive Anticipation (A/PA)											1	.408**	.322**	.246*	.119
Sadness (SAD)												1	.498**	.508**	.316**
Anger/Frustration (A/F)													1	.357**	.235*
Fear (FEAR)														1	.259*
Discomfort (DIS)															1

** p<.01, *p<.05. N=106.

Table 9

Intercorrelations of the ECT Scales

ECT Scale	Emotion Identification	Situations	Behaviors
Emotion Identification	1	.479**	.232*
Situations		1	.460**
Behaviors			1

** p<.01, *p<.05, Emotion Identification, N=115; Situations, N=114; Behaviors, N=110.

Table 10

Intercorrelations of the SCBE Subscales

SCBE Scale	Depressive-Joyful	Anxious-Secure	Angry-Tolerant	Isolated-Integrated	Aggressive-Calm	Egotistical-Prosocial	Oppositional-Cooperative	Dependent-Autonomous
Depressive-Joyful	1	.690**	.367**	.728**	.242**	.290**	.330**	.519**
Anxious-Secure		1	.358**	.703**	.233**	.252**	.315**	.583**
Angry-Tolerant			1	.309**	.782**	.788**	.789**	.557**
Isolated-Integrated				1	.301**	.319**	.366**	.455**
Aggressive-Calm					1	.825**	.743**	.455**
Egotistical-Prosocial						1	.783**	.516**
Oppositional-Cooperative							1	.576**
Dependent-Autonomous								1

** p<.01, *p<.05. N=121.

Table 11

Intercorrelations of the SCBE Subscales and Summary Scales

SCBE Scale	Social Competence	Externalizing Problems	Internalizing Problems
Depressive-Joyful	.721**	.136	.693**
Anxious-Secure	.686**	.138	.693**
Angry-Tolerant	.681**	.851**	.404**
Isolated-Integrated	.770**	.058	.699**
Aggressive-Calm	.647**	.763**	.281**
Egotistical-Prosocial	.698**	.776**	.318**
Oppositional-Cooperative	.689**	.815**	.374**
Dependent-Autonomous	.686**	.492**	.662**
Social-Competence	1	.425**	.577**
Externalizing Problems		1	.271**
Internalizing Problems			1

** p<.01, *p<.05. N=121.

Research Question 1: What dimensions of attention are revealed by exploratory factor analyses of the STI? What are relations exist between STI factors themselves, as well as between STI factors and all 15 scales of the CBQ?

Exploratory Factor Analyses of the STI.

The proposed study examined the relationships between attention, emotion understanding and social competence from a temperament based perspective. Thus, analyses relied heavily on the STI and CBQ, both of which examine features of attention from a temperament framework. As the STI is a new measure, exploratory factor analyses were conducted to determine what dimensions of attention are inherent within it.

Principal Axis factoring with oblimin rotations were conducted, with eigenvalues set at one or greater. Items related to quality of interest were removed in order to promote clarity of analyses and factors, as precision regarding their factor loading could not be achieved. As such, items 13, 15, 19, 20, 22, 23, 24, 26, 30, and 32 were removed. Initial analyses indicated several factors with eigenvalues greater than one. However, three clearly dominant factors were evident in a scree plot review. The review suggested the presence of two dominant factors, and one additional, though less powerful factor. Thus, both a two and three factor solution was attempted. All applicable assumptions were met for both solutions; the Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO) was adequate and Bartlett's Test of Sphericity was significant for each. A review of each solution is presented below, followed by a comparative discussion.

Two Factor Solution. The first factor of this model, entitled Low Distraction from Task and High Duration of Attention, is largely comprised of items from theoretically-based and proposed STI dimensions including Attention/Span Persistence and External Sources of Distraction. It explained 28.32% of the variance in measured domains of attention. Items included within this factor largely refer to distractibility by various stimuli and duration of attention. The second factor, entitled Low Distraction from Emotional Investment, was broader in scope, drawing from distraction and emotion based items across all four proposed STI dimensions. This factor explained 14.37% of the variance in attention. Cumulatively, this model explained 42.693% of the variance in measured domains of attention. Items included in this factor refer to a child's ability to be distracted from a negative emotion. The two factors were positively correlated, $r=.119$, $p<.05$.

Cronbach's Alpha was used to examine internal consistencies of both factors, with adequate results (Low Distraction from task and High Duration of Attention, $\alpha= .758$; Low

Distraction from Emotional Investment, α= .740). Neither factor was found to be significantly correlated with age or gender.

Table 12

Exploratory Factor Analyses of the STI: Eigen Values and Variance for Two Factor Solution

Factors	Eigenvalues	Cumulative % of Variance Explained
Low Distraction from Task and High Duration of Attention	4.248	28.320
Low Distraction from Emotional Investment	2.156	42.693

N=92.

Table 13

Exploratory Factor Analyses of the STI: Item Factor Loadings for Two Factor Solution

	Low Distraction from Task and High Duration of Attention	Low Distraction from Emotional Investment
STI 9: distract sounds and sights	.692	-.063
STI 27: duration when asked to do something	-.680	-.192
STI 12: distract by external from assignment	.671	-.061
STI 17: distract from focus by unimportant info	-604	-.024
STI 29: wants to complete started assigned task	-.598	.165
STI 25: duration seatwork in class	-.582	-.084
STI 10: distract by external, chosen	.532	-.182
STI 21: on task, will give best effort	.465	.015
STI 33: absorbed not selected	-.420	-.099
STI 14: distraction by thoughts, independent work	.413	.105
STI 18: distract by less central details when telling story	.324	.002
STI 16: distract from disappointment by thoughts	-.122	.749
STI 11: distract from distress by alternative	.241	.695
STI 28: resists stopping when absorbed	-.048	.513
STI 31: absorbed in chosen	-.103	.500

N=92.

Table 14

Internal Consistencies of the STI: Two Factor Solution

STI Factor (N Items)	Alpha Coefficient
Low Distraction from Task and High Duration of Attention (11)	.758
Low Distraction from Emotional Investment (4)	.740

N=92.

Table 15

STI Correlated with Age and Gender: Two Factor Solution

STI Factor	Age	Gender
Low Distraction from Task and High Duration of Attention	.114	.022
Low Distraction from Emotional Investment	-.049	.194

** p<.01, *p<.05. N=92.

Three Factor Solution. An alternate three factor solution was also considered, as scree plots suggested the presence of a third viable factor. The emerging third factor, Low Distraction by Unimportant Information, proved to be a branch of the first factor of the previously described solution, entitled Low Distraction from Task and High Duration of Attention. It included items from the proposed External Sources of Distraction and Internal Sources of Distraction dimensions of the STI, and explained approximately 8.76% of the variance in attention. Items included in this factor refer to a child's tendency to be distracted by extraneous and irrelevant details. The first factor of this model continued to be comprised largely of items from the proposed External Sources of Distraction and Attention Span/Persistence scales, again explaining 28.32% of the variance. The second factor remained broad in nature, drawing from a

number of proposed dimensions and explaining 14.37% of the variance in attention. Low Distraction from Task, High Duration of Attention evidenced a positive correlation with the Low Distraction from Emotional Investment factor ($r=.097$, $p<.05$) and a negative correlation with the Low Distraction by Unimportant Information factor ($r=-.406$, $p<.05$). Low Distraction from Emotional Investment evidenced a negative correlation with Low Distraction by Unimportant Information ($r=-.167$, $p<.05$). As in the case of the two factor solution, no factors were significantly correlated with age or gender.

Cronbach's Alpha indicated that internal consistencies for items within the first two factors of this solution were adequate (Low Distraction from Task and High Duration of Attention, $\alpha= .757$; Low Distraction from Emotional Investment, $\alpha= .745$). The internal consistency of the third factor, Low Distraction by Unimportant Information, neared but did not meet acceptable standards ($\alpha=.616$). Item-level statistics suggest that eliminating any item within this scale would not improve the internal consistency to acceptable levels.

As the scale associated with the third factor is relatively short (three items), the Spearman-Brown Prophecy formula was calculated to examine the internal consistency of this scale, should more items be added. If the size of the scale was doubled with equally strong items, the Spearman-Brown Prophecy indicates that the internal consistency would be adequate ($\alpha=.762$).

Table 16

Exploratory Factor Analyses of the STI: Eigen Values and Variance for Three Factor Solution

Factors	Eigenvalues	Cumulative % of Variance Explained
Low Distraction from Task and High Duration of Attention	4.248	28.320
Low Distraction from Emotional Investment	2.156	42.693
Low Distraction by Unimportant Information	1.315	51.457

N=92.

Table 17

Exploratory Factor Analyses of the STI: Item Factor Loadings for Three Factor Solution

	Low Distraction from Task and High Duration of Attention	Low Distraction from Emotional Investment	Low Distraction by Unimportant Information
STI 12: distract by external from assignment	.788	.004	.107
STI 9: distract sounds and sights	.694	-.012	-.041
STI 10: distract by external, chosen	.635	-.130	.099
STI 25: duration seatwork in class	-.585	-.134	.013
STI 29: wants to complete started assigned task	-.476	.142	.216
STI 27: duration when asked to do something	-.433	-.200	.382
STI 21: on task will give best effort	.412	.041	-.097
STI 33: absorbed not selected	-.304	-.113	.179
STI 16: distract from disappointment by thoughts	-.173	-.809	-.143
STI 11: distract from distress by alternative	.158	.699	.-075
STI 31: absorbed in chosen	-.067	.502	.099
STI 28: resists stopping when absorbed	-.175	.491	-.146
STI 17: distract from focus by unimportant info	-.219	.016	.654
STI 18: distract by less central details when telling story	-.075	-.061	-.647
STI 14: distraction by thoughts, independent work	.235	.103	-.275

Table 18

Internal Consistencies of the STI: Three Factor Solution

STI Factor (N Items)	Alpha Coefficient
Low Distraction from Task and High Duration of Attention (8)	.757
Low Distraction from Emotional Investment (4)	.745
Low Distraction by Unimportant Information (3)	.616
Low Distraction by Unimportant Information (6) (Spearman-Brown Prophecy)	.762

N=92.

Table 19

STI Correlated with Age and Gender: Three Factor Solution

STI Factor	Age	Gender
Low Distraction from Task and High Duration of Attention	.125	.057
Low Distraction from Emotional Investment	-.049	.194
Low Distraction by Unimportant Information	-.025	-.019

** p<.01, *p<.05. N=92.

Comparison of Two and Three Factor Solutions. After reviewing the information described above, it was decided that relationships between both the two and three factor solutions of the STI and all other measures would be compared in subsequent correlational and hierarchical regression analyses. Both measures produced viable factors and thus scales (with internal consistency for the Low Distraction by Unimportant Information scale determined via the Spearman-Brown Prophecy). Comparative analyses and subsequent discussions will in part review whether the inclusion of the Low Distraction by Unimportant Information adds additional clarity regarding the relations between attention, emotion understanding, and social competence, beyond that obtained via the two factor solution.

Correlational Relationships between Measures of Attention.

Pearson correlations were conducted to explore how newly established scales of the STI might be related to the CBQ (a validated measure of temperament). In the case of the two and three factor STI solutions, it was expected that scales would encompass and therefore demonstrate significant relations with several CBQ scales. Most notably, it was expected that scales from the Effortful Control factor of the CBQ would correlated significantly with STI

factors. Additional significant correlations were expected with some Extraversion/Surgency scales, including Impulsivity and Activity Level (as related dimensions are included in multiple conceptualizations of temperament).

With regard to the two factor solution, the STI's Low Distraction from Task and High Duration of Attention scale was significantly positively correlated with all of the CBQ's Effortful Control scales, both before and after controlling for age. It was also significantly negatively correlated with Negative Affect's Anger scale after controlling for age, as well as the Fear scale before and after controlling for age. Significant positive correlations were evident with Negative Affect's Falling Reactivity/Soothability scale. All of these relationships emerged as expected. Notably, no significant relationships were evident between this STI scale and any of the CBQ's Extraversion/Surgency scales.

In comparing STI and CBQ relationships for the two and three factor STI solutions, small but noteworthy changes were evident. The CBQ's Perceptual Sensitivity scale switched allegiances, correlating significantly with the new Low Distraction by Unimportant Information scale, rather than the Low Distraction from Task, High Duration of Attention scale. In the three factor solution, neither of these factors correlated significantly with Falling Reactivity/ Soothability (a CBQ scale that had demonstrated a relationship with the Low Distraction from Task, High Duration of Attention scale in the two factor solution). Finally, the new third factor, Low Distraction by Unimportant Information, was also significantly positively correlated with Inhibitory Control, before and after controlling for age.

The composition between the Low Distraction from Emotional Investment scale did not change between the two and three factor solutions. Thus, results are the same. This scale was significantly positively correlated with Effortful Control's Perceptual Sensitivity, Low Intensity

Pleasure, and Inhibitory Control scales before and after controlling for age. It was significantly negatively correlated with Extraversion/Surgency's Shyness scale before and after controlling for age. Importantly, this STI scale demonstrated significant relationships with all of the Negative Affect scales before and after controlling for age, in expected directions.

In reviewing these outcomes, the Low Distraction from Task, High Duration of Attention scale seemed to be most strongly related to the CBQ's Effortful Control scales, especially the Attentional Focusing scale, given a number of significant positive correlations. Although the Low Distraction from Emotional Investment scale is also related to Effortful Control scales, outcomes suggest a substantial relationship between this scale and the CBQ's Negative Affect factor, given a number of significant negative correlations. In general, it seems that the Low Distraction from Task and High Duration of Attention scale captures a number of cognitive domains, while the Low Distraction from Emotional Investment scale is more heavily related to emotional domains. Although items within each factor attend to distinct aspects of attention, the divergence of cognitive as compared to emotion based relationships is of interest. With regard to the three factor solution, Low Distraction by Unimportant Information, as a branch of the Low Distraction from Task, High Duration of Attention scale, retains a cognitive emphasis.

Table 20

Correlations between the STI and CBQ: Two Factor Solution

CBQ Scale	Low Distraction from Task, High Duration of Attention	Low Distraction from Emotional Investment
Effortful Control		
Perceptual Sensitivity	.280* (.276*)	.376** (.379**)
Smiling and Laughter	.255* (.259*)	.129 (.127)
Low Intensity Pleasure	.257* (.293*)	.276* (.273*)
Inhibitory Control	.368** (.369**)	.325** (.326**)
Attentional Focusing	.484** (.478**)	.097 (.103)
Extraversion/Surgency		
Impulsivity	-.210 (-.212)	.000 (.000)
Activity Level	-.164 (-.169)	-.168 (-.166)
High Intensity Pleasure	.019 (.015)	-.012 (-.010)
Shyness	-.085 (-.083)	-.366** (-.367**)
Approach/Positive Anticipation	.017 (.004)	-.043 (-.037)
Negative Affect		
Sadness	-.071 (-.096)	-.260* (-.256)
Anger/Frustration	-.230* (-.238*)	-.475** (-.473**)
Fear	-.412** (.423**)	-.296* (-.294*)
Discomfort	-.105 (-.125)	-.234* (-.229*)
Falling Reactivity/Soothability	.223 (.251*)	.522** (.524**)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=101.

Table 21

Correlations between the STI and CBQ: Three Factor Solution

CBQ Scale	Low Distraction from Task, High Duration of Attention	Low Distraction from Emotional Investment	Low Distraction by Unimportant Information
Effortful Control			
Perceptual Sensitivity	.213 (.209)	.376** (.379**)	.323** (.325**)
Smiling and Laughter	.259* (.265*)	.129 (.127)	.139 (.138)
Low Intensity Pleasure	.272* (.316**)	.276* (.273*)	.135 (.133)
Inhibitory Control	.264* (.266*)	.325** (.326**)	.395** (.395**)
Attentional Focusing	.541** (.535**)	.097 (.103)	.161 (.164)
Extraversion/Surgency			
Impulsivity	-.175 (-.178)	.000 (.000)	-.168 (-.168)
Activity Level	-.134 (-.140)	-.168 (-.166)	-.142 (-.142)
High Intensity Pleasure	.040 (.035)	-.012 (-.010)	.002 (.003)
Shyness	-.059 (-.058)	-.366** (-.367**)	-.088 (-.089)
Approach/Positive Anticipation	-.066 (-.083)	-.043 (-.037)	.141 (.145)
Negative Affect			
Sadness	-.074 (-.106)	-.260* (-.256)	-.058 (-.054)
Anger/Frustration	-.250* (-.261*)	-.475** (-.473**)	-.115 (-.114)
Fear	-.451** (-.466**)	-.296* (-.294*)	-.186 (-.185)
Discomfort	-.090 (-.115)	-.234* (-.229*)	-.123 (-.121)
Falling Reactivity/Soothability	.185 (.218)	.522** (.524**)	.219 (.219)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=101.

