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# Emotion Knowledge and Language Skills: Contributions to Social, Behavioral and Academic Outcomes in Kindergarteners

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Emotion Knowledge and Language Skills: Contributions to Social, Behavioral and  
Academic Outcomes in Kindergarteners

A thesis presented by

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To the Department of Psychology

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# LANGUAGE, EMOTION KNOWLEDGE, and ADJUSTMENT

## Abstract

This study examined emotion knowledge and language skills in kindergarteners, and how these skills jointly affect children's overall social, behavioral and academic functioning. Participants included 60 kindergarteners from a language and literacy-enhanced early childhood school, who were individually interviewed using the Kusche Affective Interview-Revised. Additionally, all participants' expressive and receptive language skills were tested using the Peabody Picture Vocabulary Test (PPVT) and the Expressive One-Word Vocabulary Test (EVT). Participants' language and emotion knowledge scores were then compared to social, behavioral and academic performance as noted in the school's teacher-rated report card. Preliminary analyses indicated positive correlations between language skills and emotion knowledge. Additionally researchers found positive correlations between language skills and some areas of academic success, especially for expressive language skills. Some aspects of emotion knowledge were related to school success, but contrary to predictions, emotion knowledge could not predict above and beyond language skills in the academic and behavioral domain. Socioeconomic comparisons found significant multivariate differences between language skills, but only weak evidence of emotion knowledge score differences and report card differences. Findings suggest positive effects of language and literacy enhanced preschools to help close the gap between socioeconomic groups. Furthermore, due to the observed relationship between language skills and emotion knowledge, these findings support the need to control for language skills whenever studying emotion knowledge in the future.

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Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables.....	v
List of Appendices.....	vi
Introduction.....	6
Methods.....	32
Results.....	37
Discussion.....	49
References.....	58
Appendices.....	69

## LANGUAGE, EMOTION KNOWLEDGE, and ADJUSTMENT

### List of Tables

Table 1: Descriptive Statistics for Language and Emotion Measure.....	39
Table 2: Factor Analysis for Work Habits and Attitudes.....	40
Table 3: Correlations Between Emotion Measures.....	41
Table 4: Correlations Between Academic Scores.....	43
Table 5: Relationship Between Language Measures and Emotion Knowledge Measures.....	44
Table 6: Relationship Between Language/Emotions and Academic Outcomes.....	46

List of Appendices

Appendix A: Cover Letter.....	69
Appendix B: Consent Form.....	70
Appendix C: PPVT Sample Page.....	73
Appendix D: EVT Scoring Sheet.....	74
Appendix E: Emotion Naming.....	75
Appendix F: Emotion Identification Sample Page.....	76
Appendix G: Emotion Explanation.....	77
Appendix H: Report Card.....	78
Appendix I: Debriefing.....	79

**Overview**

From a very young age, children learn how to socially navigate through their world; however, there are many subtle and intricate skills required for a child's successful social existence. In order for children to have positive social interactions they must establish the elements necessary for those interfaces. According to recent research, two important elements for successful interactions in typically developing children, are adequate verbal skills, and an understanding of the mental and emotional state of the person with whom they are interacting (Saarni, 1999). Past researchers have theorized that children with deficits in one of these relevant skills may have diminished social, behavioral, and academic success (Izard 1971; McCabe & Meller, 2004).

Researchers have defined emotion knowledge as the ability to discriminate emotions, detect and name emotional expressions and understand emotions indicated in others' behavior (Sullivan, Bennett, Carpenter, & Lewis, 2008). Research suggests that emotion knowledge plays an important role in social adjustment, as well as social and emotional competencies (Izard, 1971; Izard, et al., 2008). While many researchers have observed the relationship between emotion knowledge and greater social functioning, relatively few have examined how emotion knowledge and language skills jointly relate to children's overall social, behavioral, and academic success.

The purpose of this thesis was to examine the development of emotion knowledge in conjunction with language skills in kindergarten children, and how they link to social, academic, and behavioral functioning. Past research has found relationships between emotion knowledge and language development (Izard et al., 2008), as well as connections between language development, emotion knowledge, and social adjustment. However,



many studies of language and emotion examine receptive language skills alone and few examine multiple dimensions of both language skills and emotion knowledge (Vander Meulen & Janssen, 1997). Just as there are many aspects to emotion knowledge, there are multiple aspects of language, and a better understanding of the development of both sets of skills will take these multiple aspects into account.

This introduction will review and reflect on some of the more recent research on emotion knowledge and language development in children to develop a foundation for the present study. First emotional competence and its component skills will be described, with an emphasis on emotion knowledge and understanding. Next, the literature on language development will be examined with particular attention to expressive and receptive skills, which may be prerequisites for successful development of emotion competence. This introduction will then discuss how the two separate developmental dimensions are interrelated. There will be a specific emphasis on the negative outcomes associated with disrupted development of emotion understanding and language, as well as a focus on some of the benefits of intervention. Finally, the present study will be described. The present study uses specific measures of receptive and expressive emotion knowledge, to gain greater insight into how the different dimensions of language development relate to several aspects of emotion knowledge/understanding, and then how language and emotion knowledge relate to academic, social, and behavioral functioning.

### **What is Emotional Competence?**

Before discussing emotion knowledge, it is important to understand the broader term, emotional competence. Over the past several years, there has been a growing interest in emotional competence in children. This attention may be linked to the broader

interest in emotional intelligence in adults and the long-standing interest in the social competence in children. According to Carolyn Saarni (1999), emotional competence refers to the “skills needed to be self-efficacious, particularly when we are in emotion-eliciting social transactions” (p. 4). Many psychologists have noted the positive effects of children’s successful development of emotional competence. For example, researchers have found that children who enter kindergarten with more positive profiles of emotional competence have more success in developing positive attitudes about school, and gain higher academic achievement upon school entrance than children with lower emotional competence (Denham, 2006). By developing and maintaining emotional competence, a child is more likely to be successful in both social and academic domains, including sustained positive engagement with peers (Denham, 2006), as well as exhibit more advanced cognitive development, pre-academic achievement, school readiness, and school adjustment (Blair, 2002; Carlton & Winsler, 1999; Greenberg & Snell, 1997). According to C. E. Izard, emotional competence during the preschool years predicts later academic competence even after controlling for the effects of verbal ability (Izard, 2002). On the other hand, deficits in emotional competence during early childhood may be used as a predictor for children’s later social and behavioral problems (Denham et al. 1990; Dodge & Somberg, 1987; Schultz, Izard, & Ackerman, 2000). Examination of these studies demonstrates the impact that emotional competence can have on children throughout their social and academic careers.

Emotional competence can and should be differentiated from the broader concept of social competence. Despite the interconnectedness between social and emotional competence, they are identified in the literature as two separate constructs (Denham,

et.al., 2003). Researchers have described in great detail the components of social competence, which include a child's social, cognitive, and emotional capabilities (Rubin & Ross, 1988). Emotional competence therefore contributes to the overall level of an individual's social competence. In essence, the effects of emotional competence on social competence are seen in the child's ability to negotiate throughout interpersonal exchanges (Saarni, 1999). The two concepts are so complexly intertwined that many researchers have found it necessary to carefully delineate the varying elements of emotional competence and how they work together to foster a socially successful experience.

Much like the concept of social competence, emotional competence is described as an umbrella term for several distinct emotional dimensions. Prominent emotional competence researchers have classified emotional regulation, emotion expressiveness/recognition, and emotion knowledge as the three components of emotional competence (Buckley & Saarni, 2009; Denham et al. , 2003). They explain that all three aspects are interrelated, but that each makes a unique contribution to overall functioning. Many researchers have discussed how each component is a central predictor of mental health and well-being, starting at pre-school and continuing throughout the years (Denham et al., 2003). Young children who are able to utilize these components are in a good position to continue thriving in the social world. Each of these central components will be examined in turn.

### **Emotion Regulation**

Emotion regulation refers to the ability of a child to regulate his/her emotions based on environmental demands (Denham, et al., 2003). Children master emotion

regulation once they are able to control their internal and external affective experience, across the range of all human emotions, in order to achieve social goals (Buckley & Saarni, 2009). Stefan (2008) describes this as 'effortful control,' meaning "the ability to inhibit a dominant response in order to perform a subdominant response" (p. 287). Simply stated, children must learn to control their emotional responses and portray socially appropriate responses. For example, it is not uncommon to see a child in a grocery store upset and throwing a tantrum. Once those children master the skills of emotion regulation, and understand how they are expected to act in public places, they will be able enact modulated responses to frustrating situations.

As a child develops emotional regulation becomes increasingly necessary due to the ever-growing complexity of children's emotionality, paired with increasing demands of the social world. The process of acquiring emotion regulation is gradual however; and its benefits allow children to adjust their behavior and convey their emotions in a socially acceptable manner. Although the importance of emotion regulation is undeniable, it has been heavily researched in relation to behavioral and academic adjustment (Hubbard & Dearing, 2004) therefore more attention will be focused in this thesis on the other components of emotion competence.

### **Emotional Expression/Recognition**

Another component that falls under the umbrella term of emotional competence is emotional expression/recognition. Emotional expression/recognition refers to a child's awareness of emotions and ability to communicate his/ her emotions to others. Skills involved in this component are the ability to label an emotion and recognize emotion based on its verbal label (Stefan, 2008). Additionally, the process of emotion recognition

requires children to effectively divide their attention and focus their gaze on all provided relevant information, including speech, facial expression and body gesture (Kuusikko et al., 2009). Many psychologists have taken a functional perspective on expressive emotion, which “conceptualizes emotions as relational constructs defined by two coterminous aspects (appraisals and action readiness tendencies) that poise an individual to interact with the environment” (Dennis, Crole, Wiggins, Cohen, & Zalewski, 2009, p. 520). While Stefan (2005) has indicated that the majority of normal developing children acquire these skills by the age of 5, others (Kuusikko et al., 2009) believe that the interpretation of emotions is fully achieved only when a child reaches 10 or 11.

Children who fail to develop strong emotional expression/recognition skills may struggle with peer relationships, especially during the preschool years. Inability to identify emotions can serve as a predictor for difficulties in maintaining positive social interactions. For example, research has shown that some children’s aggressive behavior can be an indirect consequence of an incorrectly recognized social cue (Stefan, 2008). Similarly, deficits in children’s emotional expression may result in poor social interactions. The primary use of emotional expression is to achieve goals within a setting (Campos, Mumme, Kermoian, & Campos, 1994), however in order to achieve their goals, children have to send affective messages in accordance with the social context (Denham, 2007). For example, asking a peer to share a toy is a common preschool challenge. Expressing such a request with an inappropriate emotion, such as anger, can be detrimental to fragile new relationships. Additionally, children who exhibit higher levels of negative emotional expressiveness have been found to express low levels of empathy and pro-social behavior (Denham, 2007). Research such as this exhibits the value of

preschoolers developing emotional expression/recognition, and how these skills can influence children's broader social and behavioral functioning.

### **Emotion Knowledge**

The third and final aspect of emotional competence is identified as emotion knowledge, which is the primary focus of the current study. Researchers have defined emotion knowledge as the ability to discriminate emotions, detect and name emotional expressions, and understand emotions indicated in others' behavior (Sullivan, Bennett, Carpenter, & Lewis, 2008). There have been a variety of findings about the developmental course of emotion knowledge. Many researchers view emotion knowledge as a multifaceted ability that allows a cohesive social interaction to take place.

The first step of emotion knowledge is noticing emotion signals given by others (Halberstadt et al., 2001) such as facial expressions. Research has shown that as early as infancy children comprehend various facial expressions, and use them as the main source for identifying emotional states in others (Meltzoff & Moore, 1977). According to one study, infants as young as 10 months were capable of differentiating facial expressions (Haan, Blesky, Reid, Volein, & Johnson, 2004). Identification of facial expression generally tends to develop first in children. Then as development progresses, children are able to identify more abstract displays of emotion, such as body gestures. The identification of body gesture may seem like a simple task, however most children do not acquire the ability to notice abstract emotional signals until between the ages of 2-4 ½ (Denham, 2006). Once children have learned to identify an abstract display of emotion, they must be able to label the emotional expression verbally and nonverbally. During this developmental period, children learn all the varying types of positive and negative

emotions, which can be confusing. Only gradually do children begin differentiating between the different negative emotions (e.g., anger, sadness or fear). Until they have a concrete understanding of the negative emotions, they tend to confuse them, using negative emotional words interchangeably (Denham & Couchoud, 1990; Fabes et al. 1991) For example, children commonly say they feel sad when in fact they feel angry.

Once children have mastered the ability to label isolated expressions of emotion, they must then learn how to correctly identifying emotion-eliciting situations (Denham, 2006), however this too is a process. Similar to the development of emotion labeling, research has shown that preschoolers tend to have better understanding of situations that evoke positive emotions than negative emotions. One study conducted by Fabes, Eisenberg, Nyman, and Michealieu (1991), recruited trained coders to observe kindergarteners in their classrooms interacting with each other. Whenever researchers observed an emotional situation taking place, they conducted a brief interview with the child “witnesses” to find out if children understood their peer’s emotional reaction, and specifically what cues they used to identify the peer’s emotion. This study was meant to test children’s ability to appraise others’ emotional states during emotional interactions. The findings of this study suggest that in naturalistic settings, young children's tendency to rely on one type of information may depend on the specific emotional response, its intensity, and the relative salience of available cues. Developmentally, this conclusion suggests that young children may prefer to use the more salient cues regardless of the type of cue (e.g., expressive vs. situational).

Children become truly advanced once they are capable of combining two forms of emotion knowledge, both comprehending cues and identifying emotional-eliciting

situations (Fabes et al., 1991). Additionally, children will be capable of describing mental states and internal experiences in their definitions of emotional states (Cook, Greenberg, & Kusche, 1994). After children have mastered combining these two forms of emotion knowledge, they will be capable of manipulating their emotions and how they are expressed. Combining the forms of emotion knowledge is relevant because the ability to make or hide an emotion, or understand the possibility of having a mixed emotion (i.e., feeling more than one emotion at a time) are advanced skills that rely on emotion knowledge (Denham, 2006). Studies have shown that such complex understanding of emotions is not present until later childhood (Arsenio, Cooperman, & Lover, 2000).

The development of emotion knowledge is especially relevant during the preschool years because studies have shown that children who understand emotions are more likely to have a cohesive relationship with teachers and peers than are children who lack this understanding (Denham, 1986; Denham et al., 1990; Stayer, 1989). Similarly, recent findings have indicated that strength in children's emotion knowledge can serve as an indicator of better outcomes for their social functioning, including social status and peer experiences (Miller, Gouley, Seiffer, Zakriski, & Eguia, 2005). On the other hand, poor emotion knowledge skills have been related to lower academic functioning and disruptive behavior problems (Cook, Greenberg, & Kusche, 1994).

### **Expressive/Receptive Language: Development and Usage**

Humans are social beings by nature. In every society, there is a practical necessity for humans to learn language in order to communicate with the fellow humans. Over the past 50 years, researchers have examined the interplay between social interactions and language use and development (Chomsky, 1965). While some theorists believe that



language acquisition is natural (Vygotsky, 1962), others think that the process is a more complex one, that depends on elements that children encounter in their social world (Chomsky, 1965). While Chomsky and Vygotsky have extremely different views on language development, both their theories can help researchers appreciate the complex processes involved in language acquisition. Once established, many psychologists have come to view language structure as an input and output system (Riley, 2008), meaning that speakers must comprehend and process the information that is being presented to them (i.e., input), and then respond accordingly (i.e., output). The skills that support this input/output system are more formally described as receptive language skills, and expressive language skills.

Receptive language skills represent a child's ability to understand the language that is being presented to them. Language reception requires children to utilize their auditory and cognitive processing skills to comprehend others' speech (Wasic, Bond, & Hindman, 2006). Over the course of growth, children experience large variation in terms of the quantity and quality of speech to which they are exposed. Due to these variations, it is difficult to create a comprehensive model of how experience shapes language development (Anderson, Moffat, & Sapiro, 2006). Many researchers, however, have sought to determine how differences in children's exposure to vocabulary contributes to their understanding of language.

Research by Huttenlocher, Haight, Bryk, Seltzer, and Lyons (1991) specifically focused on the number of words/minute that mothers spoke to her children. Results from this study indicated that the density of maternal input serves as one of the best predictors of the rate of vocabulary growth in middle-class children. Additionally, research has

shown that the context in which words are expressed to children can affect how well the children retain the vocabulary. For example, children who are exposed to more sophisticated vocabulary in contextually supportive situations, such as book reading, learn to recognize vocabulary more quickly (Feitelson, Goldstein, Iraqi, & Share, 1993). Studies such as this are relevant because they exhibit how the quality and quantity of children's language input can positively relate to both their reception/comprehension and their output abilities. For example, one study, conducted by Weizman and Snow (2001) found that there is a strong positive relationship between the density of exposure to sophisticated vocabulary and the child's expressive vocabulary skills.