Research Question 2: What relations exist between dimensions of attention (as measured by STI factors and 15 CBQ scales) and emotion understanding (as measured by 3 ECT scales)?

Pearson correlations were conducted to review relationships between attention-based measures, including the STI and CBQ, and the ECT, a measure of emotion understanding. As significant correlational relationships were evident between the STI and scales within the Effortful Control and Negative Affect factors of the CBQ, both factors were included in analyses. Relationships between emotion understanding and scales within the CBQ's Extraversion/Surgency factor were also explored. It is possible that Extraversion/Surgency scales capture dimensions of attention not captured by the STI. Therefore, they were included in the following correlations in order to obtain a comprehensive picture of the relationship between attention and emotion understanding.

In previous research, a child's ability to identify emotions in others based on facial expressions and situational cues have been most frequently linked to external constructs, including attention. In several studies, analyses that examine these two facets of emotion understanding in aggregate have demonstrated relations between enhanced emotion understanding and more well-developed dimensions of attention (Trentacosta, Izard, Mostow, & Fine, 2006). Limited evidence suggests a relationship between dimensions of attention and a child's ability to identify emotions in others based on behaviors during the preschool age. Thus, scales from the STI and CBQ were expected to demonstrate relations with the Emotion Identification and Situations scales of the ECT.

In the case of the two factor solution, analyses indicate that the STI's Low Distraction from Task, High Duration of Attention scale was significantly positively correlated with the

Situations scale of the ECT, both before and after controlling for age. No relationships were evident between either STI scale and the ECT's Emotion Identification or Behavior scales. In the case of the three factor solution, the Low Distraction from Task, High Duration of Attention scale continued to evidence a significant positive correlation with the Situations scale. The new scale, Low Distraction by Unimportant Information, also demonstrated a significant positive correlation with the Situations scale. In general, children who are less distractible and able to attend for long periods of time performed better on this scale.

No CBQ scales evidenced a significant relationship with the Emotion Identification or Behaviors scales of the ECT. It was anticipated that children less well-developed attention dimensions would struggle significantly to identify emotions in several emotion understanding domains (specifically on the previously studied Emotion Identification and Situations scales). The Smiling and Laughter, Low Intensity Pleasure, and Attentional Focusing scales, all subsumed under Effortful Control, demonstrated significant positive correlations with the Situations scale when controlling for age. The High Intensity Pleasure scale from the Extraversion/Surgency factor also demonstrated a significant positive correlation with the Situations scale. Generally, these relationships emerged as anticipated, suggesting that children who demonstrate more positive emotionality and well-developed features of attention are better able to identify emotions in others based on situational cues. The Fear scale from the CBQ's Negative Affect factor was significantly negatively correlated with the Situations scale when controlling for age, indicating that children who are more fearful in their presentation have more difficulty identifying emotions based on situational cues.

Table 22

Correlations between the STI and the ECT: Two Factor Solution

ECT Scale	Low Distraction from Task, High Duration of Attention	Low Distraction from Emotional Investment
Emotion Identification	.194 (.171)	-.076 (-.064)
Situations	.386** (.373**)	-.117 (–.107)
Behaviors	.153 (.121)	-.184 (-.179)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=73.

Table 23

Correlations between the STI and the ECT: Three Factor Solution

ECT Scale	Low Distraction from Task, High Duration of Attention	Low Distraction from Emotional Investment	Low Distraction by Unimportant Information
Emotion Identification	.161 (.128)	-.076 (-.064)	.140 (.157)
Situations	.351** (.330**)	-.117 (-.107)	.281* (.315**)
Behaviors	.155 (.119)	-.185 (-.179)	.106 (.123)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=73.

Table 24

Correlations between the CBQ and ECT

CBQ Scale	Emotion Identification	Situations	Behaviors
Effortful Control			
Perceptual Sensitivity	-.016 (-.034)	.027 (.009)	-.051 (-.074)
Smiling and Laughter	.019 (.147)	.213 (.242*)	.046 (.059)
Low Intensity Pleasure	-.072 (.014)	.113 (.234*)	-.155 (-.073)
Inhibitory Control	.019 (.020)	.120 (.130)	.002 (.002)
Attentional Focusing	.196 (.172)	.258* (.237*)	.152 (.124)
Extraversion/Surgency			
Impulsivity	-.050 (-.057)	.076 (.077)	-.034 (-.041)
Activity Level	.044 (.033)	.047 (.034)	-.155 (-.181)
High Intensity Pleasure	.096 (-.087)	.230* (.231*)	-.002 (-.019)
Shyness	-.080 (-.079)	-.142 (-.147)	-.086 (-.085)
Approach/Positive Anticipation	.019 (-.026)	.120 (.077)	-.064 (-.118)
Negative Affect			
Sadness	.135 (.065)	.083 (-.004)	.149 (.076)
Anger/Frustration	-.076 (-.103)	-.101 (-.135)	-.180 (-.217)
Fear	-.081 (-.114)	-.226 (-.277*)	-.082 (-.117)
Discomfort	-.004 (-.066)	.038 (-.031)	.046 (-.016)
Falling Reactivity/Soothability	-.164 (-.101)	-.132 (-.058)	-.112 (-.041)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=86.

Research Question 3: What relations exist between dimensions of attention (as measured by STI factors and 15 CBQ scales) and social competence (as measured by 7 SCBE subscales and summary scales).

Pearson correlations were also used to review relationships between the CBQ, STI, and SCBE. For previously described reasons, all 15 scales of the CBQ were examined as they are related to the SCBE, as were both factor solutions of the STI. Correlations examined CBQ and STI relationships with summary scales of the SCBE, as well as with subscales in order to develop a comprehensive, nuanced picture of the relationship between attention and social competence. Higher scores on SCBE subscales are indicative of higher levels of adaptive behavior, whereas lower scores are indicative of higher levels of maladaptive behaviors (e.g. high scores on the Depressive-Joyful scale indicate more joyful behaviors, lower score indicate more depressive behaviors).

Surprisingly, no STI scale from the two factor solution was significantly correlated with any SCBE scale. In the three factor solution, the Low Distraction by Unimportant Information scale correlated positively with the SCBE's Isolated-Integrated scale before and after controlling for age. No other significant relationships were evident for the three factor solution. It was expected that difficulty on various dimensions of attention would yield poorer ratings on a variety of social competence domains. Per these findings, dimensions of attention captured by the STI are quite minimally related to social competence outcomes.

More relationships were evident between scales of the CBQ and SCBE. Effortful Control's Low Intensity Pleasure was significantly positively correlated with the Oppositional-Cooperative and Externalizing Problems scales of the SCBE, both before and after controlling for age. Effortful Control's Inhibitory Control scale was significantly positively correlated with

the Angry-Tolerant, Aggressive-Calm, Egotistical-Prosocial, Oppositional-Cooperative, and Externalizing Problems (indicating the presence of fewer externalizing problems) scales of the SCBE. Thus, children who demonstrate better inhibitory control are also evaluated as being more socially competent across several domains.

Scales from the CBQ's Extraversion/Surgency factor correlated with many SCBE scales. Impulsivity was significantly positively correlated with the SCBE's Depressive-Joyful, Anxious-Secure, and Dependent-Autonomous scales before and after controlling for age. The CBQ's Shyness scale was significantly negatively correlated with the Depressive-Joyful, Anxious-Secure, and Isolated-Integrated scales, as well as with the Social Competence and Internalizing Problems summary scales. Finally, Activity Level was significantly negatively correlated with the Aggressive-Calm scale after controlling for age, and the Egotistical-Prosocial scale only before controlling for age (indicating that outcomes on this domain may be largely attributed to the influence age).

Finally, the scales from the CBQ's Negative Affect factor evidenced significant relations with SCBE scales. Sadness was significantly negatively correlated with the Internalizing Problems summary scale, after controlling for the influence of age, indicating that children who experience more sadness also experience more internalizing problems. Fear was significantly negatively correlated with the Aggressive-Calm and Oppositional-Cooperative subscales before and after controlling for age, as well as with the Externalizing Problems summary scale (indicating more fearful children exhibit more externalizing problems). Fear was also significantly correlated with the Egotistical-Prosocial scale, though only before controlling for age.

These relationships indicate that children with more well-developed attention-related skill sets are generally viewed as more socially competent. It is unclear why the CBQ demonstrated relationships with the SCBE and the STI did not, given previously described relationships between the STI and CBQ. Existing research suggests that items from time-referenced, behavior specific measures of temperament, such as the CBQ, may be quite similar to items within social competence measures, such as the SCBE (Sanson et al., 1990). Similarity in behaviors and actions referenced, as well as response format, yield concerns. Researchers suggest that these measures overlap in the behaviors and thus constructs measured. It is possible that similarities between CBQ and SCBE items enhanced relationships between these measures.

Table 25

Correlations between the STI and SCBE: Two Factor Solution

SCBE Scale	Low Distraction by Task, High Duration of Attention	Low Distraction from Emotional Investment
Depressive-Joyful	.159 (.152)	-.005 (-.001)
Anxious-Secure	.012 (.009)	-.079 (-.078)
Angry-Tolerant	.032 (.048)	.011 (.004)
Isolated-Integrated	.202 (.194)	-.094 (-.089)
Aggressive-Calm	.064 (.088)	-.034 (-.046)
Egotistical-Prosocial	.106 (.144)	.028 (.014)
Oppositional-Cooperative	.087 (.109)	.023 (.014)
Dependent-Autonomous	.062 (.063)	.035 (.035)
Social-Competence	.160 (.165)	-.044 (-.046)
Externalizing Problems	.005 (.032)	.033 (.021)
Internalizing Problems	.074 (.068)	.032 (.035)

** p<.01, *p<.05 Information in parenthesis denotes correlations when controlling for age. N=74.

Table 26

Correlations between the STI and SCBE: Three Factor Solution

SCBE Scale	Low Distraction by Task, High Duration of Attention	Low Distraction from Emotional Investment	Low Distraction by Unimportant Information
Depressive-Joyful	.125 (.116)	-.005 (-.001)	.152 (.155)
Anxious-Secure	-.016 (-.021)	-.079 (-.078)	.043 (.044)
Angry-Tolerant	.034 (.054)	.011 (.004)	.032 (.028)
Isolated-Integrated	.130 (.118)	-.094 (-.089)	.253* (.257*)
Aggressive-Calm	.050 (.080)	-.034 (-.046)	.077 (.073)
Egotistical-Prosocial	.122 (.169)	.028 (.014)	.061 (.056)
Oppositional-Cooperative	.057 (.085)	.023 (.014)	.128 (.126)
Dependent-Autonomous	.057 (.057)	.035 (.035)	.055 (.055)
Social-Competence	.123 (.130)	-.044 (-.046)	.185 (.184)
Externalizing Problems	.012 (.045)	.033 (.021)	.010 (.004)
Internalizing Problems	.029 (.022)	.032 (.035)	.108 (.110)

** p<.01, *p<.05 Information in parenthesis denotes correlations when controlling for age. N=74.

Table 27

Correlations between the Effortful Control Factor of the CBQ and SCBE

SCBE Scale	Perceptual Sensitivity	Smiling & Laughter	Low Intensity Pleasure	Inhibitory Control	Attentional Focusing
Depressive-Joyful	.149 (.145)	.178 (.181)	-.006 (.015)	.110 (.110)	.090 (.082)
Anxious-Secure	.058 (.056)	.153 (.154)	-.057 (-.050)	.089 (.089)	.046 (.043)
Angry-Tolerant	-.015 (-.008)	.005 (.000)	.154 (.122)	.240* (.242*)	.064 (.080)
Isolated-Integrated	.040 (.035)	.112 (.115)	-.106 (-.082)	.172 (.173)	.078 (.067)
Aggressive-Calm	-.092 (-.083)	-.013 (-.019)	.116 (.064)	.316** (.324**)	.094 (.120)
Egotistical-Prosocial	-.097 (-.086)	.076 (.071)	.184 (.117)	.251* (.263*)	.054 (.139)
Oppositional-Cooperative	-.034 (-.024)	.061 (.056)	.263* (.225*)	.312** (.319**)	.115 (.139)
Dependent-Autonomous	.064 (.064)	-.006 (-.006)	.069 (.071)	.188 (.188)	.130 (.130)
Social-Competence	.064 (.067)	.119 (.118)	.023 (.011)	.207 (.207)	.106 (.111)
Externalizing Problems	-.093 (-.083)	-.010 (-.017)	.280** (.232*)	.223* (.231*)	.076 (.106)
Internalizing Problems	.044 (.042)	.052 (.054)	-.029 (-.015)	.156 (.156)	.070 (.065)

** p<.01, *p<.05 Information in parenthesis denotes correlations when controlling for age. N=91.

Table 28

Correlations between the Extraversion/Surgency Factor of the CBQ and SCBE

SCBE Scale	Impulsivity	Activity Level	High Intensity Pleasure	Shyness	Approach/ Positive Anticipation
Depressive-Joyful	.240* (.240*)	.093 (.090)	.163 (.161)	-.331**(-.331**)	.152 (.143)
Anxious-Secure	.273* (.273*)	.079 (.077)	.061 (.060)	-.252* (-.252*)	-.070 (-.075)
Angry-Tolerant	-.041 (-.039)	-.117 (-.113)	.084 (.091)	-.067 (-.070)	-.026 (-.007)
Isolated-Integrated	.163 (.162)	-.041 (-.046)	.011 (.007)	-.312** (-.312**)	.103 (.091)
Aggressive-Calm	-.136 (-.136)	-.217 (-.213*)	.074 (.085)	.104 (.103)	-.120 (-.095)
Egotistical-Prosocial	-.080 (-.080)	-.207* (-.205)	.001 (.014)	-.020 (-.026)	-.010 (.030)
Oppositional-Cooperative	-.050 (-.049)	-.117 (-.111)	.081 (.092)	-.061 (-.065)	.022 (.049)
Dependent-Autonomous	.231* (.231*)	.096 (.097)	.196 (.196)	-.197 (-.197)	.021 (.022)
Social-Competence	.162 (.163)	-.001 (.001)	.131 (.133)	-.240* (-.241*)	.085 (.092)
Externalizing Problems	-.102 (-.102)	-.118 (-.111)	.077 (.090)	.038 (.035)	.013 (.047)
Internalizing Problems	.198 (.198)	-.071 (-.073)	.028 (.026)	-.304** (-.303**)	-.133 (-.142)

** p<.01, *p<.05 Information in parenthesis denotes correlations when controlling for age. N=91.

Table 29

Correlations between the Negative Affect Factor of the CBQ and SCBE

SCBE Scale	Sadness	Anger/ Frustration	Fear	Discomfort	Falling Reactivity/ Soothability
Depressive-Joyful	.197 (.184)	-.043 (-.048)	-.030 (-.037)	.164 (.153)	.047 (.066)
Anxious-Secure	.071 (.065)	.054 (.052)	-.092 (-.095)	.131 (.127)	.014 (.022)
Angry-Tolerant	-.134(-.104)	-.156 (.0148)	-.240* (-.232)	.095 (.124)	.136(.109)
Isolated-Integrated	.137 (.117)	.002 (-.005)	-.057 (-.065)	.122 (.106)	.017 (.040)
Aggressive-Calm	-.159 (-.115)	-.188 (-.179)	-.265* (-.256*)	.091 (.134)	.075 (.030)
Egotistical-Prosocial	-.130 (-.067)	-.149 (-.136)	-.246* (-.234)	-.013 (.042)	.075 (.013)
Oppositional-Cooperative	.160 (-.121)	-.155 (-.146)	-.259* (-.250*)	-.030 (.005)	.167 (.130)
Dependent-Autonomous	.040 (.041)	-.047 (-.047)	-.018 (-.018)	-.078 (-.079)	.079 (.081)
Social-Competence	.103 (.117)	-.039 (-.037)	-.082 (-.078)	.074 (.083)	.059 (.050)
Externalizing Problems	-.206 (-.159)	-.159 (-.149)	-.283* (-.273*)	.012 (.058)	.112 (.063)
Internalizing Problems	-.047(-.303**)	-.099 (-.103)	-.176 (-.181)	.128 (.120)	.056 (.070)

** p<.01, *p<.05 Information in parenthesis denotes correlations when controlling for age. N=91.

Research Question 4: What relations exist between emotion understanding (as measured by 3 ECT scales) and social competence (as measured by 7 SCBE subscales and summary scales)?