Expressive language refers to a person's ability to verbally respond to others. As mentioned previously, receptive language development and expressive language development often are mutually reinforcing. One study found that infants who recognize speech segmentation (i.e. differentiating between words rather than merely recognizing a stream of speech) were found to have significantly better early expressive language skills (Newman, Bernstine-Ratner, Jusczyk, Jusczyk, & Dow, 2006). Some may argue that this early expressive language begins with undifferentiated vocal play during infancy. Typically, an infant's first attempt at "speech" is a combination of indistinguishable babble (Stark, 1969). Only gradually does the child begin to label objects and events appropriately using words. Most verbal representations begin with single word labeling (i.e. truck, cup, bird etc.), and gradually children are capable of stringing their words together to make sentences (Stark, 1969). Researchers have found that children who have the opportunity to practice their verbal skills tend to have better expressive vocabulary. One study conducted by Wasic, Bond and Hindman (2006) found that, once mothers

were encouraged and trained to converse frequently with their preschoolers, that the children showed significant improvements in their vocabulary. By strengthening their verbal responses, children are better able to investigate and navigate through their environment (Wasic et al., 2006).

A balance of expressive and receptive language skills is necessary for successful interaction. Eventually a child will begin utilizing their expressive and receptive language skills to produce and comprehend more complex forms of speech, such as sentences and phrases, and to engage in conversation (Stark, 1969). Words serve as building blocks for responses and the child's understanding of the verbal symbol is judged by the appropriateness of his/her response, use, and comprehension. Once a child has become more advanced, he/she will be able to utilize verbal thought processes to organize hierarchies, and eventually achieve abstract levels of thinking, where symbols alone are the referents (Stark, 1969). For example, once children have mastered the art of language, they will be able to speak about events that are not readily present, including past and future occurrences. Additionally, acquiring advanced expressive and receptive language skills has proven especially beneficial for the purpose of school readiness. For example, a longitudinal study, conducted by Justice, Bowles, Pence-Turnbull, and Skibbe (2009) indicated expressive and receptive language skills serve as a leading predictor for kindergartener's school readiness, including their literacy, mathematics and social skills. By examining the development and function of these skills, researchers can observe children's varying levels of receptive and expressive language skills, and how they work in conjunction with emotion knowledge to determine children's broader social, behavioral and academic outcomes.

**Relationships between Language and Emotion Knowledge**

After separately examining the complex constructs of language and emotion knowledge, it is important to see how the two separate entities work in conjunction to contribute to children's social experiences. According to Cutting and Dunn (1999), "Some children are blessed with cognitive and language skills that allow them to better understand their social world, including the emotions within it, as well as to better communicate their own feelings, wishes, desires, and goals for social interactions and relationships." Several studies have shown that children who possess those skills may be better able to successfully navigate through their preschool environment.

One study conducted by Denham et al., (2003) showed that children between the ages of three and four, with greater expressive verbal abilities can ask more pointed questions about their own and others' emotions, giving them the advantage in understanding, dealing with and expressing their own emotions. Another review written by Raver (2007) notes multiple studies that found that children with higher verbal skills will likely do better on emotion knowledge measures. As a result, often when investigating emotion knowledge as it relates to other skills, researchers are required to control for language so as not to let it become a confounding variable in the study. For example, one study conducted by Cassidy, Werner, Rourke, Zubrnis, and Balaraman (2003) observed the relationship between emotion understanding and positive social behavior and results indicated that, after language was partialled out of the relationship, many of the significant correlations disappeared. Cassidy et al.'s (2003) study indicates how important it is to attend to the relationship between emotion knowledge and language skills when conducting research. Its important to note, however, that some

researchers have found that emotion skills can predict above and beyond language skills. For example, some studies have indicated that a strong relationship exists between positive peer interactions and peer acceptance (Denham, McKinley, Couchoud, & Holt, 1990). These conflicting views lead many to believe that further research is necessary to understand the exactly how language and emotion work together to predict children's broader outcomes.

This interrelationship is unsurprising for some researchers, because they (Saarni, 1999) argue that language development serves as an essential building block for emotion knowledge and provides a means for representing emotional experiences. Saarni (1999) states that, "by having access to [verbal] representations of our emotional experiences, we can further elaborate on them, integrate them across contexts and compare them with others' representations about emotional experience" (p. 131). By examining the relationship between emotion knowledge and language it becomes evident that the interplay between these two separate skills is crucial for children's greater functioning.

### **Deficits in Language Skills or Emotion**

When the healthy development of either emotion knowledge or language skills are disrupted in any way, then children may have several difficulties as a result. There are multiple factors that can contribute to deficits in children's language and emotion knowledge development.

One known risk for speech and language impairment is low socio-economic status (SES). Children living in low-income households are at an increased risk for a host of different problems, including poor achievement in language (Qi et. al., 2003; Spitz, Tallal, Flax, & Benasich, 1997). According to Qi and colleagues, (2003) the language

scores for children living in low-income households are generally lower than those in higher-income households. Such language impairment is often present, despite children having normal hearing and nonverbal intelligence (Spitz et al., 1997). Due to the children's seemingly normal nonverbal abilities, it leads one to believe that the environment is playing a significant role in their language acquisition.

The environmental context in which a child is raised has long been recognized as an influential factor in their development. Multiple studies have noted that children in low-income households are exposed to a far greater number of environmental risk factors than those in higher-income households (Evans & English, 2002). Some of the identified risk factors for language delays in children with low SES include single parenthood, poor quality of day care, poor parent-child interactions and stressful life events. One study found that 80% of children of low SES are exposed to two or more risk factors for language development delays (Stanton-Chapman, Chapman, Kaiser, & Hancock, 2004). Studies have repeatedly found that children with low-SES perform significantly worse on various cognitive and linguistic measures (Robertson, 1998; Stanton-Chapman et al., 2004). As the number of risk factors increased, the language score decreased. One study conducted by Stanton-Chapman and colleagues (2004) found that children who were subjected to five or more of the risk factors prevalent in low-income households, fell into a low language functioning group.

Children's emotion knowledge also appears to be influenced by risk factors, including SES (Raver et al., 2007). Psychologists have noted that research on social and emotion knowledge as it relates to income is relatively sparse (Izard, 2008). However, trends in research show that children in lower SES households perform more poorly on

measures of emotional understanding (Cutting & Dunn, 1999). Other research indicates that children with lower SES are at significantly higher risk for emotion regulation problems (Gilliom, Shaw, Beck & Schonberg 2002).

Other risk factors have also been shown to influence children's development of emotion knowledge as well. For example, children who experience parental neglect have consistently poor levels of emotion knowledge over time compared to those who have not experienced neglect (Sullivan, Bennett, Carpenter & Lewis, 2008). Additionally, exposure to violence can affect children's understanding of emotions. For example, one study conducted by Pollak and colleagues, found that children who had experienced physical abuse were highly accurate at when identifying expressions of anger, however they were they were less likely to detect receptive emotions of sadness or happiness (Pollak, Cicchetti, Hornung, & Reed, 2000). Some psychologists speculate that this is due to the fact that neglectful and abusive mothers are less responsive to children's emotions, and provide them with limited emotion vocabulary, thus providing a poor environment for learning emotions (Sullivan et al., 2008). Studies such as this provide ample evidence that poverty-related stressors can lead to significantly heightened risk for behavior problems mediated by emotion regulation difficulties (Raver, Garner, & Smith, 2007).

### **The Relationship of Emotion Knowledge and Language Skills to Social, Academic & Behavioral Outcomes**

As noted previously, there are several benefits of supporting children to have highly developed emotion knowledge and language skills. Psychologists offer an abundance of research to suggest that children's emotion knowledge and language skills have a direct effect on their social, behavioral and academic functioning.

**Emotion Knowledge.** According to Denham, “Children who can identify the expression on a peer’s face or comprehend the emotions elicited by common social situations are more likely to react pro-socially to peers’ displays of emotion” (Denham et al. 2003, p. 239). These findings arguably suggest that preschoolers can have solid conceptions of the consequences of emotions for both self and others (Denham, 2006). Children with strong recognition and understanding of emotion knowledge have an advantage when they first enter school because children who are better able to send and receive emotional messages and are also better equipped to negotiate interpersonal exchanges and sustain successful social functioning ( Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1990). Therefore, it is evident that the skills involved in recognizing an emotion, or emotional situations, affect the social life of the child.