As previous research suggests that emotion understanding is a building block for social competence, it was expected that significant relationships would exist between all three scales of the ECT and the SCBE. Stronger relations were expected with the Emotion Identification and Situations scales, given previous research suggesting the special utility and strength of these related skill sets during the preschool years (Denham, Mckinley, Couchoud, & Holt, 1990; Izard, King, & Morgan, 2010). As in the case of previous correlational analyses, the Emotion Identification scale did not demonstrate significant relationships with any SCBE scale. The Situations scale was significantly positively correlated with the Depressive-Joyful and Isolated-Integrated scales before and after controlling for age, as well as the Social Competence and Internalizing Problems summary scales. Children who are better able to identify emotions based on situational cues exhibit fewer internalizing problems and better social competence. Situations was also significantly positively correlated with the Angry-Tolerant scale after controlling for age. The Behaviors scale of the ECT was significantly positively correlated with the Depressive-Joyful and Isolated-Integrated before and after controlling for age, as well as the Internalizing Problems summary scale. In general, this suggests that children who are more socially competent across several domains (specifically more joyful and socially integrated) are better able to identify emotions in others based on situational and behavioral cues.

Table 30

Correlations between the ECT and SCBE

SCBE Scale	Emotion Identification	Situations	Behaviors
Depressive-Joyful	.096 (.073)	.315** (.308**)	.255* (.242*)
Anxious-Secure	.122 (.117)	.121 (.116)	.137 (.133)
Angry-Tolerant	.013 (.068)	.154 (.231*)	.068 (.131)
Isolated-Integrated	.120 (.090)	.296** (.278**)	.271* (.252*)
Aggressive-Calm	.002 (.081)	.076 (.176)	.022 (.109)
Egotistical-Prosocial	-.088 (.013)	.062 (.200)	-.005 (.113)
Oppositional-Cooperative	-.023 (.047)	.058 (.148)	-.038 (.035)
Dependent-Autonomous	.045 (.047)	.167 (.180)	-.005 (-.006)
Social-Competence	.068 (.089).	.242* (.281**)	.169 (.198)
Externalizing Problems	-.005 (.086)	.020 (.130)	-.088 (.000)
Internalizing Problems	.076 (.061)	.220* (.215*)	.219* (.213*)

** p<.01, *p<.05. Information in parenthesis denotes correlations when controlling for age. N=91.

Hierarchical Regression Analyses

Hierarchical regression analyses were conducted to explore how dimensions of attention contribute to the variance in emotion understanding and social competence, as well as how attention and emotion understanding dimensions, examined together, contribute to social competence outcomes. As age was significantly correlated with many measures, it was controlled for in all analyses. Hierarchical regression analyses were limited in their use of predictors, given samples sizes. Thus, scales were chosen for inclusion in each analysis based on correlational relationships between predictor variables and outcome variables and a consideration of the theoretical underpinnings of predictors as they are intended to relate to overarching

predictive constructs (e.g. how are CBQ scales thought relate to attention overall) . Reviews of Tolerance and Variance Inflation Factors were not indicative of the presence of multicollinearity in any of these analyses.

Research Question 5: What dimensions of attention contribute to the variance in emotion understanding outcomes, after controlling for age?

Independent Variable- CBQ, Dependent Variable- ECT.

One analysis examined the relationship between the CBQ's Effortful Control scales and the ECT. Effortful Control scales evidenced significant correlational relationships with the Situations scale, though not with the Emotion Identification or Behaviors scales. The Smiling and Laughter, Low Intensity Pleasure, Attentional Focusing, and Inhibitory Control scales of the CBQ's Effortful Control factor demonstrated significant correlational relationships with the Situations scale and were chosen for inclusion in the regression analyses. The underlying constructs of each scale are thought to be independent and thus unique in their contribution to attention outcomes.

Age, the control variable, was entered in step 1 of this analysis, explaining 13.1% of the variance in Situations outcomes. Age was a significant predictor at this level, $\Delta F(1,75)=11.297$, $p<.01$, $\Delta R^2=.131$. Smiling and Laughter, Low Intensity Pleasure, and Attentional Focusing were all entered at step 2, explaining an additional 10% of the variance in Situations outcomes, $\Delta F(3,72)=3.130$, $p<.05$, $\Delta R^2=.100$. The complete model explained 23.1% of the variance in Situations outcomes and was significant $F(4,76)=5.413$, $p<.01$, $R^2=.231$. This suggests that when examined together, these attention-related Effortful Control Scales have a significant influence on a child's ability to interpret another's emotions based on situational clues. However, none of the scales made a unique contribution in the context of the others.

Table 31

Select Effortful Control Scales as Predictors of Situations Outcomes

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.015	.004	.362**	3.361	.131**	.131**
Step 2:						
Age	.015	.004	.367**	3.409		
Smiling and Laughter	.135	.079	.203	1.714		
Low Intensity Pleasure	.032	.083	.049	.393		
Attentional Focusing	.073	.046	.171	1.589	.100*	.231

** p<.01, *p<.05. N=86.

Independent Variable- STI, Dependent Variable- ECT.

Two hierarchical regression analyses were conducted to determine how much of the variance in ECT outcomes was explained by attention related dimensions of the STI. Both the two and three factor solutions of the STI were considered. In each case, STI scales only demonstrated significant correlations with the Situations scale of the ECT. Therefore, only one analysis was run for each solution.

The following table reviews the hierarchical regression for the two factor solution of the STI and the Situations Scale of the ECT. The Low Distraction from Task, High Duration of Attention scale demonstrated a significant correlational relationship with this ECT scale. This scale and age were included in this analysis. Age, the control variable, was entered in step 1, ultimately explaining 15.1% of the variance in Situations outcomes. Age was a significant predictor at this level, $\Delta F(1, 71)=12.619$, $p<.01$, $\Delta R^2=.151$. Low Distraction from Task, High Duration of Attention was entered in step 2, explaining an additional 10.8% of the variance in

Situations outcomes. Low Distraction from Task, High Duration of Attention was a significant predictor at step 2, $\Delta F(1,70)=10.231$, $p<.01$, $\Delta R^2=.108$. The complete model explained 25.9% of the variance in Situations and was significant, $F(2, 70)=12.245$, $p<.01$, $R^2=.259$. These results indicate that a child's ability to attend to his environment for long durations of time without becoming distracted significantly influences his or her ability to decipher another's emotions based on situational cues.

Table 32

Select STI Factors as Predictors of Situations Outcomes: Two Factor Solution

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.016	.005	.388**	3.552	.151**	.151**
Step 2:						
Age	.015	.004	.344**	3.309		
Low Distraction from Task, High Duration of Attention	.247	.077	.332**	3.199	.108**	.259**

** p<.01, *p<.05. N=73.

The following table examines the relationship between the three factor solution of the STI and the ECT's Situations scale. In this case, the Low Distraction from Task, High Duration of Attention scale and the Low Distraction by Unimportant Information scale (the first and third factor, respectively) both evidenced significant correlational relationships with the ECT's Situations scale. Both were included in regression analyses. As in the case of the two factor model, age, entered at step 1, was a significant predictor and explained 15.1% of the variance in Situations outcomes, $\Delta F(1, 71)=12.619$, $p<.01$, $\Delta R^2=.151$. Low Distraction from Task, High Duration of Attention and Low Distraction by Unimportant Information were added in step 2, explaining an additional 11.4% of the variance in Situations outcomes, $\Delta F(2, 69)=5.356$, $p<.01$,

ΔR^2=.114. The model as a whole was significant, F(3, 69)=8.293, p<.01, R^2=.265, and explained 26.5% of the variance in Situations outcomes. However, no STI factor made a unique contribution to Situations outcomes in the context of the other. Limited distractibility, ability to attend to task, and ability to focus on important details seem to explain variability in a child's ability to identify others' emotions based on situational clues.

Table 33

Select STI Factors as Predictors of Situations Outcomes: Three Factor Solution

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.016	.005	.388**	3.552	.151**	.151**
Step 2:						
Age	.015	.004	.353**	3.376		
Low Distraction from Task, High Duration of Attention	.144	.075	.223	1.926		
Low Distraction by Unimportant Information	.110	.071	.178	1.553	.114**	.265**

** p<.01, *p<.05. N=73.

Research Question 6: What dimensions of attention contribute to the variance in social competence outcomes after controlling for age?

Independent Variable- CBQ, Dependent Variable- SCBE.

One hierarchical regression analysis was conducted to explore the relationship between Effortful Control scales and the SCBE. In correlational analyses, Effortful Control scales demonstrated a significant relationship with the Externalizing Problems summary scale of the SCBE, but no other summary scales. Inhibitory Control and Low Intensity Pleasure were related to other subscales of the SCBE that are ultimately subsumed under the Externalizing Problems

summary scale. Given this, Effortful Control scale relationships with the Externalizing Problems scale were reviewed (no analyses were conducted utilizing subscales).

Low Intensity Pleasure and Inhibitory Control were included as predictors in the following analysis given their significant correlational relationship with Externalizing Problems. Age was entered at step 1 of this analysis, explaining 4.9% of the variance in Externalizing Problems. Age was a significant predictor at step 1, $\Delta F(1,77)=3.998$, $p<.05$, $\Delta R^2=.049$. In step 2, Low Intensity Pleasure and Inhibitory Control were entered, explaining an additional 8.8% of the variance in Externalizing Problems, $\Delta F(2, 75)=3.845$, $p<.05$, $\Delta R^2=.088$. Neither Effortful Control predictor was significant in step 2, though taken together they explained a significant amount of the variance in Externalizing Problems beyond age. The overall model was significant and explained 13.8% of the variance, $F(3, 75)=3.994$, $p<.05$, $R^2=.138$. Thus, children who both prefer lower intensity stimulation as well as withhold immediate responses while they evaluate a situation are better able to manage outwardly directed emotions and behaviors.

Table 34

Select Effortful Control Scales as Predictors of Externalizing Problems Outcomes

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	-.220	.110	-.222*	-2.000	.049*	.049*
Step 2:						
Age	-.160	.109	-.162	-1.467		
Low Intensity Pleasure	2.861	1.633	.196	1.753		
Inhibitory Control	2.130	1.183	.197	1.801	.088*	.138*

** p<.01, *p<.05. N=91.

Independent Variable- STI, Dependent Variable- SCBE.

No hierarchical regression analyses were run to explore how STI factors may have explained variance in SCBE outcomes. In the case of the two factor STI solution, neither factor demonstrated a significant correlational relationship with any SCBE subscale or summary scale. In the case of the three factor solution, only one significant correlation was evident. The Low Distraction by Unimportant Information scale was significantly positively correlated with the Isolated-Integrated subscale, before and after controlling for age, suggesting a relationship between low levels of distraction by less relevant information and high levels of social integration. Even so, this STI scale was not significantly correlated with the Internalizing summary scale, suggesting that the relationship between attention and Internalizing Problems may in fact be specific to the Isolated-Integrated subscale (rather than internalizing issues as a whole).

Research Question 7: What dimensions of emotion understanding contribute to the variance in social competence outcomes after controlling for age?

Three hierarchical regression analyses were conducted given the previously described criteria for inclusion of predictors. The Situations scale was significantly correlated with Social Competence. Thus, it was the only predictor included in the following analysis. Age was entered in step 1 of this analysis, though it did not explain a significant amount of the variance in Social Competence, $\Delta F(1, 87)= .007$, $p=.932$, $\Delta R^2=.000$. The Situations scale of the ECT was entered in step 2, explaining 5.3% of the variance in Social Competence outcomes, $\Delta F(1, 86)= 4.814$, $p<.05$, $\Delta R^2=.053$. Within step 2, Situations was a significant predictor. The model as a whole approached significance, $F(2, 86)= 2.411$, $p=.096$, $R^2=.053$.

Table 35

Select ECT Scales as Predictors of Social Competence Outcomes

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.007	.086	.009	.085	.000	.000
Step 2:						
Age	-.062	.090	-.077	-.687		
Situations	5.245	2.391	.246*	2.194	.053*	.053*

** p<.01, *p<.05**.** N=91.

One analysis was conducted to examine the relationship between ECT scales and the Internalizing Problems scale of the SCBE. Both the Situations and the Behaviors scales of the ECT demonstrated significant correlational relationships with the Internalizing Problems scale of the SCBE. Age, entered in step 1 of the analysis, explained 1.2% of the variance in Internalizing Problems, though it was not significant, $\Delta F(1, 79)=.957$, $p=.331$, $\Delta R^2=.012$. The ECT's Situations and Behaviors scales were entered in step 2, explaining an additional 5.5% of the variance in Internalizing Problems. However, neither scale emerged as a significant predictor at this level, $\Delta F(2, 77)=2.266$, $p=.111$, $\Delta R^2=.055$. The overall model was not significant, $F(3, 77)=1.840$, $p=.147$., $R^2=.067$. These results suggest that a child's ability to identify another's emotions based on situational and behavioral cues is not associated with their tendency to demonstrate internalizing problems such as elevated sadness, shyness, or anxiety.

Table 36

Select ECT Scales as Predictors of Internalizing Problems Outcomes

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.101	.103	.109	.978	.012	.012
Step 2:						
Age	-.007	.114	-.008	-.062		
Situations	3.479	3.004	.145	1.158		
Behaviors	4.981	3.810	.165	1.307	.055	.067

** p<.01, *p<.05. N=91.

Finally, a significant correlational relationship was evident between the Situations scale of the ECT and the Isolated-Integrated scale of the SCBE. No other ECT scales were significantly related to the Isolated-Integrated scale. A hierarchical regression analysis was conducted to further explore this relationship. Age was entered in step 1 of the analysis, explaining 2.6% of the variance in Isolated-Integrated scores, though it was not significant, $\Delta F(1,86)=2.340$, $p=.130$, $\Delta R^2=.026$. Situations was entered in step 2 and was a significant predictor, explaining an additional 5.4% of the variance, $\Delta F(1, 85)=5.031$, $p=.027$, $\Delta R^2=.054$. The overall model was significant, $F(2, 87)=3.740$, $p<.05$, $R^2=.081$.

Table 37

Select ECT Scales as Predictors of Isolated-Integrated Outcomes

Variable	B	SE(B)	*B*	*t*	ΔR^2	Total R^2
Step 1:						
Age	.170	.111	.163	1.530	.026	.026
Step 2:						
Age	.080	.116	.077	.692		
Situations	6.921	3.085	.249*	2.243	.054*	.081*

** p<.01, *p<.05. N=91.

Research Question 8: If dimensions of attention and emotion understanding are related to the same dimensions of social competence, what combination of dimensions show a relationship with social competence outcomes?

The results of all hierarchical regression analyses were reviewed in order to inform an analysis utilizing dimensions of both attention and emotion understanding as predictors for social competence. As noted previously, the CBQ's Low Intensity Pleasure and Inhibitory Control scales significantly contribute to the variance in the SCBE's Externalizing Problems scale when examined together. In separate analyses, the Situations scale of the ECT explained a significant amount of the variance in the SCBE's Social Competence scale. The Situations scale also explained a significant amount of the variance in the Isolated-Integrated scale of the SCBE. Despite these findings, no results presented here indicate that any attention or emotion understanding scale explains a significant amount of the variance in the same SCBE scale. Thus, analyses were not conducted to examine the combinative influence of attention and emotion understanding dimensions on social competence outcomes.

Qualitative Coding

The two factor solution of the STI was chosen for evaluation of research question nine. Ultimately, 81 STI's contained narrative data sufficient for use in coding analyses. As noted previously, the two highest loading items from each factor were chosen for analysis. Included items as well as frequency of quantitative Likert scale responses are reported below.

Table 38

STI Factors and Items for Qualitative Analyses

Factor	Items
Low Distraction from Task, High Duration of Attention	STI 9: In general, how distractible is this youngster by external stimuli such as sounds or sights?
	STI 27: What is the duration of attention during an assigned task?
Low Distraction from Emotional Investment	STI 16: When disappointed, how easily does the child cheer up by thinking about something else?
	STI 11: When upset or disappointed, how easy is it to distract the child by offering an alternative object or activity?

Table 39

Frequency of Likert Scale Ratings for STI Factor 1, Item 9: Distract- Sights and Sounds

Response Option	Frequency
1. Almost anything draws his/her attention away from an ongoing activity	1
2. Attention is easily and frequently drawn away by extraneous stimuli	17
3. Attention is drawn away occasionally	39
4. Attention is drawn away only by substantial intrusion of external stimuli	16
5. Child can tune out extraneous events or interruption when engaged in an activity	7
No numerical data available	1

Table 40

Frequency of Likert Scale Ratings for STI Factor 1, Item 27: Duration When Asked to Do Something

Response Option	Frequency
1. Very long attention span, becomes absorbed	3
2. Long attention span	15
3. About average	53
4. Lower than average attention span	8
5. Momentary or fleeting attention	0
No numerical data available	2

Table 41

Frequency of Likert Scale Ratings for STI Factor 2, Item 16: Distract from Disappointment by Thoughts

Response Option	Frequency
1. Almost immediately finds something else to think about and cheers up	8
2. After a short time, finds something else to think about	42
3. Only after having a chance to settle down does the child think about something else	21
4. Takes a long time to settle and think about something else	7
5. Takes an inordinately long time to cheer up and finds it hard to think about anything else	1
No numerical data available	2

Table 42

Frequency of Likert Scale Ratings for STI Factor 2, Item 11: Distract from Distress by Alternative

Response Option	Frequency
1. Extremely difficult. Nothing else will do when the child's heart is set on something	1
2. Very difficult. Only after taking time to settle down does the child accept an alternative	11
3. Mildly difficult. An alternative is accepted after a short time	38
4. Very easy. An alternative is easily accepted after the initial reaction	27
5. Extremely easy. An alternative is accepted right away	2
No numerical data available	2

Research Question 9: What themes are evident in parents' qualitative responses for the STI's attention scales?

- **a. What themes do parents raise when rating their child on a particular aspect of attention? How do themes differ between extremes of ratings within the same item (e.g. ratings of one as compared to ratings of five)?**
- **b. How do themes differ between items within the same factor?**

Qualitative data were examined to determine themes evident in parent responses for the STI. Codes were created for each apparent theme in the manner outlined earlier in this paper. The majority of responses included multiple themes within the narrative. Thus, where appropriate, responses were classified into more than one code. Importantly, in several cases narrative responses were coded as "Other." A review of these responses suggest that nearly all either reiterated language evident in the question itself or in STI Likert scale descriptors (thus

providing no original, child-specific information), or offered no narrative data to code. The tables below review code frequencies for each group of items and ratings.

Table 43

Themes for STI Factor 1, Item 9, Rating of 5 and 4: Distract Sights and Sounds*

Theme	Frequency
If interested in activity, child will ignore distractors	8
Persists in face of distractors until task is completed	1
Long duration of attention	2
Very alert to/aware of everyday distractors	1
Distracted only by major intrusion	5
Distracted by internal thoughts	1
Exclusionary focus on current activity/item of interest	3
Comparison to peer group	1
Distracted because of interest in distractor or emotion associated with distractor	1
Other	4

*Ratings of 5 and 4 represent low distractibility.

Table 44

Themes for STI Factor 1, Item 9, Rating of 3: Distract Sights and Sounds*

Theme	Frequency
If interested in an activity, child will ignore distractors	10
If not interested in distractor, child is able to maintain focus	2
Reference to external regulation	3
Exclusionary focus on current activity/item of interest	4
Self Regulation/ Inhibition	1
Distracted because of interest in distractor or emotion associated with distractor	16
Distracted only by major intrusion	1
Alert to environment but re-orients to task	7
Distractibility dependent on energy level of child	1
Distracted by internal thoughts	1
Comparison to sibling	1
Comparison to peer group	4
Other	4

*Ratings of 3 represent occasional distractibility.

Table 45

Themes for STI Factor 1, Item 9, Rating of 2 and 1: Distract Sights and Sounds*

Theme	Frequency
Distractibility dependent on difficulty of current activity/interest in current activity	5
Reference to external regulation	3
Dependent on number of potential distractors in setting	1
Very alert to/aware of everyday distractors	6
Distracted because of interest in distractor or emotion associated with distractor	4
Focus improves/distractibility lessens with age	1
Anything will distract the child	3

*Ratings of 2 and 1 represent high distractibility.

Table 46

Themes for STI Factor 1, Item 27, Rating of 4 and3: Duration When Asked to Do Something*

Theme	Frequency
Comparison to sibling	3
Comparison to peer group	5
Poor duration if assigned	1
Desire to please person who assigned task	2
Reference to external regulation	7
Interest in task determines speed of completion	3
Duration dependent on interest in task/task itself	20
Child attempts to negotiate task	4
Average with example	6
Other	18

*Ratings of 4 and 3 represent less than average and average attention span, respectively.

Table 47

Themes for STI Factor 1, Item 27, Rating of 2 and 1: Duration When Asked to Do Something*

Theme	Frequency
Duration dependent on which adult is monitoring task	2
Duration dependent on interest in task	4
Duration dependent on interest in distractor	1
Reorients to task without external regulation	1
Desire to complete task when started	2
Other	10

*Ratings of 2 and 1 represent long and very long attention spans, respectively.

Table 48

Themes for STI Factor 2, Item 16, Ratings of 5 and 4: Distract from Disappointment by Thoughts*

Theme	Frequency
Upset by departure from expectation	1
Reference to external regulation/soothing	3
Upset characterized by long duration	7
Upset by small things, minor issues	3
Other	1

*Ratings of 5 and 4 represent long duration of disappointment.

Table 49

Themes for STI Factor 2, Item 16, Ratings of 3: Distract from Disappointment by Thoughts*

Theme	Frequency
Intense emotional reaction	4
Long duration of emotion, requires time to self-soothe/ for self directed distraction	9
Reference to adult directed distraction	8
Needs time to settle before responsive to adult directed distractors	3
Depends on how adults approach child when upset, adult style	2
Other	1

*Ratings of 3 represent average duration of disappointment.

Table 50

Themes for STI Factor 2, Item 16, Ratings of 2 and 1: Distract from Disappointment by Thoughts*

Theme	Frequency
Requires combination of self directed and adult directed distraction	4
Comparison to siblings	1
Moves on quickly without adult directed distraction	11
Moves on quickly with adult directed distraction	16
Easily switches to new activity without intense reaction, no reference to self or adult directed distractor	12
Unexpected change in mood	1
Other	9

*Ratings of 2 and 1 represent short duration of disappointment.

Table 51

Themes for STI Factor 2, Item 11, Ratings of 5 and 4: Distract from Distress by Alternative*

Theme	Frequency
Moves on easily with adult directed distraction- activity or object	14
Moves on easily with adult directed thoughts, conversation, explanation- not activity or object	9
Dependent on intensity of emotion and level of interest in alternate thought, object, or activity	3
Dependent on energy level of child	1
Needs to negotiate/bargain	1
Moves on easily, no reference to type of distractor, self or other directed thoughts or activity	6
Other	3

*Ratings of 5 and 4 represent high distractibility.

Table 52

Themes for STI Factor 2, Item 11, Ratings of 3: Distract from Distress by Alternative*

Theme	Frequency
If interested or engaged in original activity, child has more difficulty moving on	10
Ability to move on dependent on interest in distractor	5
Reference to adult directed distractor	26
Distracted by object/activity	15
Distracted by thoughts	3
Emotions change very quickly	1
Upset characterized by long duration	7
Dependent on intensity of emotion	4
Attends and reacts to levels of adult frustration	1
Comparison to siblings	1
Other	7

*Ratings of 3 represent average distractibility.

Table 53

Themes for STI Factor 2, Item 11, Ratings of 2 and 1: Distract from Distress by Alternative*

Theme	Frequency
Difficult to distract, needs time to calm	6
Difficult to distract, big emotional reaction	4
Distractor needs to be better than original activity	1
Reference to adult directed distractor	6
Depends on who is attempting distraction	1
Comparison to peers	1
Other	1

*Ratings of 2 and 1 represent low distractibility.

The following tables are broken down by factor. Each table depicts all themes represented within one factor, specifically reviewing whether themes are represented more than once across different ratings and items within the same factor. In the case of the Low Distraction from Task, High Duration of Attention factor, multiple themes are evident across all three groups of ratings for Item 9. These include themes related to distractibility, extremely intense focus, comparison to others, and regulation of attention by adults. For Item 27, themes related to duration of attention and levels of interest were evident across both groups of ratings. Four themes were represented by ratings in both items, including Comparison to Peer Group, Reference to External Regulation, Comparison to Sibling, and Other (largely representing narrative responses that either reiterated language quoted directly from STI response options or offered no narrative for coding). In general, parent responses for this factor appear to be characterized by themes related to distractibility (as well as resistance to distractibility and thus inhibition in the face of distractors), duration of attention, level of interest, and adult directed regulation of attention.

Far less overlap within and between ratings and items was evident in the Low Distraction from Emotional Investment factor. In the case of Item 16, only Other was represented across more than one rating. In the case of Item 11, themes referencing adult directed distraction as well as Other were represented across more than one rating. Themes including Upset Characterized by Long Duration, Reference to Adult Directed Distraction, Comparison to Siblings, and Other were represented by ratings in both items.

Table 54

Frequency of Themes Represented Across Factor 1, Items 9 and 27, All Ratings

	Factor 1: Low Distraction from Task, High Duration of Attention				
Theme	Item 9 (5 and 4- Low Distractibility)	Item 9 (3- Average Distractibility)	Item 9 (2 and 1- High Distractibility)	Item 27 (4 and 3- Average/Less than Average Attention Span)	Item 27 (2 and 1- Long/ Very Long Attention Span)
If interested in activity, child will ignore distractors	8	10	-	-	-
Persists in face of distractors until task is completed	1	-	-	-	-
Long duration of attention	2	-	-	-	-
Very alert to/aware of everyday distractors	1	-	6	-	-
Distracted only by major intrusion	5	1	-	-	-
Distracted by internal thoughts	1	1	-	-	-
Exclusionary focus on current activity/item of interest	3	4	-	-	-
Comparison to peer group	1	4	-	5	-
Distracted because of interest in distractor or emotion associated with distractor	1	16	4	-	-
If not interested in distractor, child is able to maintain focus	-	2	-	-	-
Reference to external regulation	-	3	3	7	-
Self-Regulation/ Inhibition	-	1	-	-	-
Alert to environment but re-orients to task	-	7	-	-	-

Distractibility dependent on energy level of child	-	1	-	-	-
Comparison to sibling	-	1	-	3	-
Distractibility dependent on difficulty of current activity/interest in current activity	-	-	5	-	-
Dependent on number of potential distractors in setting	-	-	1	-	-
Focus improves/ distractibility lessens with age	-	-	1	-	-
Anything will distract the child	-	-	3	-	-
Poor duration if assigned	-	-	-	1	-
Desire to please person who assigned task	-	-	-	2	-
Interest in task determines speed of completion	-	-	-	3	-
Duration dependent on interest in task/ task itself	-	-	-	20	4
Child attempts to negotiate task	-	-	-	4	-
Average with example	-	-	-	6	-
Duration dependent on which adult is monitoring task	-	-	-	-	2
Duration dependent on interest in distractor	-	-	-	-	1
Reorients to task without external regulation	-	-	-	-	1
Desire to complete task when started	-	-	-	-	2
Other	4	4	-	18	10

Table 55

Frequency of Themes Represented Across Factor 2, Items 16 and 11, All Ratings

	Factor 2: Low Distraction from Emotional Investment					
Theme	Item 16 (5 and 4- Long Duration of Disappointment)	Item 16 (3-Average Duration of Disappointment)	Item 16 (2 and 1- Short Duration of Disappointment)	Item 11 (5 and 4- High Distractibility)	Item 11 (3- Average Distractibility)	Item 11 (2 and 1- Low Distractibility)
Upset by departure from expectation	1	-	-	-	-	-
Reference to external regulation/ soothing	3	-	-	-	-	-
Upset characterized by long duration	7	-	-	-	7	-
Upset by small things, minor issues	3	-	-	-	-	-
Intense emotional reaction	-	4	-	-	-	-
Long duration of emotion, requires time to self-soothe/ for self directed distraction	-	9	-	-	-	-
Reference to adult directed distraction	-	8	-	-	26	6
Needs time to settle before responsive to adult directed distractors	-	3	-	-	-	-
Depends on how adults approach child when upset, adult style	-	2	-	-	-	-
Requires combination of self directed and adult directed distraction	-	-	4	-	-	-
Comparison to siblings	-	-	1	-	1	-

Moves on quickly without adult directed distraction	-	-	11	-	-	-
Moves on quickly with adult directed distraction	-	-	16	-	-	-
Easily switches to new activity without intense reaction, no reference to self or adult directed distractor	-	-	12	-	-	-
Unexpected change in mood	-	-	1	-	-	-
Moves on easily with adult directed distraction- activity or object	-	-	-	14	-	-
Moves on easily with adult directed thoughts, conversation, or explanation- not activity or object	-	-	-	9	-	-
Dependent on intensity of emotion and level of interest in alternate thought, object, or activity	-	-	-	3	-	-
Dependent on energy level of child	-	-	-	1	-	-
Need to negotiate/ bargain	-	-	-	1	-	-
Moves on easily, no reference to type of distractor, self or other directed thoughts or activity	-	-	-	6	-	-
If interested or engaged in original activity, child has more difficulty moving on	-	-	-	-	10	-
Ability to move on dependent on interest in distractor	-	-	-	-	5	-
Distracted by object/activity	-	-	-	-	15	-
Distracted by thoughts	-	-	-	-	3	-

Emotions change very quickly	-	-	-	-	1	-
Dependent on intensity of emotion	-	-	-	-	4	-
Attends and reacts to levels of adult frustration	-	-	-	-	1	-
Difficult to distract, needs time to calm	-	-	-	-	-	6
Difficult to distract, big emotional reaction	-	-	-	-	-	4
Distractor needs to be better than original activity	-	-	-	-	-	1
Depends on who is attempting distraction	-	-	-	-	-	1
Comparison to peers	-	-	-	-	-	1
Other	1	1	9	3	7	1

Chapter V: Discussion

The current study examined the relations between attention, emotion understanding, and social competence in preschool age children, paying special attention to the definition and measurement of all constructs. The results of preliminary analyses are examined below, immediately followed by a discussion of exploratory factor analyses, and thus attention as defined by measures used in this study. Parents' qualitative responses for attention scales of the STI are discussed in order to examine themes apparent within sets of numerical ratings of attention. The relations among attention, emotion understanding, and social competence are examined in context of the existing literature.

Preliminary Data Analyses

No measure demonstrated significant correlational relationships with gender. A precedent exists for gender differences in dimensions of attention. These differences are thought to grow through late childhood, though they become insignificant in preadolescence (Else-Quest, 2012). In general, young girls perform better across Effortful Control dimensions, though young boys show more variability within these dimensions; little support exists for gender differences within Extraversion/Surgency dimensions within the preschool age (Else-Quest, 2012). The current study suggests that no significant gender differences exist in attention-related dimensions of temperament as measured by the STI or CBQ. Given that gender differences increase throughout childhood, it is possible that the preschool aged participants in the current study are not yet demonstrating significant differences in temperament-based attention.

The lack of relations between gender and ECT findings was expected and mirrors outcomes from prior studies (Denham & Couchoud, 1990; Glanville & Nowicki, 2002; Izard, Fine, Schultz, Mostow, Ackerman, Youngstrom, 2001; Shultz, Izard, & Bear, 2004). Research

by LaFreniere and Dumas (1996) indicates that, during the preschool age, gender differences exist in social competence domains including anger-aggression and generalized social competence. No gender differences exist on domains related to anxiety-withdrawal. As SCBE scales are standardized within genders, the lack of gender differences apparent in this study are not surprising.

No STI factor in either the two or three factor solution demonstrated significant correlational relationships with age. It was thought that these factors (which encompass elements of self-regulation) would demonstrate a positive relationship with age. Furthermore, no Effortful Control or Extraversion/Surgency scale of the CBQ demonstrated a significant relationship with age. Rothbart indicates that Effortful Control is largely comprised of self-regulatory dimensions of attention that develop overtime (2011). Toddlers and preschoolers are thought to experience especially significant gains in Effortful Control (Cipriano & Stifter, 2010) Thus, it is surprising that age was not related to self-regulatory dimensions within the present study. It was surmised that distractibility might lessen with age as attentional self-regulation improves. Within the assessed age group, however, neither demonstrated a significant relationship with age.

All ECT scales demonstrated a significant positive correlational relationship with age, corroborating findings from previous research (Denham et al. 2003). Several SCBE scales demonstrated relationships with age, suggesting that a child's standing on certain dimensions improve over time. Importantly, significant age differences were not apparent on all scales, in keeping with LaFreniere and Dumas original findings (1995). LaFreniere and Dumas determined that it was unnecessary to standardize the scale based on age, given the limited significance of apparent differences.

Within measure relationships largely emerged as would be expected, inclusive of scale relationships within the CBQ's Effortful Control, Extraversion/Surgency, and Negative Affect factors. All ECT scales were significantly positively correlated with one another. Nearly all SCBE scales were significantly positively correlated with one another, suggesting that dimensions of social competence develop in concert with one another, and that adaptive dimensions of social competence are positively related to one another. This pattern was expected, indicating that children who demonstrate one positive dimension of social competence are likely to demonstrate others.