Other studies have found a relationship between emotion knowledge and both prosocial behavior and peer status (Denham 1986; Denham et al., 1990; Denham and McKinley, 1993). This is relevant because pro-social behavior can lead to positive outcomes for children when they first enter preschool, while lower social skills are a potential source of children’s behavioral problems (Hancock, Cai, Foster, & Hester 2000). Fabes and colleagues observed how the spontaneous use of emotional language in preschoolers can be used as a predictor for higher quality peer interactions and greater peer acceptance (Fabes, Eisenberg, Hanish, & Spinrad, 2001). Similarly, a study by Miller and colleagues (2005) noted that children’s measured emotion knowledge was related to their over all social status and self-reported experiences with peers in their school. In particular, kindergartners and 1<sup>st</sup> graders who had greater emotion vocabulary and emotion recognition skills had better social functioning at school (Miller et al., 2005).



Additionally, studies have found that emotion knowledge not only affects social acceptance, it also can translate into academic success. There is evidence suggesting that children with varying levels of emotion knowledge have cognitive and neuropsychological differences. For example, one study found that high IQ was correlated with higher emotion knowledge scores in preschool-aged children (Sullivan, Bennett, Carpenter & Lewis, 2008). Furthermore, according to motivational and goal-appraisal theories of emotion, children who have a heightened understanding of positive emotions have higher persistence in completing academic related tasks (Ford, 1992; Schultz et al., 2000). On the other hand, many psychologists argue that deficits in children's emotional knowledge hinders their ability to learn. Some hypothesize that children's knowledge of their own and others' emotions indirectly affects the experience of their learning environment. Many believe that the social contexts of learning may seem baffling and upsetting to a child who has difficulty reading emotional cues (Schultz et al., 2000). Clearly, given the centrality of emotional competence to social and academic adjustment, deficits in this domain can serve as predictors for later social and academic difficulties (Denham, 2002).

**Language.** Because the process of acquiring language skills is so developmentally important, disruption in the developmental process can be detrimental to a child. It is important to note that, in their definition of social competence, Marshall and colleagues, base their description on the assumption that there are no communication impairments that might jeopardize the subjects' social success (Marshall, Hightower, Fritton, Russell & Meller, 1996). Marshall and others believe that children with language impairments are less proficient at communicating their emotions and therefore likely to

be perceived as less emotionally competent (Marshall, Hightower, Fritton, Russell & Meller, 1996).

A study conducted by McCabe and Meller (2004), not only demonstrated the communication deficits of children with SLI, but also showed that children's impairments often relate to emotional difficulties. One study found that children with SLI exhibit less assertive empathetic responding. These findings suggest that children with SLI may have difficulty ascertaining appropriate situational emotions (McCabe & Meller, 2004). For example, the children with SLI may have a hindered ability to understand why a specific situation would evoke a negative emotion for others. This can be detrimental for children in the preschool years because those with SLI may misinterpret and be susceptible to misinterpretation by peers (McCabe & Meller, 2004).

Similarly, another study was conducted by Brinton, Spackman, Fujiki and Ricks, (2007) which sought to explore SLI elementary students' versus typically developing students' ability to judge the need to dissemble emotions in specific social situations. Results indicated that children with SLI did not always comprehend the impact of displaying all emotions. The authors indicated that this supports the theory that SLI children are delayed in their development of emotion knowledge, which in turn may lead to behaviors inappropriate to specific situations, resulting in social conflicts (Brinton et al., 2007).

Multiple studies have reported the detrimental academic, behavioral, and social effects of speech and language impairment (SLI). For example, one study showed that the presence of expressive language delays in infants was linked to lower social development than that of typical developing infants (Carson, Klee, Perry, Donaghy, & Muskina, 1997).

Likewise, another study demonstrated that preschoolers with language-based learning disabilities showed poorer social skills than typical peers.

Some psychologists have speculated that children's poor peer acceptance may be associated to antisocial behavior caused by language deficits. Recent studies have examined the relationship between developmental language disorders and emotional/behavioral problems (Benasich, Curtis, & Tallal, 1993). For example, a study conducted by Gilliam and De Mesquitties (2000) found that language delays were significantly related to emotional/behavioral problems. Surprisingly, some initial study examining language skills found that an overwhelming 50%-60% of preschoolers with languages delays had documented behavioral problems (Stevenson & Richman, 1978; McCabe & Meller, 2004) Specifically, one study indicated that poor language skills were related strongly to hyperactivity and lethargy (Sigafoos, 2000).

Examining language functioning in greater detail, researchers have studied how expressive versus receptive knowledge affects behavioral problems in children with SLI. One study found higher levels of negative behavior being reported in the children specifically with expressive language disorder (Caulfield, Fischel, DeBaryshe, & Whitehurst, 1989). In another case, Botting and Conti-Ramsden (2000) found that children who showed mainly expressive difficulties had the fewest behavioral problems, while children with mixed expressive and receptive language problems had the most significant portrayals of behavioral, and social difficulties.

In addition to the social and behavioral deficits exhibited by children with SLI, many studies have demonstrated a correlation between language skills and learning (Silva, Williams, & McGee, 1987). For example, studies have found that language

deficits predict other types of academic shortcomings such as reading and writing (Stanton-Chapman et al., 2004). Another study noted that “literacy and language skills have significant effects on the academic attainments of young people with a history of SLI” (Conti-Ramsden, Durkin, Simkin, & Knox, 2009). Additionally, a study conducted by Conti-Ramsden (2008) found that, out of all possible negative outcomes for preschool and adolescent children with SLI, the two most commonly affected areas were children’s literacy and academic scores. Findings showed the 90% of participants diagnosed with SLI had significantly lower literacy and academic scores than their typically developing peers (Conti-Ramsden et al., 2008). By examining evidence such as this, one can see the detrimental effects that language deficits can have on children’s academic success.

Taken altogether, this research makes it clear that language skills, in addition to emotion knowledge, can significantly impact children’s social, academic, and behavioral outcomes. Evidence such as this suggests that fostering the development of language and emotion knowledge could have long lasting benefits on a broad set of skills.

### **Interventions and Prevention methods to Enhance Language Skills and Emotion Knowledge**

As the evidence of increased social, behavioral and academic difficulties for children with language delays and emotion knowledge deficits arises, many are seeking to create intervention programs to address these skill deficits. Many of the programs have shown promising results, such as preventing problems from developing or decreasing a deficit or delay when caught at an early age. Such intervention can even close the gap between children in varying socio-economic statuses (Schechter & Bye, 2007). Access to interventions appears to greatly enhance emotion and language abilities in young children

because these they provide enriching developmental experiences (Burchinall, Roberts, Nabors, & Bryant, 1996).

One recent review on speech and language intervention techniques, written by Pickstone, Goldbart, Marshal, Rees, and Roulstone (2009), describes the two primary types of SLI interventions as child-focused approaches and environmental approaches. Child-focused approaches tend to concentrate on an individual child's use of language in order to elicit progress in their communication behavior (Pickston, et al. 2009). Environmental approaches, on the other hand, "concentrate on the people (adult input) and resources (e.g., toys, TV and radio) around the child and the way that they interact with the child, the opportunities, language models and feedback they provide" (Pickstone et al., 2009, p. 67). While both approaches have shown to benefit children's speech and language abilities, some studies have noted that the environmental approach is better for children's broader outcomes. For example, one study using an environmental approach to SLI intervention noted that several beneficial situational changes occurred due to the intervention, including improved parent-child interactions, and improvements made to kindergarten classroom book collections (Newman et al, 1999).

More recently there has been growing research about social communication intervention techniques to assist children with SLI (Adams, 2005). Social communication interventions focus on the synergistic emergence of social interactions, social cognition, pragmatics (verbal and nonverbal aspects), and language processing (receptive and expressive). The social communication intervention has show promising results (Adams, 2005). Research findings showed gains in not only formal language tests, but also in participant's reported academic functioning in the form of better listening and

comprehension skills and improvements in literacy (Adams, 2005). Additionally, research on SLI interventions, such as this, have been found to help children overcome their impairments, and as a result of their increased comprehension of language and social interactions, they are better able to control their emotionality (Denham, 1998; Lewis, Sullivan, & Vasen 1987).

One emotion preventative-intervention study conducted by Izard and colleagues (2008), used an emotion based treatment with the hope of accelerating emotional understanding and, in turn, decrease maladaptive behavior that stems from poor understanding of emotions (Izard et al., 2008). The results of this preventative intervention indicated that Izard's emotion-based prevention program accelerated the development of emotion and social competence, decreased agnostic behaviors and decreased negative peer and adult interactions (Izard et al., 2008). Another study, conducted by Denham (2003), also found that emotion knowledge interventions show benefit above and beyond emotion knowledge skills. Denham and Burton (2003) conducted a social-emotional intervention for at risk 4-year-olds. Results for this study indicated that, as compared to the control group, children who received the 37 week-long intervention program exhibited higher emotional understanding as well as positive peer interactions. Similarly, The Preschool Promoting Alternative Thinking Strategies (PATHS; Conduct Problems Prevention Research Group, 2010) has been recognized as an excellent model for promoting social and emotional competencies by using teachers to encourage students to exercise self control, emotional awareness and understanding, and peer-related social skills (Conduct Problems Prevention Research Group, 2010). One study, recently performed by the Conduct Problems Prevention Research Group (2010)

found that preschoolers who participated in multiyear social-emotional learning programs (such as PATHS) experience exceptional benefits in terms of their behaviors and academic engagement.

Despite promising intervention methods, some researchers believe that interventions call for greater interdisciplinary expertise. Researchers have noted that there are many common aspects of impairment across related emotion and language conditions, and these aspects are not always well understood or effectively addressed (Adams, 2005). While researchers have been taking strides to learn more about the relationship between emotion knowledge, language development and other aspects of children's functioning, much more research is needed.

### **The Current Study**

Over the past several decades, many researchers have sought to understand the relationship between emotion knowledge and language skills. There are many studies of language skills relationship to outcomes and of emotion skills relationship to outcomes but few that look at how these two important developmental skills jointly influence social, behavioral and academic outcomes. When it has been studied jointly, sometimes language skills are more important than emotion skills (Cassidy et al., 2003), however in some studies emotion skills add to what can be predicted by language skills alone. While much research has been done on language skills and emotion knowledge, the current study strives to add something unique. The present study will contribute to the existing literature by examining language and emotions skills closely using different types of assessments, tapping into different component skills. The hope is that further examination of the varying components of these skills will give us greater insight into the

development of aspects of emotion knowledge, their relationship with language skills, and their joint effect on social, behavioral and academic functioning

A recent study conducted by Miller and colleagues served as inspiration for this topic. Miller et al., (2005) focused on urban, low income early elementary school children's expressive and receptive emotion knowledge and how these abilities related to their early elementary school social status and peer acceptance. The researchers found that children's peer social status and self reported negative experience with peers was predicted by their emotion knowledge scores. Although the findings for this study were very relevant, the biggest limitation noted in the article's discussion was the failure to examine children's language ability. Because the study involved a measure with spontaneous naming of emotion, there was no way to deduce if the children were displaying heightened levels of emotion knowledge or merely advanced vocabulary, or whether both skills are important to the development of successful early peer relations.

In order expand upon the previous research; the current study aimed to observe how the various aspects of language skills work with the various aspects of emotion knowledge to predict broader outcomes. In particular, this study intended to examine how expressive and receptive language skills are related to the expressive and receptive emotion measures used in Miller et al., (2005). By examining the various aspects of language skills and emotion knowledge, this study will be able to determine how the specific components of language and emotion contribute to children's broader school adjustment.

Additionally, the setting of this study provides a very unique opportunity to study these issues. The study is conducted in an early childhood school with a language and



literacy-enhanced curriculum that has a mixed income and mixed demographic student population. There has been no research on how language enhanced educational programs might influence children's development of language skills and emotion knowledge. Research in this setting has shown that low income children show academic gains in mixed-income preschools (Schechter & Bye, 2007). For example, research done by Schechter and Bye (2007) showed that children from low-income households, who attended mixed income preschool had no significant language differences from their high-income peers over time. Perhaps some of the benefits of mixed income schooling will extend to the development of emotion skills as well.

It was hypothesized that children with greater expressive/receptive verbal abilities would perform better on tests of expressive/receptive emotion knowledge, respectively. It was further hypothesized that differences in children's expressive and receptive verbal skills would be related to differences in emotion understanding. In addition, because the Friendship School is a language and literacy magnet school, we hypothesized that kindergartners who attended preschool in this environment would have greater emotion knowledge skills than those who joined in the kindergarten year. Past studies have shown a significant difference in language skill and emotion knowledge in children with lower socio-economic status (Stanton-Chapman et al., 2004). Fewer socioeconomic differences were expected in this sample because of the integrated and language enriched setting of the Friendship School. Finally, it was hypothesized that children with higher scores on expressive/receptive language skills and emotion knowledge would have greater social, behavioral and academic functioning. Both types of skills should contribute to these outcomes, and it was expected that emotion skills would contribute above and beyond

language skills in the domain of social and behavioral functioning.

### **Method**

#### **Participants**

The participants consisted of 60 kindergarteners (32 boys, 28 girls) at the Friendship School, an early childhood language-enhanced literacy magnet school, serving the Waterford (46.7%) and New London (53.3%) school districts. Participants mean age was 66.75 months with a standard deviation of 3.92 months. The kindergarteners represented the ethnically and economically diverse population in New London and Waterford. Fifty percent of participants were Caucasian, 32% were Hispanic, 11% identified as African American and 7% were Asian. Participants' socioeconomic status was calculated by obtaining their status on the school's free and reduced lunch program. Forty percent of the participants received free/reduced lunch, and 60% paid for their lunch in full. All participants were recruited from the Friendship School through a letter sent home to parents indicating the approval of the project by the Waterford and New London school districts and the support of the school's director, Kathy Suprin (see appendix A). One parent of each participant completed and returned the informed consent document before his/her child participated (see Appendix B). Sixty-five consent forms were returned. Five of the original participants were not included in analysis due to their unwillingness or inability to complete all of the measures in the study.

#### **Measures**

**Peabody Picture Vocabulary Test (PPVT).** The PPVT is a standardized vocabulary test that assesses children's receptive vocabulary. Therefore, the purpose of this test was to examine if children could comprehend language that was being presented to them by the tester. During administration, the participant is shown a series of pages

depicting four illustrations. For each page, the child is asked to identify which picture best represents a spoken word. For example, the experimenter says “Show me the child who is sleeping” (see Appendix C). The participant then points to the picture that he/she believes best fit the description. The test begins with fairly easy depictions and the examiner presents items that become progressively more difficult. Once the child names eight consecutive incorrect answers, the testing is discontinued.

A total score is calculated from this assessment based on the number of correct responses. All raw scores were converted to standard scores, percentile ranks, and age equivalents for interpretation and data analysis. Scores on this measure have a mean of 100 and a standard deviation of 15. The PPVT was being administered to all kindergarteners at the school, independent of this study, as part of the pre-post assessment of the kindergarten language program. The principal investigator assisted with the administration of the PPVT assessments and the school shared participants’ scores, with parental consent, for the purpose of this study.

**Expressive One-Word Vocabulary Test (EVT).** The EVT is a standardized vocabulary test that assesses children’s expressive vocabulary. The purpose of this measure is to observe how well the children can verbally respond to a tester’s question. During this test, a child is presented with a series of illustrations depicting objects, actions, or concepts that he/she will be asked to name (i.e. “What is this?” “What is she doing?”). The test begins with fairly easy depictions and the examiner presents items that become progressively more difficult. Once the child names five consecutive incorrect answers, the testing is discontinued (see Appendix D). A total score is calculated from this assessment based on the number of correct responses. All raw scores were converted

to standard scores, percentile ranks, and age equivalents. The mean of this test is 100 with a standard deviation of 15. This measure is often used by the Friendship School but, for the purpose of this study, was administered by the principal investigator.

**Emotion Naming.** This test serves as a measure of the participants' expressive emotion knowledge. This measure is adapted from the Kusche Affective Interview (KAI-R; Kusche, Greenberg, & Beilke, 1988), and was used to assess "spontaneous emotion naming skills" (Miller et al., 2005). The participants were asked to name as many emotions as they could think of, and were prompted with "Any more?" This continued until the child said "no" (see Appendix E). Children were credited for naming a series of emotions including: happy, sad, afraid, scared, surprised, love, mad, and angry. Children received one point for every emotion they named. Synonyms were accepted as answers, and unanticipated emotion answers (i.e., answers that were not included in the scoring) were counted if they were good examples of emotions. For example, joyous was accepted as a synonym for happy. Scores include the number of total positive and negative emotions named, as well as the total number of emotions named.

**Emotion Identification.** The Emotion Identification (adapted from the KAI; Kusche et al., 1988), is similar in structure to the PPVT and can be used to measure participants' receptive emotion knowledge. The participants are shown ten pages, each depicting four different children experiencing different emotions. The emotions include: love, sadness, fear, excitement, anger, surprise, frustration, pride, worry, and happiness. The experimenter then asks "Which picture shows a child who feels \_\_\_\_?" (see Appendix F/E). Children receive 0 points on this measure for an incorrect answer (e.g., sad for happy), 1 point for an answer that is the correct valence but the wrong emotion

(e.g., sad for scared), and 2 points for a correct answer (Miller et al., 2005). The participants' mean accuracy scores are used for analysis.