Conceptualization of Attention: Quantitative Analyses

Both a two and three factor solution were explored in quantitative analyses in this study. The two factor solution included a Low Distraction from Task, High Duration of Attention factor, as well as a Low Distraction from Emotional Investment factor. The former was comprised of items from theoretical underpinnings of the STI including attention span/ persistence and external sources of distraction. The latter drew from distraction and emotion based items across dimensions of attention theorized to be represented by STI items (internal sources of distraction, external sources of distraction, attention span/persistence). The three factor solution included an additional factor, Low Distraction by Unimportant Information, which drew items from the Low Distraction from Task, High Duration of Attention factor from the two factor solution.

Given theoretical underpinnings of the STI, it was expected that STI factors would demonstrate significant relations with all of the CBQ's Effortful Control scales and many of the Extraversion/Surgency scales. Specifically, relations were expected with Effortful Control scales including Inhibitory Control and Attentional Focusing and Extraversion/Surgency scales

including Impulsivity and Activity Level. Much of this hypothesis was upheld, with Low Distraction from Task, High Duration of Attention correlating with all Effortful Control Scales before and after controlling for age. However, the Low Distraction from Task, High Duration of Attention factor did not demonstrate a correlational relationship with any Extraversion/Surgency scale. Low Distraction from Emotional Investment was positively correlated with several Effortful Control scales, though it evidenced more relationships with the CBQ's Negative Affect scales. The new factor in the three factor solution, Low Distraction by Unimportant Information demonstrated a relationship with Effortful Control's Perceptual Sensitivity, as well as with Inhibitory Control.

On the whole, nearly all theorized dimensions of the STI's attention scale were evident in the two and three factor solutions of the STI. Teglasi originally built the attention scale to include dimensions such as attention span/persistence, external sources of distraction, internal sources of distraction (subsuming selective focus and attentional shift), and level of interest. However, these dimensions did not emerge as unique factors in exploratory factor analyses. Instead, the items attending to the four theorized dimensions were merged into two (or three) broad factors. Moreover, although the Low Distraction from Task, High Duration of Attention merged two theorized dimensions (attention span/persistence and external sources of distraction), the make-up of Low Distraction from Emotional Investment was more complex, including items from multiple dimensions of attention initially thought to be encompassed by the STI. The third factor, Low Distraction by Unimportant Information provided additional specificity with regard to distractibility (including items from attention span/persistence and external sources of distraction), though no further clarity regarding the presence of theorized dimensions was added with use of this factor.

Rothbart contends that the CBQ's Effortful Control factor encompasses many dimensions of attention related to self-regulation, whereas the Extraversion/Surgency and Negative Affect factors better capture dimensions of attention related to reactivity (2011). STI factor relations with CBQ scales indicate that the first and third factors, Low Distraction from Task, High Duration of Attention and Low Distraction by Unimportant Information, maintain heavy cognitive and self-regulatory underpinnings. These two factors demonstrated a myriad of relations with the CBQ's Effortful Control factor. The second factor, Low Distraction from Emotional Investment, also demonstrated relations with scales from the Effortful Control factor, though more relations were evident with scales from the Negative Affect factor. Relations with these emotion-laden and reactive scales of the Negative affect factor suggest that Low Distraction from Emotional Investment encompasses significantly more reactive than self-regulatory dimensions of attention. The presence of this factor is especially interesting, as items related to interest (which is likely linked to emotionality) were removed from analyses due to lack of clarity regarding factor loading. Nevertheless, the influence of emotionality on dimensions of attention remains strongly present. Themes related to interest and emotionality also appear in qualitative analyses, again testifying to the importance of this construct.

Given all of this information, what dimensions of attention are captured by measures utilized in the current study and how do these dimensions compare to the broader definition of attention described at the beginning of this paper? It is clear that the STI encompasses self-regulatory components (e.g. attention span/persistence), as well as reactive and emotion based components (e.g. level of interest, distractibility and/or resistance to distractibility related to emotional investment). Despite capturing many traditional dimensions of temperament based attention in broad terms, factor analysis of the STI did not clearly distinguish between attention

span/persistence, sources of distractibility, and level of interest. Instead, analyses differentiated between distractibility based factors (distraction by unimportant information, from emotional investment, general distractibility) as well as attention/span persistence, and emotion. In comparison to the CBQ, however, the STI provides more information with regard to distractibility by specific types of stimuli.

Conceptualization of Attention: Qualitative Analyses

Qualitative analyses were undertaken to elucidate attention-related themes evident in parents' narrative responses to the STI. More precisely, the present study maintained interest in comparing themes raised within and between STI items and factors, and thus themes evident in differing dimensions of attention. These analyses provide insight into parent understanding of STI items as well as parents' conceptualization of attention. Moreover, analyses provide additional information regarding possible underlying dimensions of attention captured by the STI.

Factor One.

As previously noted, analysis of themes was conducted on the two factor solution, given the relative comprehensiveness of this solution. Analyses were conducted on the two highest loading items from each factor. In the case of the Low Distraction from Task, High Duration of Attention factor, these items included STI items 9 and 11:

- STI Item 9: In general, how distractible is this youngster by external stimuli such as sounds or sights?
- STI Item 11: What is the duration of attention during an assigned task?

Expectations for emerging themes were formulated based on existing literature regarding temperament-based measures of attention as well as outcomes from previously discussed

exploratory factor analyses of the STI and correlational analyses with the CBQ. Teglasi's assertions regarding the theoretical underpinnings of the STI's attention scale also served to inform expectations. As the Low Distraction from Task, High Duration of Attention factor demonstrated many relations with self-regulatory components of attention, themes related to attention span/persistence were expected to emerge, as this dimension is included within the Effortful Control factor. Moreover, STI Item 11 asks specifically for information regarding the duration of a child's attention. Attention span/persistence and thus duration of attention has historically been evident in questionnaire based measures of attention; they also referenced by cognitive attention theorists and social competence studies (Rowe & Plomin, 1977; Rothbart, 2011; Styles, 2006; Thomas and Chess, 1963). Parents were expected to discuss the length of time for which a child may stay engaged with a task, as well as their capacity to persist on a task in the face of distractors. Themes related to inhibitory control were also expected to emerge, given relations with the CBQ's Inhibitory Control scale from the Effortful Control factor. As a continuum of capacity for inhibitory control exists, a reference to self-regulated as well as externally-regulated attention was anticipated.

Although the dimensions of internal and external sources of distraction are more reactive in nature, themes related to these dimensions were anticipated given broader item make-up of the overall factor. More specifically, in referencing attention span/persistence in the face of distractors, it was assumed that parents would also discuss distractibility. Themes related to distractibility were expected to emerge on a continuum, consistent with a broad range of presentation in typically developing children (e.g. high, moderate, and low distractibility). Furthermore, distractibility is also evident in many temperament-based attention measures

(Thomas & Chess, 1963). As STI item 9 specifically references distractibility by external stimuli, examples of external stimuli were anticipated (e.g. police sirens).

Literature suggests that dimensions such as attention span/persistence and distractibility are often tied to more emotionally based constructs such as level of interest. Thus, themes related to level of interest were anticipated.

STI Item 9: In general, how distractible is this youngster by external stimuli such as sights and sounds?

Ratings of 5 and 4 represented low levels of distractibility. Themes related to high level of interest in the original activity (rather than distractor) were salient within these ratings. Interest in original activity seemed to protect children from becoming distracted by external stimuli. On a related note, examples referencing distraction by major external intrusions were also frequent. This suggests that children characterized as "low" on the distractibility continuum are able to sustain attention in the face of most distractors, especially when interested in the original task.

Ratings of 3 represented average levels of distractibility. These ratings were also characterized by children whose interest in original tasks protected against distraction from other stimuli. Despite this, more references were made to children's interest in the distractor (as opposed to the original task). Interest in the alternate activity was more likely to lead to distraction than in ratings of 5 and 4. Importantly, children's capacity to re-orient to task despite initial distraction was also salient to these ratings. Thus, references to inhibition and regulation were evident.

Ratings of 2 and 1 represented high levels of distractibility. These ratings were characterized by children's heightened alertness to even everyday (not major) sights and sounds. Moreover, ratings were characterized by a generalized tendency to become distracted for a myriad of

reasons. Notably, references to regulation of attention by adults were more prevalent within this group of ratings.

STI Item 27: What is the duration of attention during an assigned task?

Ratings of 4 and 3 indicated an average or shorter than average attention span. Emerging themes at this extreme suggest that the duration of a child's attention may largely be dependent on their interest in the task at hand. References to external regulation were also prevalent. Ratings of 2 and 1 indicated a long attention span. In this case, duration of attention was also largely dependent on interest in task, though reference was made to more prolonged duration of attention.

Dimensions of attention captured by Low Distraction from Task, High Duration of Attention.

In general, parent ratings suggest a continuum of both distractibility and attention span/persistence, corroborating existing research in typically developing populations. Themes related to level of interest (in task and distractor), intrusiveness of distractors, and personal capacity for re-orientation and regulation of attention (inhibition and self-regulation) were also salient to parents' conceptualization of attention and narrative responses. Additional though seemingly less salient themes included comparison of children to their peer group, comparison of children to their siblings, and the need for external regulation of attention (at extremes of the continuum). The presence of those themes across both items within the factor indicates that parents may utilize same aged peers as reference points for the normality of their child's behavior. Moreover, when referencing high levels of distractibility, parents routinely cite the need for external (adult) regulation of attention. It is possible that this more intensive need for adult regulation cues parents to refer to their child as "highly distractible," given a more

significant need for external support. Items directly related to interest were removed from factor analyses given a lack of clarity regarding their factor loading. The presence of themes related to interest here suggests that this dimension of attention is pervasive and tied to many other attention-related themes and dimensions. Rather than existing as a unique dimension, in this study the dimension of interest dispersed across multiple other relevant dimensions. The presence of this theme suggests that even when not directly queried for, interest is especially salient to parental characterizations of attention.

On the whole, emerging themes align with those anticipated based on existing literature as well as factor and correlational analyses from this study. Themes related to attention span/persistence, inhibitory control (including re-orientation to task and extremes of self versus other directed regulation), distractibility, and interest were all present. Notably, although quantitative analyses suggest that the Low Distraction from Task, High Duration of Attention factor is largely self-regulatory in nature (based on relations with the CBQ), qualitative analyses indicate that these self-regulatory dimensions are heavily tied to reactive and emotion based components including distraction and level of interest. Thus, although self-regulatory components may overshadow reactive components in quantitative analyses, this factor maintains significant reactive ties and undertones.

Factor Two.

The Low Distraction from Emotional Investment factor included the following highest loading items:

- STI Item 16: When disappointed, how easily does the child cheer up by thinking about something else?

- STI Item 11: When upset or disappointed, how easy is it to distract the child by offering an alternative object or activity?

As was the case for the first factor, expectations for emerging themes were formulated based on existing literature regarding temperament-based measures of attention as well as outcomes from previously discussed exploratory factor analyses of the STI and correlational analyses with the CBQ. Teglasi's assertions regarding the theoretical underpinnings of the STI's attention scale also served to inform expectations. Previously discussed quantitative analyses indicated that the Low Distraction from Emotional Investment factor encompassed many reactive and emotionally loaded dimensions of temperament and attention. Specifically, in addition to relations with Effortful Control scales of the CBQ, relations were also evident with Negative Affect scales. Thus, themes were expected to reference self-regulatory dimensions of attention with a significantly heavier emphasis on emotionality (and specifically negative emotionality). Literature routinely suggests an inverse relationship between Effortful Control and Negative Affect (Rothbart et al., 2001). Thus, it was expected that children with more intense negative emotionality would demonstrate poorly developed features of Effortful Control and self-regulation. Discussion of negative emotions was anticipated, given emotionality's strong and established links to attention. References to the intensity of children's emotions and thus intensity of emotional reactivity were also anticipated. Given known relations between Effortful Control and Negative Affect, references to self-directed and adult-directed regulation of emotion and distraction were anticipated.

STI Item 16: When disappointed, how easily does the child cheer up by thinking about something else?

Themes referencing duration of negative emotionality were apparent across all ratings, existing on the expected continuum. Ratings of 5 and 4 referenced atypically long durations of negative emotionality, whereas ratings of 2 and 1 referenced comparatively short durations of negative emotionality. Interestingly, parents discussed child (self) initiated distraction from negative emotions with similar frequency within ratings of 3, 2, and 1. This pattern indicates that a child's capacity for distraction from disappointment (and thus the ability to cheer up) was of importance. In fact, parents seemed to be more concerned with their child's capacity for distraction from disappointment than with the origin of the distraction. A child's move towards positive emotionality seemed to override the source of that change.

STI Item 11: When upset or disappointed, how easy is it to distract the child by offering an alternative object or activity?

Ratings of 5 and 4 indicated high levels of distractibility. As expected, frequent references to adult-directed distraction from disappointment were evident within this extreme. A relatively even split existed between references to adult-directed distraction from disappointment via activities and objects and adult-directed distraction via thoughts (e.g. positive anticipation of future events). Adult-directed distraction from disappointment via activities and objects was also salient within ratings of 3. These ratings were further characterized by references to the child's level of interest and investment in the original object or event.

Ratings of 2 and 1 indicated low distractibility. It was difficult to distract children from their negative emotions at this extreme. Within this group of ratings, parents routinely reported that their child required significant amounts of time to calm prior to becoming receptive to

attempts at distraction. Additionally, children demonstrated intense emotional reactions to their disappointment. These themes suggest that parents may be less likely to attempt to distract a child experiencing an intense emotion, instead choosing to direct the child's attention back to the desired activity.

In examining frequency of themes across the entirety of the Low Distraction from Emotional Investment factor, it is apparent that relatively little overlap exists between items, as well as between groups of ratings within items. In fact, each group of ratings makes use of an almost entirely unique set of themes. Only two major themes were evident in both items. Parent responses for STI item 16, ratings of 5 and 4 (long duration of disappointment) and STI item 11, ratings of 3 (average levels of distractibility) suggested that a child's emotionality was long in duration. STI item 16, ratings of 3 (average duration of disappointment) and STI item 11, ratings of 3 (average levels of distractibility) and 2 and 1(low levels of distractibility) were characterized by a reference to adult initiated distraction. However, this theme was most frequent in STI item 11, ratings of 3 (average levels of distractibility).

Dimensions of attention captured by Low Distraction from Emotional Investment.

In general, themes evident within this factor emerged as expected. Themes referencing negative emotionality, intensity of negative emotions, and duration of negative emotions were apparent. Moreover, references to self-regulation (child-initiated as compared to adult initiated distraction from disappointment) were discussed. Minimal reference to self-regulation was made in cases of heightened emotionality, in keeping with literature regarding the relationship between Effortful Control and Negative Affect (Rothbart et al., 2001). Interestingly, parents frequently referenced distraction via activities or objects in addition to or instead of distraction based on thoughts. This suggests that parents tend to emphasize a child's capacity for moving towards

positive emotions, rather than the source of the positive emotion. In general, the Low Distraction from Emotional Investment factor seems to offer support for the established inverse relationship between Effortful Control and Negative Affect.

Conceptualization of Attention: Unifying Quantitative and Qualitative Outcomes

Previous researchers indicated that attention, as examined from a temperament perspective, includes both reactive and self-regulatory dimensions such as alerting, orienting, and executive functioning (Rothbart, 2011). Cognitive theory further supports this, suggesting that attention is an umbrella term that includes multiple types of attention (e.g. visual attention, auditory attention), as well as methods for regulating attention (Styles, 2006). As was noted earlier in this paper, most temperament-based informant measures of attention include dimensions such as activity level and attention span/persistence (though modern researchers suggest that activity level is not an attentional dimension) (Rothbart, 2011; Rowe & Plomin, 1977; Thomas & Chess, 1996). Rothbart adds to these dimensions in the CBQ, including impulsivity, attentional control, inhibitory control, and attentional focusing. In creating the STI, Teglasi included underlying attentional dimensions such as attention span/persistence, external sources of distraction, internal sources of distraction, and level of interest. In general, self-regulatory dimensions of attention include inhibitory control (including resisting distraction), attentional focusing, attention span/persistence, whereas reactive dimensions of attention include impulsivity and distractibility (Rothbart, 2011).