**Emotion Explanation.** The Emotion Explanation (adapted from the KAI; Kusche et al., 1988), is a scripted interview that asks participants to explain their understanding of emotions in greater detail. The interview focuses on four target emotions: happiness, sadness, anger, and fear. The participants are asked, "How do you know when you are feeling \_\_\_\_?" and "How do you know when other people are feeling \_\_\_\_?" (see Appendix G). For each of the participants' answers, their explanation was prompted for additional detail or examples, until no more could be provided. All answers were recorded verbatim. For scoring, answers were coded as specified for the Kusche Affective Interview-Revised Coding System. The coding system numerically ranks the sophistication of the participants' answers. For the purpose of this study, the scoring system for "self" was used for both "self" and "other" answers. The combination of scoring systems was done in order to make scores more comparable across these two domains of emotion knowledge, to facilitate data analysis and interpretation.

Inter-rater agreement was calculated for descriptions of emotion recognition in self and in others. Sixteen randomly selected cases were double-coded and agreement for self understanding was Cohen's  $k = .69$ , and  $k = .65$  for understanding of others. Disagreements primarily resulted from confusion over codes 2: situational explanations, "when I get a present," and behavioral cues, "when I jump up and down." Disagreement was discussed and resolved and a second set of 8 randomly selected cases were double-coded for reliability. Agreement was much higher with this second set. Agreement for self was  $k = .83$ , and for other was  $k = .84$ . All other cases were coded with these

clarified distinctions between situations/behaviors, as well as other clarifications made during disagreement discussions.

### **Report Card Assessments of Academic, Social, and Behavioral Functioning.**

Report cards were obtained for every participant. The Friendship School report cards utilize a four-point scale using letters (see Appendix H). This rating system was converted to a numeric scale (0-3) with a score of one indicating that a child's score is average for his/her age-range, higher scores indicating that the child is above average, and lower scores indicating a child is below average. Several skills were recorded in the report card under the headings of: Reading, Writing, Science, Listening/Speaking, Math, and Work Habits. Average ratings were calculated over the different items in each domain. Because of differences across teachers in grading standards and practices, all report card scores were standardized within classroom.

### **Procedure**

This study was reviewed and approved by the Connecticut College Institutional Review Board. With the support of the Friendship School director, and both school district superintendents, researchers asked parents to volunteer to have their children participate in the study. During school-approved hours, researchers worked with the students individually to conduct the EVT, the Emotion Naming, the Emotion Identification, and finally the Emotion Explanation measures. Interviews were conducted in a relatively quiet corner of the school's hallway, just outside the child's classroom. In order to accommodate the school's schedule, the PPVT was conducted in December and early January, and the rest of the measures were completed during late January and early February. On average, the individual testing lasted approximately 15-20 minutes per

child. At the end of every interview, the child was given a verbal debriefing (see Appendix I). Once all the data were collected, parents of participants were sent a formal debriefing form, providing them with an explanation of the study and resources (see Appendix I). Results were shared in summary form with the school administration upon completion of the study.

## **Results**

### **Preliminary Analyses**

Preliminary analyses indicated that language skill, emotion knowledge, and academic/classroom scores did not significantly differ by age or by gender, so data were collapsed over these dimensions for all subsequent analyses. Children with dual language backgrounds were also examined, and compared with English-only speakers. In multivariate testing, these children did not differ from one another in language skill, emotion knowledge, or academic/behavioral functioning  $F(15,31) = 1.53, p > .05$ , Wilk's Lambda = .58. Thus, all children were included in subsequent analyses.

Inspection of the data revealed that participants had average scores for language skills on the PPVT and EVT (see Table 1). Scores for both tests displayed a broad range with the lowest being borderline and the highest indicating superior language skills. Because emotion knowledge scores are not standardized, it is difficult to interpret mean levels in the same way; however they are reported in Table 1 for descriptive purposes. There was good variability on these measures as well. According to teacher-completed report cards, the kindergarten participants met grade level standards in all areas, including: Reading, Writing, Listening/Speaking and Math. Additionally, participants demonstrated relatively higher scores in teacher-rated classroom Work Habits (see Table 1). Report card scores are reported in raw form here for ease of interpretation in terms of

the grading system, but subsequent analyses use scores that were normed within classroom to reduce the effect of idiosyncratic grading practices.

Because Work Habits was the primary measure of behavioral and emotional adjustment in this study, and because it included a heterogeneous set of items, a factor analysis was performed. The principal components factor analysis with varimax rotation revealed two factors that accounted for 61.93% of the variance in Work Habits items. The item loadings for the two factors can be seen in Table 2. Most items loaded more heavily on the first factor, named the Work Habits-Broad scale, but four items formed a separate factor emphasizing ADHD-like symptoms. These items were: Organized, Attentive, Follows Direction, and On-Task. This scale was named Work Habits-Attention.

Next, interrelations among predictors and dependent variables were examined. As expected, there was a positive correlation between the PPVT and the EVT scores,  $r = .65, p = .00$ . Additionally, there were several correlations among the different emotion knowledge measures (see Table 3). In particular, there were positive correlations between the number of negative emotions named and all other emotion measures, whereas Emotion Identification correlated with very few of the other emotion measures.



Table 1

*Descriptive Statistics for Language and Emotion Measure*

	Minimum	Maximum	Mean	SD
PPVT	74	140	108.45	14.35
EVT	80	140	103.5	12.99
# Positive Emotions	0	4	1.27	0.80
# Negative Emotions	0	5	2.55	1.13
Total Emotions Named	0	7	3.80	1.42
Emotions Identified	8	20	18.37	2.75
Emotion Evaluation	1.89	4.91	2.58	0.66
Reading	0.33	3.00	1.25	0.49
Writing	0.25	2.75	1.11	0.42
Listening/ Speaking	0.40	2.20	1.18	0.17
Work Habits - Broad	0.83	3.00	1.89	0.54
Work Habits - Attention	0.25	3.00	1.75	0.58

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 PPVT= Peabody Picture Vocabulary Test

EVT= Expressive One-Word Vocabulary Test

Table 2

*Factor Analysis for Work Habits and Attitudes*

	Work Habits - Broad	Work Habits - Attention
Effort	<b>0.55</b>	0.40
Respect	<b>0.57</b>	0.36
Organized	0.39	<b>0.62</b>
Timely Completion	<b>0.56</b>	0.37
Cooperative	<b>0.80</b>	0.17
Follows Rules	<b>0.78</b>	0.38
Responsible	<b>0.82</b>	0.07
Self Control	<b>0.78</b>	0.09
Attentive	0.07	<b>0.82</b>
Follows Directions	0.48	<b>0.63</b>
On Task	0.21	<b>0.90</b>

Bold items indicate which category the work habits were assigned.

Table 3

*Correlations Between Emotion Measures*

	# Positive Emotions	# Negative Emotions	Total Emotion Named	Emotions Identification	Emotion Evaluations (Self)	Emotion Evaluation (Other)	Emotion Evaluation (Total)
# Positive Emotions	--	.07	.63**	.10	.05	.03	.04
# Negative Emotions		--	.82**	.43**	.31*	.26*	.29*
Total Emotions Named			--	.40**	.25	.18	.21
Emotions Identification				--	.16	.10	.15
Emotion Evaluation (Self)					--	.70**	.93**
Emotion Evaluation (Other)						--	.91**
Emotion Evaluation (Total)							--

\* $p < .05$ , \*\* $p < .01$

Next, the interrelations of the participants' report card grades were examined. There were correlations between several academic areas (see Table 4). Reading scores were positively correlated with Writing, Listening and Speaking, and Math scores. Additionally, Listening/Speaking scores were positively correlated with writing and math scores. There was also a positive correlation between participants' two Work-Habit subscales, as well as Work-Habits (Attention) and Listening/Speaking scores.

### **Relations between Language and Emotion Knowledge**

It was hypothesized that language skills and emotion knowledge would be related. As predicted, there was a positive correlation between the receptive language skills measure (PPVT) and the receptive emotion knowledge measure (Emotions Identified) (see Table 5). Additionally, there were correlations between the PPVT and nearly all other emotion measures, including emotion naming and emotion evaluations. As predicted, the expressive language measure (EVT) was positively correlated with the expressive language skills measure (Emotion Naming). While the expressive/receptive language measures did correlated with the expressive/receptive emotion knowledge measures, there is undeniably some cross over. For example, some expressive language scores did correlate with receptive emotion knowledge measures (i.e. emotion Identification), and some receptive language scores correlated with expressive language measures (i.e. Total emotions named) (see Table 5).

Table 4

*Correlations Between Academic Scores*

	Reading	Writing	Listening/ Speaking	Math	Work Habits – Broad	Work Habits - Attention
Reading	—	.68**	.42**	.66**	.14	.13
Writing		—	.43**	.66**	.11	.11
Listening/ Speaking			—	.36*	.20	.36**
Math				—	.09	.19
Work Habits- Broad					—	.64**
Work Habits- Attention						—

\* $p < .05$ , \*\* $p < .01$

Table 5

*Relationship Between Language Measures and Emotion Knowledge Measures*

	# Positive Emotions	# Negative Emotions	Total Emotions Named	Emotion Identification	Emotion Evaluation (Self)	Emotion Evaluation (Other)	Emotion Evaluation Total
PPVT	.17	.37**	.37**	.42**	.36**	.33**	.37**
EVT	.22	.45**	.46**	.39**	.19	.18	.19

\* $p < .05$ , \*\* $p < .01$ 

PPVT = Peabody Picture Vocabulary Test

EVT = Expressive One-Word Vocabulary Test

### **Relations between Language Skills/Emotion Knowledge and Academic and Behavioral Outcomes**

The PPVT and the EVT were also related to academic and behavioral outcomes, as assessed by participants' report card scores. There was a positive correlation between participants' PPVT scores and their listening and speaking scores, and a positive correlation between EVT scores and children's reading, listening/speaking and math scores (see Table 6). It was hypothesized that emotion knowledge would be related to academic and behavioral outcomes; however, only weak evidence of this relationship was observed. Only performance in the emotion naming exercise was significantly related to academic outcomes, specifically to grades for the language arts (i.e., reading, writing, and listening/speaking; see Table 6).

### **Effects of Socioeconomic Status and Early Childhood Education on Language and Emotion Skills**

A series of MANOVAs was conducted to examine the relationship between socioeconomic status (SES) and children's language skill, emotion knowledge, and academic functioning. There was a significant multivariate effect for the language measures  $F(2, 57) = 8.24$ , Wilks's Lambda = .78,  $p = .00$ . Univariate tests revealed significant effects for both PPVT,  $F(1, 58) = 16.48$   $p = .00$  and EVT,  $F(1, 58) = 8.02$ ,  $p = .00$ . Children with lower SES had lower EVT ( $M = 98.00$ ,  $SD = 10.92$ ) and lower PPVT ( $M = 100.25$   $SD = 14.29$ ) scores than did children with higher SES ( $M = 107.17$ ,  $SD = 13.01$ ;  $M = 113.92$ ,  $SD = 11.68$ ,) respectively. Interestingly, students who participated in Head Start services for low income children and families had smaller differences between

Table 6

*Relationship Between Language/Emotions and Academic Outcomes*

	Reading	Writing	Listening/Speaking	Math	Work Habits- Broad	Work Habits - Attention
PPVT	.14	.12	.40**	.23	.15	.29*
EVT	.42**	.23	.49**	.36*	.21	.29*
# Positive Emotions	.23	.28*	.24	.17	-.14	-.10
# Negative Emotions	.29*	.15	.24	.22	.17	.23
Total Emotions Named	.34**	.26*	.32*	.23	.05	.12
Emotion Identification	.09	.01	.22	.04	.01	.10
Emotion Evaluation (Self)	-.50	-.17	-.01	-.01	-.04	.17
Emotion Evaluation (Other)	.07	-.08	.00	.11	.06	.27*
Emotion Evaluation (Total)	.00	-.14	.00	.05	.00	.24

\* $p < .05$ , \*\* $p < .01$



language measures,  $F(2, 57) = 3.00, p = .58$  Wilks's Lambda = .91. However, exploratory univariate tests revealed that children who did not attend Headstart (higher income backgrounds;  $M = 111.07, SD = 14.04$ ) had significantly higher scores on the PPVT  $F(1, 57) = 5.95, p < .05$ , than did those who did attend Headstart (lower income backgrounds;  $M = 101.25, SD = 13.03$ ).

Next, a MANOVA was conducted to examine the effects of SES on the various emotion measures. No significant multivariate effect was found,  $F(5, 54) = 1.67, p = .16$ , Wilks's Lambda = .87. Additionally, there were no multivariate differences between emotion measures for children who did and did not attend the school's Headstart program,  $F(5, 54) = 1.47, p = .22$ , Wilks's Lambda = .88.

Finally, there was no multivariate effect for SES on academic/classroom behavior scores,  $F(6, 40) = 1.5, p = .15$ , Wilk's Lambda = .82. Univariate tests were done for exploratory purposes, and showed that SES had a significant effect on reading scores  $F(1, 40) = 4.24, p = .04$ , and listening/speaking scores,  $F(1, 40) = 6.64, p = .01$ . However this difference was not strong enough to make SES statistically significant on a multivariate level. Additionally, there were no significant multivariate or univariate differences for academic scores by Headstart attendance status,  $F(6, 40) = 0.26, p = .78$ , Wilks's Lambda = .96. Thus, language skill was most strongly influenced by socioeconomic status in this sample. Emotion knowledge and academic/classroom behavior showed only weak evidence of differences between low and high-income children. Headstart participation seemed to reduce the SES-related skills gaps, even where large differences had been observed (i.e., for language skill).

A MANOVA was conducted to observe how duration of time in a language and literacy enhanced preschool affects children's language skills and emotion knowledge. Small numbers of children entering the Friendship School at Kindergarten ( $n = 10$ ) vs. Pre-K limited the strength of these analyses. Analyses indicated no significant differences between children who entered in Pre-K versus Kindergarten for language skills  $F(2,57) = 0.08, p = .57$ , Wilks's Lambda = 1.00 and emotion Knowledge,  $F(7, 52) = 0.73, p = .49$ , Wilks's Lambda = .91. Further exploratory analysis indicated no univariate differences by Pre-K status for language skills or emotion knowledge.

### **Predicting Child Adjustment from Language Skill and Emotion Knowledge**

Next, a series of hierarchical multiple regressions were run to examine the joint prediction of academic/classroom behavioral functioning by language skills and emotion knowledge. To reduce the number of regressions and predictors, univariate correlations were used to guide the selection of independent and dependent variables. Overall, these analyses showed that emotion knowledge did not predict academic/classroom behavioral functioning above and beyond language skills. One regression was conducted to observe the relationship between the EVT, PPVT, and Emotion Evaluation Others as predictors of Work Habits-Attention. Language variables were entered on the first step and the emotion variable was added on the second. While both models were significant, or nearly so,  $R^2 = .10, F(2,57) = 3.15, p = .05$ ;  $R^2 = .14, F(3,56) = 2.92, p = .04$ , prediction was weak, and none of the variables made a significant contribution to the prediction of attention. Next, a regression was used to see how the EVT, PPVT and Total Emotions Named measures predicted listening/speaking grades. Once again, the language measures were entered in the first model and the emotion measure was entered in the second. While

both models were significant  $R^2 = .25$ ,  $F(2,56) = 9.38$ ,  $p = .00$ ;  $R^2 = .26$ ,  $F(3,55) = 6.44$ ,  $p = .00$ , the EVT was the only variable that independently made a significant contribution  $B = .02$ ,  $p = .03$  in the full model. Finally, a regression was implemented to see how reading grades could be predicted using the EVT and Total Emotion Scores. Number of negative emotions was also correlated with reading grades, however it was not included in this regression because it is part of the Total Emotions variable. Model 1, with EVT as a predictor was significant  $R^2 = .18$ ,  $F(1, 58) = 12.35$ ,  $p = .00$ . Model 2 which added Total Emotions was also significant  $R^2 = .20$ ,  $F(2, 58) = 7.19$ ,  $p = .00$ . However, Total Emotion did not significantly predict reading  $B = .18$ ,  $p = .18$ , once EVT was in the model  $B = .34$ ,  $p = .02$ .

### Discussion

The purpose of this study was to observe how language skills and emotion knowledge relate to kindergarteners' social, behavioral, and academic functioning. Through the course of this investigation, emotion knowledge and language scores were observed individually, then in relation to one another, and then in their joint relations to a set of outcome variables for children. SES was also examined as a predictor of language, emotion, and academic/classroom behavioral functioning. Finally, researchers examined whether attending a language and literacy enhanced preschool was related to higher language functioning and emotion knowledge. Language skills were related to academic performance, especially the expressive language skills. However, emotion knowledge was only weakly related to these outcome variables. In general, language variables were found to predict the largely academic outcomes in this study more strongly than did emotion variables. Interestingly, an exception was writing skill, which was more related

to emotion knowledge than language skill. Some of the possible reasons for weaker performance of emotion knowledge variables in this study are discussed, as well as suggestions for future research.