Findings from the current study establish that the STI largely encompasses self-regulatory dimensions of attention, evidencing clear relationships with the CBQ's Effortful Control factor. Factor and correlational analyses also indicate the presence of dimensions related to emotionality and level of interest. Themes emerging from qualitative analyses lend support for

the presence of dimensions including distractibility (by internal and external stimuli, general awareness of environment), duration of attention (including persistence in the face of distractors), level of interest (in activity and distractors), adult directed and child initiated modulation of attention, as well as the influence of intensity of emotion on attentional outcomes. It is clear that many of these themes are self-regulatory in nature, thus supporting quantitative analyses that suggest relations between the STI and self-regulatory scales of the CBQ. Similarly, many themes lend support for the importance of reactive dimensions related to emotionality and level of interest. Themes related to distractibility (more specifically, resistance to distractibility required for persistence) are subsumed under the Low Distraction from Task, High Duration of Attention factor. It is possible that self-regulatory dimensions within this factor overshadow the influence of reactive dimensions in quantitative analyses, thus making it difficult to tease out the unique influence of self-regulatory versus reactive dimensions. Even so, outcomes from quantitative and qualitative analyses generally support one another.

The influence of emotionality on dimensions of attention is not entirely unexpected. A vast body of research suggests that emotion-based variables including interest and tendency towards expression of either positively or negatively valenced emotions are related to attention outcomes (Cohen, Henik, & Mor, 2011). As was noted previously, an inverse relationship exists between Effortful Control and Negative Affect (Rothbart et al., 2001). Moreover, literature indicates that it is difficult to tease out the unique influence of emotionality as compared to attention as they are related to other outcomes. Research suggests that emotion and attention are strongly linked; children must regulate the emotions they experience in order to devote appropriate attention to various stimuli (reducing tendencies to allocate too many or too few attentional resources). Heightened and unregulated emotionality disrupts an individual's capacity

to appropriately shift attention and allocate related self-regulatory resources (Cohen, Henik, & Mor, 2011). Given this information, references to emotionality, level of interest, and other emotion-laden constructs in qualitative responses are not unexpected, nor are STI relations with emotionally driven scales of the CBQ. However, it is difficult to differentiate between the influence of emotion and attention as they are related to other examined constructs.

Relations between Attention and Emotion Understanding

Previous research regarding the relations between attention and emotion understanding has relied heavily on populations of children diagnosed with ADHD and therefore clinically based definition and measurement of attention. Earlier, it was noted that even within this definition researchers frequently did not differentiate between specific dimensions of attention, instead relying on a global diagnosis (DaFonseca et al., 2009; Sinzig, Morsch, & Lehmkuhl, 2008; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007). In the case of emotion understanding, studies frequently folded all three types of understanding (identification based on facial expression, situations, or behavioral cues) into one task, thereby making it difficult to discern unique relations between attention and each type of emotion understanding. Despite these issues, broad findings suggested that children with ADHD performed worse than their typically developing peers on emotion understanding tasks (DaFonseca et al., 2009; Sinzig, Morsch, & Lehmkuhl, 2008; Shin et al., 2008; Singh et al., 1998; Yuill & Lyon, 2007).

Findings from the current study suggest that dimensions of attention are significantly related to a child's performance on the Situations scale of the ECT. With regard to the STI, children who are less distracted from task in general and demonstrate long attention spans, as well as less distraction by irrelevant information, perform better than their more distracted peers on the Situations scale. Regression analyses indicate that after controlling for age, Low

Distraction from Task, High Duration of Attention explains a significant amount of the variance in Situations outcomes. Regression analyses indicate that after controlling for age, Low Distraction from Task, High Duration of Attention, and Low Distraction by Unimportant Information, taken together, explain a significant amount of the variance in Situations outcomes (though no variable is uniquely predictive beyond others). These findings suggest that self-regulatory dimensions of attention assessed by the STI contribute significantly to Situations outcomes. Moreover, findings attest to the importance of the Situations scale in conceptualizing emotion understanding skill sets as they present in young children, thereby corroborating previous research regarding the utility of this scale in preschoolers (Trentacosta, Izard, Mostow, & Fine, 2006).

Relations with the CBQ indicate that children with higher levels of positive emotionality and enhanced attention across multiple dimensions perform better on the Situations scale. Regression analyses suggest that, when examined together, Age, Smiling and Laughter, Low Intensity Pleasure, and Attentional Focusing explain a significant amount of the variance in Situations outcomes, though none make unique contributions. Attentional Focusing is a self-regulatory dimension of attention, though Smiling and Laughter and Low Intensity Pleasure are more heavily based in emotionality. Thus, CBQ results suggest that both self-regulatory dimensions of attention and constructs related to emotionality influence Situations outcomes. However, the Low Distraction from Emotional Investment factor of the STI did not evidence a significant relationship with the Situations scale, despite its more reactive and emotional underpinnings. Qualitative analyses of this factor indicate that interest and intensity of emotional attachment feature heavily in parent responses. These findings suggest that the CBQ and STI may encompass different dimensions of attention.

Analyses conducted as part of the current study add significantly to understanding the nuance regarding relationships between attention and emotion understanding. Outcomes indicate that dimensions of attention are related to a child's ability to identify others' emotions based on situational cues, though not based on facial expressions or behavioral cues. Moreover, the current study identifies specific dimensions (distractibility, attention span/persistence, positive emotionality, attentional focusing) that are related to this ability, suggesting that both self-regulatory and emotion based constructs are of importance to understanding Situations outcomes. The finely tuned outcomes from the current study underscore the importance of the Situations concept (capacity to identify emotions in others based on situational cues) within emotion understanding, as well as how relationships between dimensions of attention and emotion understanding manifest within the context of child development.

Relations between Attention and Social Competence

Existing research regarding the relationship between attention and social competence is more comprehensive and nuanced than that describing the relationship between attention and emotion understanding. Research focuses largely on sustained attention, inhibition, impulsivity, and attentional shift, though it relies heavily on performance measures of attention. Social competence is measured by both informant and performance measures, with an emphasis on both general presentation (e.g. gregariousness, social comfort, cooperation) as well as specific skill sets (e.g. entry into peer group, ability to initiate play, assertion of needs, clarity and volume of voice). In general, sustained attention is associated with gregariousness, positive social and reciprocal play, increased complexity of play schemes, decreased aggression during preschool, as well as general social comfort (Bennett Murphy et al., 2007; Perez-Edgar et al., 2010). Inhibition is associated with a preschooler's ability to assert their needs, cooperate with others, and

demonstrate adequate self-control during play (Gerwitz et al., 2009). Inhibition is also related to teacher ratings of general social competence in third graders, and parent ratings of peer competence in the same population (Gerwitz, Stanton-Chapman, & Reeve, 2009).

Findings from the current study indicate that the STI's third factor, Low Distraction by Unimportant Information, is significantly positively correlated with the Isolated-Integrated scale of the SCBE. No other STI factor from either solution correlated with any SCBE. The CBQ demonstrated more relations with the SCBE, both in correlational and regression analyses. Multiple scales from the Effortful Control and Extraversion/Surgency factors were significantly correlated in expected directions with SCBE scales. Moreover, in regression analyses, a model including age, Low Intensity Pleasure, and Inhibitory Control indicated that these predictors, when taken together, explain a significant amount of the variance in Externalizing Problems. Importantly, both the STI factor Low Distraction by Unimportant Information and the CBQ scale Inhibitory Control are largely self-regulatory and cognitively based (though elements of emotionality and reactivity are evident in both). Thus, it is possible that self-regulatory dimensions of attention are most heavily related to social competence outcomes.

The disparity in STI as compared to CBQ relations with the SCBE in part highlights issues raised by the different measurement formats of these two temperament questionnaires. Items from the STI emphasize broad constructs, with limited reference to specific or time-referenced behaviors. In contrast, items from both the CBQ and SCBE make queries regarding much more specific behaviors. Existing research suggests that even when measures are thought to examine different underlying constructs, similarity in format may inflate results and indicate more positive relationships than may truly exist (Sanson, 1990). In the case of the CBQ and SCBE, both measures may effectively assess the frequency and intensity of a similar series of

behaviors, even while attributing behaviors to different underlying constructs. For example, SCBE Item 77, which is part of both the Oppositional-Cooperative and Externalizing Problems scales, states "[the child] ignores directives and continues what he is doing." CBQ Item 81, which is part of the Inhibitory Control scale of the Effortful Control factor, states "[my child] can easily stop an activity when he is told no." That having been noted, it is difficult to know whether relations between the two measures exist due to true relations between attention and social competence rather than being the result of similarity of assessed behaviors.

Relations between Emotion Understanding and Social Competence

Much of the available literature examining the links between emotion understanding and social competence examines dimensions of each in aggregate, thus offering limited nuance regarding relationships. As noted previously, younger children show more variability in their emotion understanding skill sets than do older children. Thus, performance assessments of emotion understanding have been more predictive of informant ratings of social competence for younger children than for older children (Denham et al. 2003). Emotion understanding in elementary school students has evidenced positive relationships with social competence outcomes, as assessed by sociometric ratings (Glanville & Nowicki, 2002). Moreover, enhanced emotion understanding is associated with more limited aggression in preschoolers and early elementary school aged children, as well as with academic competence and popularity in elementary school aged children (Glanville & Nowicki, 2002; Mostow, Izard, Fine, & Trentacosta, 2003). Studies suggest that emotion identification based on facial expressions and situations are related to higher ratings of peer acceptance, as well as higher teacher ratings of general social competence (Denham et al., 2003; Izard, King, & Morgan, 2010).

All three scales of the ECT, Emotion Identification, Situations, and Behaviors, were expected to demonstrate positive relationships with scales of the SCBE, though stronger relations were expected between the Emotion Identification and Situations scales and social competence outcomes. (Denham et al., 2003; Fine, Izard, Mostow, & Trentacosta, 2003; Izard, King, & Morgan, 2010). No SCBE scale demonstrated a relationship with the Emotion Identification scale. More SCBE scales evidenced relationships with the Situations and Behaviors scales, generally indicating that children with enhanced abilities to identify others' feelings based on situational and behavioral cues are rated as more highly socially competent by their teachers. Results from regression analyses suggest that a child's ability to identify another's emotions based on both situational and behavioral cues does not explain a significant amount of the variance in their tendency to demonstrate internalizing problems. Additional regression analyses indicate that a child's ability to identify another's emotions based on situational cues does explain a significant amount of the variance in teacher ratings of their integration into broader social groups.

It is important to note that ECT scales demonstrated more relationships with SCBE scales in correlational analyses than were ultimately reflected in regression analyses. In several cases, ECT scales demonstrated relationships with SCBE subscales but not with the related SCBE summary scale. It is possible that nuanced relationships evident between individual ECT and SCBE summary scales are lost when dimensions of social competence are aggregated into broader summary scales. Interestingly, Emotion Identification continued to demonstrate little utility in explaining broader outcomes (as was also the case in a review of the relationships between attention and emotion understanding). The Situations scale, in contrast, continued to demonstrate the most relationships with other measures and therefore constructs, thereby

attesting to the relative strength and utility of this scale. Importantly, in many existing studies measures of emotion understanding collapse some or all of the underlying dimensions. Within the preschool age range, many measures collapse assessments of emotion understanding based on facial expressions and situations clues, thereby making it difficult to discern which dimension is specifically related to social competence outcomes (DaFonseca et al, 2009; Lee et al., 2009; Shin et al., 2008; Singh et al. 1998; Yuill & Lyon, 2007). In separating the three major dimensions of emotion understanding (both in assessment and analysis), the current study demonstrates the relative importance of the Situations scale.

Relations between Attention, Emotion Understanding, and Social Competence

Interestingly, outcomes from previously described analyses did not lend support for the examination of attention and emotion understanding dimensions as they jointly influence social competence outcomes. As was noted earlier, analyses suggest that when examined independently attention and emotion understanding dimensions did not explain a significant amount of the variance in any of the same social competence scales. This indicates that attention and emotion understanding may, in fact, be related to different aspects of social competence. Low Intensity Pleasure and Inhibitory Control are related to Externalizing Problems outcomes. However, a child's ability to identify emotions based on situational cues is related to integration into groups as well as general social competence.

It is important to note that questions regarding the measurement format and thus definition of attention in the STI as compared to the CBQ continue to be of concern here. Given a dearth of correlational relationships between STI factors and SCBE scales, only CBQ scales were used in regression analyses with the SCBE. As indicated earlier, the STI and attention-related scales of the CBQ's Effortful Control factor are thought to be largely cognitively based

and self-regulatory in nature, though the STI also encompasses elements of reactivity and emotionality. At the surface, STI and CBQ relations with the SCBE indicate that self-regulatory dimensions of attention influence social competence outcomes, whereas more reactive and emotion-loaded dimensions hold little to no influence. However, if CBQ/SCBE relations have been inflated due to similarity of measurement format, it is possible that fewer relationships between self-regulatory dimensions of attention and social competence many exist than those reported here. Future studies may wish to examine relations between more reactive and emotionally loaded dimensions of attention as they are related to social competence, as well as to dimensions of emotion understanding.

Conclusions

On the whole, this study indicates that dimensions of attention included in the STI largely parallel those included in other temperament-based questionnaire measures of attention. With that said, factor analyses, relations with the CBQ, and an examination of themes evident in narrative data all indicate that attentional dimensions within the STI are largely self-regulatory in nature though dimensions related to reactivity and emotionality are also apparent . The Low Distraction from Task, High Duration of Attention and Low Distraction by Unimportant Information factors are most strongly related to self-regulation, though reactive and emotion-based underpinnings are apparent. In contrast, the Low Distraction from Emotional Investment factor maintains heavy emotional underpinnings (as indicated by both quantitative and qualitative analyses). Teglasi initially created the STI to include four dimensions of attention; though all were evident in themes emerging from parent responses, these dimensions ultimately merged into a two and three factor solution which did not clearly delineate boundaries between theorized dimensions.

An examination of relations between attention and emotion understanding suggests that distractibility, attention span/persistence, positive emotionality, attentional focusing are related to a child's ability to identify emotions in others based on situational cues. Relations were not evident between dimensions of attention and a child's ability to identify emotions in others based on facial expression or behavioral cues. The later finding is commensurate with existing research indicating that identification based on behavioral cues is limited in its relation with other outcomes (Denham, Mckinley, Couchoud, & Holt, 1990; Izard, King, & Morgan, 2010). Relations between attention and social competence dimensions suggest that CBQ scales from the Effortful Control factor (linked to self-regulation) and Extraversion/Surgency and Negative Affect factors (more frequently linked to reactivity) are related to social competence outcomes. Importantly, significantly fewer relations were evident between the STI and SCBE.

The present studies offers a great deal of clarification regarding the dimensions of attention encompassed by temperament based questionnaires, as well as how specific dimensions are related to emotion understanding and social competence outcomes. Interestingly, correlational and hierarchical regression analyses suggest that emotion understanding and social competence outcomes are not necessarily related to the same dimensions of attention.

Implications for Future Research.

Results from quantitative and qualitative analyses clearly indicate that dimensions of attention and emotion are deeply intertwined; furthermore, they jointly influence outcomes of related constructs. As a result, it is difficult to assess the relations among attention and other constructs without also considering the influence of interest and emotion-based variables. The current study corroborates existing research regarding the interplay of attention and emotion, though little headway was made in examining the unique influence of each on emotion

understanding and social competence outcomes. Until such time that the influence of attention and interest may be adequately separated and measured, researchers must interpret their findings with the knowledge that the majority of attention-based constructs include emotion-based underpinnings.

Dimensions of attention and emotion were thought to be separate aspects of temperament and appear on separate scales (as in the CBQ). However, Teglasi included items about emotional investment and interest within the attentional dimension of the STI. Items reflecting "interest" did not load together but cross loaded across attentional factors; these items were deleted. However, results from the qualitative analyses indicate that attention and emotion are intertwined. In parents' qualitative responses on the STI, themes related to level of interest were salient across multiple items and rating points. Thus, it is possible that parents understand the role of interest and emotion in children's attention, perhaps conceptualizing attention in a different and more complex way than do researchers. Parent explanations offer further support for the notion that researchers must carefully consider the influence of emotion on attention related scales, even when these scales are thought to measure purely attention related dimensions.

As was noted previously, the Situations scale of the ECT was quite salient to the relationship between emotion understanding and attention, as well as emotion understanding and social competence. This finding also corroborates previous research, offering additional support for the relevance of linking emotions with situational cues in the preschool age group. Researchers may wish to expand upon the present study by including children of varying ages, allowing for an examination of the relevance of age to salient skill sets throughout development. In the case of emotion understanding in particular, a broader range of ages would allow for

examination basals and ceilings across facial recognition, situations, and behavior tasks (as behavior tasks have been shown to be challenging for preschoolers and thus a poor representation of their emotion understanding).

Finally, results from the current study suggest that item overlap between the CBQ measure of attention and the social competence questionnaire may have unduly inflated relationships between these two constructs. In the future, researchers may wish to further explore similarity of measurement format between attention and social competence rating scales. Researchers may also attempt to examine the relations between these two constructs using an assessment of attention which is clearly distinct in measurement format from social competence rating scales.

Implications for Practice.

Historically, researchers have focused on clinically significant attention-related deficits as they influence broader emotion understanding and social competence outcomes. Minimal work examines attention in typically developing populations as it is related to other constructs. Utilizing a temperament-based definition of attention to explore construct relations has potential to provide valuable information regarding the relations between attention, emotion understanding, and social competence in typically developing children. For instance, results from this study indicate that dimensions of attention heavily influence preschoolers' ability to identify emotions in others based on situational cues. Effortful Control and Negative Affect are also related to social competence outcomes.

These results have significant implications for both psychological assessments of preschoolers and social-emotional program development. It is imperative that psychological examiners review skill sets in both attention-related and social-emotional domains, especially if a

deficit is suspected in either area. Given the interplay of these constructs, accurately identifying the true area of weakness ensures that interventions target the appropriate skill set. Similarly, social-emotional programs targeting social competence skill sets in preschoolers would likely benefit from modules associated with the development of attention and emotion understanding related skill sets.

Limitations and Future Directions

Several limitations were evident in this study, not the least of which was potential differences between participating families as compared to other families within the school, as well as on regional, national, and global levels. Although ethnically diverse, participants in this study came largely from families of middle to high socioeconomic status, many of whose parents had obtained or were pursuing advanced graduate degrees. As this study utilized a relatively heterogeneous, middle to high SES population, the populations to which it generalized were limited to similar groups.

The use of an unvalidated measure of emotion understanding may also have been problematic. Though few issues were anticipated, as the assessment was largely inspired by pre-existing measures, the study ran the risk of utilizing an instrument that may later be proven ineffective. The use of the Structured Temperament Interview posed similar concerns, though preliminary analyses as well as comparisons to validated temperament measures suggested that it is largely a valid measure (Genova-Latham, 2010; Teglasi et al., 2009).

The study was also limited by the breadth and depth of the SCBE as a measure of social competence. Though general cooperation and quality of reactions are examined, the measure also focused a great deal on perceived emotionality and general valence of emotion. It lacked some specificity regarding specific tasks of social competence (i.e. entry into peer groups, use of

competent strategies, etc.), though several of these behaviors were subsumed under broader headings of internalizing and externalizing behaviors. Thus, it was difficult to ascertain the relationships specific social competence skill sets may have with other constructs.

Concerns arise given possible differences between mother and father ratings of temperament, as they may have influenced relationships between emotion understanding and social competence. Given differences in the contexts in which parents see their children and subsequent differences in perceptions of temperament, it is possible that mother and father ratings may have influenced relationships differently. However, it should be noted that the majority of informants in prior research were mothers.

Similarly, cautious interpretation of results is warranted as different raters were used within the study itself. Though parents rated their children on both the CBQ and STI, teacher report was used to assess children's social competence via the SCBE. Moreover, the ECT is a performance measure. On the whole, it is possible that differences in perception and tolerance of raters, context, as well as informant versus performance measures of different constructs may have served to influence outcomes.

Given all of this information, future studies may wish to examine relations between these constructs using multiple informants to rate dimensions of attention and social competence. Allowing several informants to rate a child across multiple constructs would allow for more clean and comprehensive comparison between measures and ratings. Moreover, additional research should be done using a measure of social competence that examines specific skill sets. This will allow for more comparisons with the existing literature base, as well as bring specificity to discussions regarding relationships. Finally, additional work must be done to

examine the utility of the Emotion Comprehension Test, specifically examining the utility of the Situations scale as compared to the Emotion Identification and Behavior scales, given the relative strength of the Situations scale in the present study.

Appendix A

Item Level Statistics for STI Two and Three Factor Solutions

Table 56

Item Level Statistics for the STI: Factor One, Two Factor Solution

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
STI 9: Distract sounds and sights	.580	.822
STI 27: Duration when asked to do something	.601	.820
STI 12: Distract by external, chosen	.565	.823
STI 17: Distract from focus by unimportant information	.809	.798
STI 29: Wants to complete started assigned task	-.389	.864
STI 25:Duration of seatwork in class	.550	.827
STI 10: Distract by external, chosen	.242	.847
STI 21: On task, will give best effort	.345	.841
STI 33: Absorbed, not chosen	.727	.807
STI: 14: Distraction by thoughts, independent work	.627	.817
STI 18: Distract by less central details when telling story	.683	.811

Table 57

Item Level Statistics for the STI: Factor Two, Two Factor Solution

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
STI 16: Distract from disappointment by thoughts	.675	.587
STI 11: Distract from distress by alternative	.626	.627
STI 28: Resists stopping when absorbed	.398	.762
STI 31: Absorbed in chosen	.481	.715

Table 58

Item Level Statistics for the STI: Factor One, Three Factor Solution

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
STI 12: distract by external from assignment	.903	.804
STI 9: distract sounds and sights	.764	.814
STI 10: distract by external, chosen	.424	.853
STI 25: duration seatwork in class	.907	.791
STI 29: wants to complete started assigned task	.796	.818
STI 27: duration when asked to do something	.794	.811
STI 21: on task will give best effort	.603	.838
STI 33: absorbed not selected	-.864	.909

N=92.

Table 59

Item Level Statistics for the STI: Factor Two, Three Factor Solution

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
STI 16: distract from disappointment by thoughts	.675	.587
STI 11: distract from distress by alternative	.626	.627
STI 31: absorbed in chosen	.481	.715
STI 28: resists stopping when absorbed	.398	.762

N=92.

Table 60

Item Level Statistics for the STI: Factor Three, Three Factor Solution

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
STI 17: distract from focus by unimportant info	.483	.418
STI 18: distract by less central details when telling story	.399	.544
STI 14: distraction by thoughts, independent work	.388	.569

N=92.

Appendix B

Definitions and Examples of Themes

Factor One: Low Distraction from Task, High Duration of Attention

Themes for STI 9, Ratings of 4 and 5.

- If interested or engaged in an activity, child will ignore distractors.
    - Distractor may be described specifically or implied. Child ignores distractor completely, rather than stopping task and reorienting attention back to task.
    - Example: "For example if he is working on something, building with his blocks for example, and someone turns on the TV or someone is talking near him, he won't respond to it, he'll just focus on what he's doing."
- Persists in face of distractors until task is completed.
    - Ignores distractors, no specific mention of interest or engagement. Child ignores distractor completely rather than stopping task and reorienting attention back to task.
    - Example: "He tends to be focused on just about any activity he's doing whether it be playing with a certain toy or reading or coloring or discussing something. He does seem to be very focused and is able to continue on until he has finished the task that he's doing."
- Long duration of attention.
    - Describes or implies child engaging in activity for extended period of time. Examples may include "good focus."
    - Example: "He's quite focused…he can work a long time on something … only when he's tired he's distracted. He will sit and work on homework…he likes assignments."

- Very alert to/aware of everyday distractors.
    - Hyperawareness. Alert/aware to an atypical degree. Awareness of distractors intrudes on current activity.
    - Example: “Does it mean that he’s attentive to the environment or that he drops the activity and goes? Because he’s very attentive and alert to his environment, like even when he’s playing, he’ll be like ‘mama, the trash truck is here.’ Because he can hear the trash trucks coming and picking, but he’ll continue playing with his things. Yeah, he’s very alert and attentive. So if there’s a police car going in the neighborhood, he goes ‘mommy, I think something has happened because there’s a police car going’ but he will be involved with his activities.”
- Distracted only by major intrusion.
    - Attention shifts from original task only as a result of major intrusions. Examples may include police or ambulance sirens, unexpected sights, sounds, events.
    - Example: “She’s not distracted at all … she’s very focused and engaged in things she’s working on. I would go with a 5 … actually maybe a 4 … if it was substantial … like a loud bang … she would notice … she wouldn’t be distracted just because we have the TV on.”
- Distracted by internal thoughts
    - Distracted by cognitions or emotions unrelated to current task.
    - Example: “When there’s a big sound or sight. Usually his thoughts distract him. When he’s playing you cannot…special intrusion needs to attract his attention. He gets absorbed. You need to call him several times to attract his attention.”
- Exclusionary focus on current activity/item of interest.

- Mentions major event that was ignored (not implied). Examples may include large weather events, etc.
- Example: “I guess a four. He pays attention. He has a fairly long attention span. Like if he’s reading I think an earth quake could happen and we wouldn’t notice (laughs)

- Comparison to peer group
  - Parent compares child and their skill sets to those of other non-sibling children.
  - Example: “She can be distracted from activities but it is almost rare compared to peers.”
- Distracted because of interest in distractor or emotion associated with distractor.
  - Child attends to distractor because he is more interested in distractor than original activity. OR Child attends to distractor because of strong emotional association with distractor (e.g. afraid of dogs, so attends to dog walking past window).
  - Example: “She is very focused. But if her brother takes her toy away she will get upset but sights and sounds don’t really distract her. Candy also might distract her. Have a hard time distracting her.
- Other
  - Example: “Can tune things out.”

Themes for STI 9, Ratings of 3.

- If interested or engaged in an activity, child will ignore distractors.
  - Distractor may be described specifically or implied. Child ignores distractor completely, rather than stopping task and reorienting attention back to task.

    - Example: “When her brother- we have a baby who’s just about 1. She’s been really good if he’s screaming- if she’s focused on something she’s not always distracted by that or upset by that. She can really manage that.”
- If not interested in distractor, child is able to maintain focus
    - Child demonstrates no interest, emotional association, or behavioral activation with presence of distractor. Child is able to maintain focus on original task.
    - Example: “He seems not very distractible, more than the typical 4 year old. If he’s not interested in what’s going on it can be anything and he’ll keep doing what he’s doing.”
- Reference to external regulation.
    - Adult assists child in maintaining attention to task. Adult redirects attention back to task and away from distractor, encourages child to persist on task, and/or refocuses child. Adult may use verbal or nonverbal forms of monitoring or instruction.
    - Example: “Her attention is drawn away occasionally. She can focus pretty well. Tv distracts her. Those kinds of things. I have to tell her when she wants to do two things at a time that were going to focus on one. But she has this desire to do both.”
- Exclusionary focus on current activity/item of interest.
    - Mentions major event that was ignored (not implied). Examples may include large weather events, etc.
    - Example: “I would say in general if we are driving in the car or playing outside she will notice a siren, but if she is really into a book or TV or playing, she won’t notice it.”
- Self-regulation/Inhibition

    - Child independently monitors attention to task. Child may re-orient back to task after becoming distracted (without adult direction). Example: child may acknowledge or comment on distractor but returns to original task without assistance.
    - Example: "When her brother- we have a baby who's just about 1. She's been really good if he's screaming- if she's focused on something she's not always distracted by that or upset by that. She can really manage that."
- Distracted because of interest in distractor or emotion associated with distractor.
    - Child attends to distractor because he is more interested in distractor than original activity. OR Child attends to distractor because of strong emotional association (e.g. afraid of dogs, so attends to dog walking past window).
    - Example: "Drawn away occasionally … yeah I mean if something like he's in the playroom and the television goes on … he'll play with his stuff a little bit longer but then he's drawn to the television."
- Distracted only by major intrusion.
    - Attention shifts from original task only as a result of major intrusions. Examples may include police or ambulance sirens, unexpected sights, sounds, events.
    - Example: "She's pretty much down the middle on that…and it would also depend on the level of sound…and what is going on sight wise…small sounds won't distract her…but a loud sound or a continuous sound…it would interrupt her…but short would not."
- Alert to environment but re-orients quickly to task
    - Child is aware of everyday sights and sounds and may comment on them or otherwise acknowledge them. Child is able to re-orient to task with no assistance.

    - Example: “He is aware of what is going on around him, but can remain focused on the task at hand. He’s aware of what’s going on. He’ll know if someone comes in or out of the room or if someone is calling his name. But if he wants to read that book or watch that movie, he can tune you out and stay focused on what he wants to.”
- Distractibility dependent on energy level of child
    - More distractible when tired, less distractible when very awake.
    - Example: “It depends on where he is with his energy level…he can be really into his activity or distractible.”
- Distracted by internal thoughts
    - Distracted by his own cognitions or emotions which are unrelated to current task.
    - Example: “If the TV is on and there is something he wants to look at…he’s more often distracted by his own daydreaming.”
- Comparison to sibling
    - Parent compares child and their skill sets to those of other siblings.
    - Example: “Quite distractible, not really any examples, shell stop and ask what’s that…actually I’ll say 3 because she’s better than my older one, especially if it’s something she wants to do she’s not as distractible.”
- Comparison to peer group
    - Parent compares child and their skill sets to those of other non-sibling children.
    - Example: “It hasn’t ever struck me that he is more or less distractible than other kids his age. Anything that would distract him would be something that would be of interest to him- like cars, if there is an unusual car but not so much else.”
- Other

- Example: “Occasional … it’s not all the time.”

Themes for STI 9, Ratings of 2 and 1.

- Distractibility dependent on difficulty of current activity/interest in current activity
    - If child finds current activity to be difficult OR child is not interested in current activity, more likely to attend to extraneous sights and sounds (distractors).
    - Example: “It depends. When he is not really interested in the activity, he is very easily distracted. If he’s ‘into it’ he is not very distractible.”
- Reference to external regulation.
    - Adult assists child in maintaining attention to task. Adult redirects attention back to task and away from distractor, encourages child to persist on task, and/or refocuses child. Adult may use verbal or nonverbal monitoring or instruction.
    - Example: “Often sticks with the task…certainly if it’s an outside authority he would. If it’s me and it’s super difficult he may not persist and need help to do it.”
- Dependent on number of potential distractors in setting
    - Child more likely to become distracted in “busy” settings wherein multiple stimuli are present and/or many things are occurring at once.
    - Example: “Easily and frequently, 2, in part colored by some feedback I’ve gotten from his teachers because there’s more demands on his attention in that setting as opposed to home, and they are competing.”
- Very alert to/aware of everyday distractors.
    - Hyperawareness. Alert/aware to an atypical degree. Awareness of distractors intrudes on their current activity.

- Example: “Her attention is frequently drawn away by external stimuli. Like when she is reading her book and music will start playing in the background she will always stop and ask what is that about and she will stop focusing on what you are telling her at that time.”

- Distracted because of interest in distractor or emotion associated with distractor.
  - Child attends to distractor because he is more interested in distractor than original activity. OR Child attends to distractor because of strong emotional association with distractor (e.g. afraid of dogs, so attends to dog walking past window).
  - Example: “Like I said before, if he is focusing on something and he sees something else that seems more interesting he’ll typically be drawn away from what he was doing.”
- Focus improves/distractibility lessens with age.
  - As child gets older he becomes less likely to attend to potential distractors. He becomes more likely to persist on task and ignore distractors.
  - Example: “I think she’s becoming less distracted as she…especially from the beginning of the last school year to now. I think as she’s maturing with age she’s getting better with distractions. But she’s still…she’s kind of between a 2 and 3. I would say that she’s still frequently drawn away.”
- Anything will distract the child
  - Example: “Almost anything will make him distracted.”

Themes for STI 27, Ratings of 4 and 3.

- Comparison to sibling
  - Parent compares child and their skill sets to those of other siblings.

    - Example: “Sometimes when the older sister is studying at this side of the desk I just teach her and I let her sit down and read a book…and a book that her sister used before…yeah she’s pretty good. Just comparing him to my older kid, he is able to focus but does not tend to go on any longer than he really needs to. But he doesn’t often look for a quick way out of things- again because he is a pleaser and wants to do exactly what he is told to do.”
- Comparison to peer group
    - Parent compares child and their skill sets to those of other non-sibling children.
    - Example: “It’s difficult to keep her on focus to get your shoes, get your socks, and your coat on. But I think that’s pretty typical.”
- Poor duration if assigned
    - Child engages with task for short amount of time (or shorter than typical) if the task is one that has been assigned to him by another person. Implication is that child is not as interested in an assigned task as he might be in an unassigned task. He therefore limits duration of effort.
    - Example: “Lower than average, not sure if he’s lower than average for 4 yr old boy, but low for the household. His sister does, I don’t know if its gender differences, but I don’t know because they’re my only children and I don’t study kids, when he decided it was dirty and he cleaned his room he did it till it was done and didn’t want anyone to mess it up but if dad says clean up you have to tie him down and he’ll say that’s ok you do it for me.”
- Desire to please person who assigned task

    - Child persists on assigned task in part or in total due to a desire to make the assignor happy. Persists on task to gain positive reinforcement, encourage positive emotions from assignor.
    - Example: “But she constantly tries to please her mommy, she still spends time even if she doesn’t like to.”
- Reference to external regulation.
    - Adult assists child in keeping attention to task. Adult redirects attention back to task and away from distractor, encourages child to persist on task, and/or refocuses child. Adult may use verbal or nonverbal monitoring or instruction.
    - Example: “If I’ve asked him to clean up or something I usually have to watch and make sure and he’s doing it and if he stops and starts playing with something I have to remind him he’s supposed to be cleaning up and help keep him on task.”
- Interest in task determines speed of completion
    - Child rushes to complete tasks that he is not interested in. Interest may be explicitly described or implicit.
    - Example: “It depends if she is interested in the task or not but normally if I ask her to make a get well card for her grandfather or birthday cards she does it pretty quickly. She draws something and then she’s over with it.”
- Duration dependent on interest in task/task itself
    - When interested in task, child spends a longer time working on task. Child is more engaged when interested. Interest may be explicitly described or implicit.
    - Example: “Three. Still depends on the situation, if the task is interesting she will pay more attention; for uninteresting tasks, not as much.”

- Child attempts to negotiate task
    - Child talks with adult in order to change task demands/outcome, requirements for method of completion, timeline for completion, etc. Child attempts to regulate what task will "look like" and/or when it will occur.
    - Example: "About average, a 3, like with cleaning his room once he gets started he's absorbed but sometimes sit takes a half hour of negotiation to get started you know."
- Average with example
    - Short example that attests to normalcy or typicality of child's response without providing further detail regarding specific manifestation.
    - Example: "If I assign him to clean up a room, it's not going to be very long. So I say about average."
- Other
    - Example: "About average. Like things at home … about average … some days are better than others."

Themes for STI 27, Ratings of 2 and 1.

- Duration dependent on which adult monitoring task.
    - Child's willingness to persist on/stay with a task dependent on which adult is monitoring task. Child may show different levels of duration with different adults (e.g. parent as compared to teacher).
    - Example: "She will do it. It also depends on who gives her the task. If Mrs. X or Mrs. Y give it to her, who are mini goddesses in her eyes, she will get it done as she sees how it should be done. If I give it to her she'll get it done and do what she needs to do but she might not be that interested in it."

- Duration dependent on interest in task, in distractor, re-orient to task
    - Parent references both interest in task and interest in distractor in her response. Child is able to re-orient back to original task despite interest in distractor. Implicit or explicit reference to interest, re-orienting.
    - Example: “Stuff I’ve seen in her classroom or cleaning up at home where we have asked her to do things. She’ll work on it and focus on it but it doesn’t have that sort of intensity as if she decided to do it herself.”
- Desire to complete task when started
    - Child tends to finish what he has started regardless of interest (or without parent mention of interest).
    - Example: “Long attention span. Just because she will stick with that until it’s completed. Until she thinks it’s completed. She doesn’t get up in the middle of a task to leave it.”
- Other
    - Example: “She’s above average. Absorbed in what I told her to do is a stretch.”

Factor Two: Low Distraction From Emotional Investment

Themes for STI 16, Ratings of 5 and 4.

- Upset by departure from expectation
    - Child becomes upset due to a change in routine, a change in expected activity, loss of expected item, etc. Things don’t go as planned, child becomes emotional.
    - Example: “He likes a sense of order. He likes to know what’s coming up. So when it doesn’t happen he’s very disappointed.”
- Reference to external regulation/soothing

- Adult assists child in redirecting attention away from disappointment to new thoughts and/or activity. Adult encourages child to direct attention away from disappointment, to persist on new thoughts/task, refocuses child. Can be verbal or nonverbal monitoring or instruction.
- AND/OR- Adult provides soothing necessary for child to calm, be redirected from task.
- Example: "Seems kind of middle of the road but he does take longer than other kids. A long time is relative but I would say it's longer than the average kid from what I've seen. So, four. Like if we forgot his stuffed animal like on a recent trip and we said we can't go back and get it and he wouldn't be upset but it would be clear in his face that he was peeved. And when we would try to redirect the situation it would be clear on his face or he would say 'I'm still thinking about the stuffed animal. ' So it takes him a long time to move on."

- Upset characterized by long duration
  - Child requires a long amount of time to recover from disappointment. Reference to "long time," "takes a while," "needs time," etc. Recovery may be with or without adult assistance, self or adult directed distraction. Source of distraction may or may not be specified.
  - Example: "Many episodes I can think of. Because she gets upset by very small things. We just walk as a family and she wants to walk faster. And we turn around and say 'Bye Sarah' and she will start crying and will last like 10 minutes. She stays upset. It takes a long time."
- Upset by small things, minor issues.

- Child becomes disappointed by/upset over small issues. Emotion or duration may be disproportionate to event/issue.
- Example: "Can take a long time. Tends to overreact. Overreacted about balloon popping. Disappointed for a while, tried to calm her down.

Themes for STI 16, Ratings of 3.

- Intense emotional reaction
    - Child demonstrates a large emotional reaction (e.g. sad, mad, tantrums, crying) that is disproportionate compared to issue/event. It may be difficult for adult to soothe the child in this emotional state. May also be difficult for child to self-soothe.
    - Example: "This has been something that has happened this past week. He has been throwing tantrums, like putting himself on the floor, and was at a party on Saturday evening. It was time to go. He was having fun and didn't want to go and put himself on the floor."
- Long duration of emotion, requires time to self soothe/for self-directed distraction
    - Child requires a long amount of time to recover from disappointment. Reference to "long time," "takes a while," "needs time," etc. Child self-soothes in order to calm down, come to peace with situation or emotion. OR Child is able to initiate distractor independently in order to come to peace with situation. Distractor may be thoughts or new activity.
    - Example: "She has to kind of get herself settled down before she can redirect herself. That's part of why we don't tell her too far in advance about things we are going to do. Sometimes she and I stop at the farm on the way home and we

couldn't do that on Monday because it was raining, and it took her a while to settle down.

- Reference to adult directed distraction
    - Adult is the source of distracting thoughts or new distracting item/activity. May occur in conjunction with self-soothing/self-directed distraction. May also occur alone.
    - Example: "I'll give her a three and I'll go back to that band-aid example. When I give her some hugs and kisses and let her pick her band-aid she's onto something else."
- Needs time to settle before responsive to adult directed distractors
    - Child requires time to settle, self-soothe, or entertain emotions before being responsive to adult attempts at distraction and/or soothing.
    - Example: "Only after having a chance to settle down. I think it depends on what else is going on and how easily we can distract her."
- Depends on how adults approach child when upset, adult style
    - Child's capacity for distraction by adults depends on the adult. May be more likely or willing to become distracted by one adult than by another.
    - Example: "Only after having a chance to settle down. He tends to have a temper with things. If you tell him he has to do something than he won't do it. If you ask him nicely than he will do it. My father helps us with the kids while we are at work and he is really strict and so his response is very demanding and my child doesn't respond to this at all. My husband will make things more fun. Like when

he doesn't go to bed he will say I will race you upstairs. So he is distracted if it's put the right way."

- Other
    - Example: No narrative offered.

Themes for STI 16, Ratings of 2 and 1.

- Requires combination of self-directed and adult-directed distraction
    - Both adult directed and self directed distraction are referenced in response. Distraction may consist of distracting thoughts or new item/activity.
    - Example: "Pretty much if you explain the situation and you let her settle down on her own."
- Comparison to siblings. Unexpected change in mood
    - Reference or comparison to siblings in the response. Child's mood changes quickly and without notice or apparent cause.
    - Example: "I'll say two. You feel like he's not going to. There's nothing you can say that will make him ok, but then all of a sudden it's all better. There's no in between really, which is so completely opposite from his sister. With her it is a point and can go on for hours."
- Moves on quickly without adult directed distraction
    - Child entertains difficult emotion for short or less than expected amounts of time. Child self-soothes in order to calm down, come to peace with situation or emotion. OR Child is able to initiate distractor independently in order to come to peace with situation. Distractor may be thoughts or new activity.

    - Example: “If he gets upset, like we’re in the store and can’t get something that he wants. He’s upset for a minute and then he’s fine with it.”
- Moves on quickly with adult directed distraction
    - Child entertains difficult emotion for short or less than expected amounts of time. Adult is the source of distracting thoughts or new distracting item/activity. May occur in conjunction with self-soothing/self-directed distraction. May also occur alone.
    - Example: “When she is watching the cartoon and you turn it off she might be upset for a little bit. But tell her you want to read a book with her or do something with her and it will make it better.”
- Easily switches to new activity without intense reaction. No reference to self or adult directed distractor
    - Child does not demonstrate intense disappointment or other intense emotion. Easily able to move on from disappointing activity/object/thought to new activity/object/thought. No mention of self-directed or other-directed distractor. Thus, unclear where the distractor originated.
    - Example: “He’s pretty resilient, he bounces back pretty quickly.”
- Other
    - Example: “After a short time.”

Themes for STI 11, Ratings of 5 and 4.

- Moves on quickly with adult directed distraction- activity or object

    - Child entertains difficult emotion for short or less than expected amounts of time. Moves on with limited or no protest. Adult is the source of distracting object or activity. May occur in conjunction with self-soothing, self-directed distraction.
    - Example: “Totally responsive to alternative. He might pout for a second but then accept something else.”
- Moves on quickly with adult directed thoughts/conversation/explanation- not activity/object
    - Child entertains difficult emotion for short or less than expected amounts of time. Moves on with limited or no protest. Adult is the source of distracting thoughts or explanation. May occur in conjunction with self-soothing, self -directed distraction.
    - Example: “Let’s say you have a situation where he’s supposed to get a piece of cake but they find out they don’t really have any left or something. He might cry for a minute but then you talk to him and he’s adaptable.”
- Dependent on intensity of emotion and level of interest in alternate thoughts/object/activity
    - If child is exceptionally distressed, more difficult to distract with thoughts/object/activity. If child is interested in alternate, more easily distracted.
    - Example: “Most of the time she is a four but if it is something she really wants then it can be a three and be more difficult.”
- Distractibility dependent on energy level of child
    - More irritable, more difficult to distract when tired.

- Example: “Most times it varies by how tired he is. On a good, rested day it’s very easy to kind of distract him and he doesn’t stay upset long at all.”

- Needs to negotiate/bargain
  - Child talks with adult in order to change task demands/outcome, requirements for method of completion, timeline for completion, etc. Child attempts to regulate what task will “look like” and/or when it will occur.
  - Example: “She’s very good at bargaining. So she very easily slips into the bargaining game.”
- Moves on easily, no reference to type of distractor, self or adult directed thoughts or activity
  - Child entertains difficult emotion for short or less than expected amounts of time. Distractor not referenced or origin of distractor (self or adult) not referenced.
  - Example: “If she is upset, she is very easy to get back on track.”
- Other
  - Example: “Usually fairly easy.”

Themes for STI 11, Ratings of 3.

- If interested or engaged in original activity, child has more difficulty moving on.
  - If interested in original activity child struggles to let go of difficult emotion. Not easily distracted by alternate.
  - Example: “It depends. Mildly difficult. Say there is an activity she wants to do and she’s disappointed in that alternative. It’s going to be difficult.”
- Ability to move on dependent on interest in distractor

    - Child attends to distractor because more interested in distractor than original activity.
    - Example: “Mildly difficult. He doesn’t, you have to offer something good like a treat and it has to be offered a couple time times if he’s really upset.”
- Reference to adult directed distraction
    - Adult is the source of distracting thoughts or new distracting item/activity. May occur in conjunction with self-soothing/self-directed distracted. May also occur alone.
    - Example: “It really depends on how upset and how disappointed. Not much problem with that. I could substitute that disappointment. If she is frustrated by not getting to see the next TV program, Cyberchase, and she wants to watch Dragontails. I don’t think she should watch TV for that long and I tell her we should read a book and she accepts that.”
- Distracted by object/activity
    - Generic. Moderately easy to distract with alternate. No reference to level of interest.
    - Example: “Last night she was really tired and it was bedtime and she decided she was hungry and wanted pizza. I think it was a distraction because she didn’t want to go to bed. I told her no because it was too late, but that she could have milk. I told her she could have milk now and pizza later in her lunch and she eventually had some milk and went to bed.”
- Emotions change very quickly

    - Child may recover from disappointment very quickly and possibly without warning or reference to alternate.
    - Example: “Easier than his sister. I’d say 3 mildly difficult to distract him. With him it seems like you’ll never be able to distract and then all of a sudden the switch flips and he’s like ‘Ok I’ll do it.’ He doesn’t warm up to it slowly.”
- Upset characterized by long duration
    - Child requires a long amount of time to recover from disappointment. Reference to “long time,” “takes a while,” “needs time,” etc. Recovery may be with or without adult assistance, self or adult directed distraction. Source of distraction may or may not be specified.
    - Example: “If he is really upset or disappointed it takes a little while to shift. So I think he’s kind of in the middle there.”
- Dependent on intensity of emotion
    - If child is exceptionally distressed, more difficult to distract with thoughts/object/activity.
    - Example: “Depends on the how upset he is I suppose. It seems like the older he’s getting, the more difficult it is.”
- Attends and reacts to levels of adult frustration
    - Child may initially be difficult to distract. However, recognizes rising levels of adult frustration and becomes more willing to acquiesce to adult suggests regarding new thought/object/activity.
    - Example: “She would insist. It’s basically how much I insist. She will never just go if I say let’s try something different. It depends. She can sense how mad I am.

If she senses I'm hesitating then she'll be more persistent and she'll probably get it."

- Comparison to siblings
    - Reference or comparison to siblings in the response.
    - Example: "Easier than his sister. I'd say three, mildly difficult to distract him. With him it seems like you'll never be able to distract and then all of a sudden the switch flips and he's like, 'Ok I'll do it.' He doesn't warm up to it slowly."
- Other
    - Example: "This is highly variable. I would say a 3. Because it varies so much. Sometimes easy sometimes difficulty."

Themes for STI 11, Ratings of 2 and 1.

- Difficult to distract, needs time to calm
    - Child needs time to experience disappointment before becoming amenable to adult or self-directed distraction. Needs time to calm before can be distracted by thought/object/activity.
    - Example: "You have to deal with his emotions on it first."
- Difficult to distract, big emotional reaction
    - Child experiences intense emotion that is atypical or inappropriate given issue/event. Child is difficult to distract. May reference adult directed distraction or self-directed distraction by thoughts/object/activity.
    - Example: "The tantrums and kind of situations or states that she gets herself into are very self-reinforcing."
- Distractor needs to be better than original activity

    - Child more easily distracted if they enjoy the distractor more than the original activity.
    - Example: "He generally has a good sense of what he wants and has a pretty sophisticated way of reasoning so you have to be smart about how you convince him that something is better than something else. He kind of tests us. It's hard for us. It's not impossible but you can't just say anything. You have to think of something good."
- Reference to adult directed distraction
    - Adult is the source of distracting thoughts or new distracting item/activity. May occur in conjunction with self-soothing/self-directed distracted. May also occur alone.
    - Example: "He generally has a good sense of what he wants and has a pretty sophisticated way of reasoning so you have to be smart about how you convince him that something is better than something else. He kind of tests us. It's hard for us. It's not impossible but you can't just say anything. You have to think of something good."
- Depends on who is attempting distraction
    - Child's capacity for distraction by adults depends on the adult. May be more likely or willing to become distracted by one adult than by another (e.g. parent vs teacher).
    - Example: "Depends who you are. It's very interesting related to this distraction/attention thing. When we had the parent-teacher conference. At home I'll go, 'Oh my god, does she have ADD?' But at school they say she has no

trouble focusing. So I don't know if it's just the environment or I don't really think she has ADD. She does flit from thing to thing. For me not very easy. Two. If I'm responding just from my own perspective. An example would be if I tell her she can't eat the candy in the morning she will cry, freak out, kick, and it's hard to get her out of that."

- Comparison to peer group
    - Parent compares child and their skill sets to those of other non-sibling children.
    - Example: "When sad, is he 100% focused on that. I tell him to breathe and relax, so we can talk and figure out what is going on. First it was tantrums and then I would just say, 'I don't know what you are talking about until you relax and take a deep breath and then we can talk about it.' And then we can talk. If it's something he can't do like jumping off the roof then I explain to him why he can't do that and he might pout and whimper a bit until he lets it go. It does take him a while to let go but I still think it takes longer that his peers. He makes a bigger deal over something that a peer might be miffed about he'll have histrionics. 'It's just the end of the world, I'm so sad, you aren't using kind words.' But at least we're having a conversation about that when before it was all behavior. Yelling, hitting biting. Very physical things when he's frustrated. Now at least he's having a conversation."
- Other
    - Example: "Difficult. Hard to get her focused."

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