### **Relationships between Language and Emotion Knowledge**

As predicted, there was a positive correlation between receptive language skill and receptive emotion knowledge, as well as a positive correlation between expressive emotion skills and expressive emotion knowledge. These positive correlations support previous findings discussed by Raver (2007), because they support the theory that emotion knowledge and language skills are interrelated. For example, Raver discusses several examples of studies that note how specific aspects of children's emotional skills are correlated with specific aspects of their cognitive functioning (Gershoff, Aber, Raver, & Lennon, 2007). The current study supports the hypothesis that there is a strong connection between emotion knowledge and language skills.

The PPVT was correlated with nearly all of the emotion measures, indicating that there is a relationship between receptive language skill and many aspects of emotion knowledge, with the only exception being number of positive emotions named. The EVT, on the other hand, was positively correlated with the Emotion Naming Measure (an expressive emotion knowledge task) and the Emotion Identification Measure (a receptive emotion knowledge task). Interestingly, the EVT did not have a significant relationship with the Emotion Evaluation Measure, despite the fact that the Emotion Evaluation Measure asks children to verbally explain how they knew when they felt a particular emotion. Thus, receptive language skills appear to be more fundamental to children's abilities to appraise emotions in self and others than are expressive language skills, even

when they have to explain those appraisals to others. It is important to note that while all of the emotion measures in this study required verbal skills, there may be a broader, nonverbal aspect of emotion knowledge or emotional competence that should be assessed in the future.

### **Language Skills and Academic/Behavioral Outcomes**

Findings indicated a positive correlation between language skills and academic/classroom behavioral functioning. It is interesting to note that the EVT (expressive language) served as a more consistent predictor of academic outcomes than did the PPVT (receptive language). For example, while the PPVT was related only to Listening/Speaking scores, the EVT was related to Reading, Listening/Speaking, and Math. Additionally, both language measures served as predictors for children's classroom behavior. While neither of the language scores was related to Work-Habits Broad, both the EVT and the PPVT were positively correlated with children's Work Habits-Attention. The relationship between language skills and Work Habits indicated that children with higher language scores exhibited less ADHD-like behaviors in the classroom than did children with lower language scores.

### **Emotion Knowledge and Academic/Behavioral Outcomes**

In general, correlational analysis indicated a weak relationship between emotion knowledge and academic/behavioral outcomes. Findings showed that Emotion Naming was the only measure that was related to academic functioning, including Reading, Writing, and Listening/Speaking. Furthermore, Emotion Evaluation of Other was the only measure that was related to Work-Habits Attention. This relationship between Emotion Evaluation of Other and Work-Habits Attention is important to note because it

can be linked to several previous findings. For example, Cook et al., (1994) found that children who had poor emotional understanding, were rated higher in behavior problems.

In multiple regression analyses, incorporating both language skill and emotion knowledge variables, none of the emotion knowledge measures was able to predict academic and behavioral outcomes above and beyond language skills. The only marginal exception to this was Writing, which could be predicted by the emotion naming measure. These results support the findings of Cassidy et al.'s research (2003), which found that in many studies, emotion knowledge could not predict children's behavior once language skills were taken into account. In the current study, while there was evidence of univariate correlations, and there was sometimes evidence that including emotion measures increased the variance accounted for in the outcome variable, in nearly every regression, the language variables were the only ones that made an independent contribution to the prediction of the academic and behavioral outcomes studied.

These findings reiterate the importance of controlling for language skills whenever testing the relationship between emotion knowledge and outcomes. Furthermore, these findings raise questions about the Miller et al. (2004) study, which did not control for language when examining relations between emotion naming/recognition and social adjustment. Studies like Miller's should be interpreted with caution, with consideration given to the possibility that language functioning may at least play a role in any observed relationship between emotion knowledge and social/behavioral outcomes. Of course, it is also possible that the outcomes studied by Miler et al. (2004) are more strongly related to emotion knowledge than are the more academic outcomes examined in

the current study. The importance of examining a broad range of adjustment variables is discussed later.

### **Effects of SES/Language and Literacy Enhanced Preschool setting**

Socioeconomic status has long been viewed as an influential factor in children's social, behavioral, and academic outcomes. Similar to previous research, this study found a significant effect of SES on children's language scores (Spitz et al., 1997). The significantly lower scores were present in both the EVT and PPVT. It is important to note, however, that children from low SES backgrounds did score solidly in the average range, despite being lower than high SES children. In contrast to language functioning, SES was not related to significant multivariate differences in children's emotion knowledge or academic scores. Exploratory univariate analysis indicated that SES differences were found for a number of measures including: Negative Emotions named, Total Emotions named, Reading, and Listening/Speaking. Children who were lower in SES had lower scores. However, these univariate differences were strong enough to make a significant multivariate difference.

One possible explanation for the notable language differences, but limited academic differences for SES, may be that the Friendship School is a mixed-income, language and literacy enhanced school, which seeks to close the gap so persistently documented for low versus high SES kids. Arguably, this environment is achieving what it sets out to do. Even with SES and language differences, children from varying SES backgrounds had similar achievement levels, and similar social competence, as indexed through emotion knowledge. The positive impact of mixed income preschools is strong theme in recent research. For example, Schechter & Bye (2007) found that when low-

income children with low language skills were integrated into mixed income preschools, there were no significant SES differences in language skills by the second term of the year. Where the gap closes may differ over studies, but together these findings support the practical significance of an enhanced learning environment for low SES children during the early learning years.

Additionally, there were promising results for children who attended Headstart, a program that serves children from low SES backgrounds. Headstart attendance was only weakly related to language differences. For both expressive and receptive language scores, there was no multivariate difference. There was evidence of a small difference for PPVT, with children who attended Headstart scoring lower than those who did not. These findings indirectly suggest that developmental delays due to low SES can be reduced by early childhood enrichment programs like Headstart. Headstart programs typically utilize educational strategies and techniques that support language development and school readiness, and provide an educationally enriched environment for impoverished children. For example, Wasic, Bond, & Hindman, (2006) trained teachers to create a language and literacy enhanced environment, and found that preschoolers who were placed in these classrooms had significantly better expressive and receptive language skills than their peers placed in non-enriched classrooms. These findings support the hypothesis that an educationally enriched early learning environment can close the gap between children of varying socioeconomic backgrounds.

Results of multivariate and univariate analysis showed that duration of education in a language and literacy enhanced preschool/kindergarten did not affect children's language skills and emotion knowledge. However, few participants entered at the



Kindergarten level ( $n = 10$ ) versus the Pre-K level. Thus, all children had been exposed to at least 2 years of language/literacy-enriched education. Had there been a larger sample of late-entering children, analyses may have found statistically significant differences for children who entered this program earlier versus later.

### **Limitations and Future Directions**

While this study revealed many relevant findings about how language and emotion knowledge can be used as predictors of kindergartener's social, behavioral and academic functioning, there is undeniably a need for more research. The largest challenge of this study was to collect data while simultaneously attempting not to disrupt the strict schedule of a functioning school. There were several limitations related to this challenge. For example, researchers did not want to ask school personnel to complete any measure that they were not already administering. As a result, measurements of academic functioning were based on teacher-rated report cards, which focused on whether or not children were meeting grade level requirements, as mandated by the No Child Left Behind Act. The issue with this type of emphasis is that there is often little differentiation between higher achievers, and, to a lesser extent, lower achievers. The emphasis is on meeting grade level standards or not. Therefore, the use of report cards to gauge academic functioning had limitations.

In addition, participants' behavioral adjustment scores had to be obtained from existing records. Once again, participants' report cards were the only available assessments of behavioral functioning, and were limited to the scope of classroom behaviors (e.g. staying on task, timely completion of work, etc.). As a result, the emotion knowledge measures were more weakly related to the teacher-rated behavioral

assessments than they may have been if other measures (e.g., the DECA, a measure used at Friendship School entry to assess social/emotional competence and resilience) had been available. In future studies, it is recommended that researchers administer a standardized behavior measure selected to match the specific purposes of the study. In this case, a measure that examines multiple aspects of behavior including peer relationships, rather than just behaviors in the classroom setting, would have been appropriate.

Another limitation of this study was seen in the Emotion Naming measure. It is likely that the emotion naming measure was not sensitive enough for a kindergarten population. The free-naming task was quite challenging for participants, and children had difficulty thinking beyond a few basic emotion labels. The difficulty of the task lead to a floor effect. After data had been collected, researchers learned that the Kusche et al. (1988) emotion interview has been adapted for use with younger participants including preschool children. A measure that offered more support for eliciting emotion labels could have produced a broader range of scores on this measure that might have better revealed individual differences in emotional competence. For future studies, it is recommended that the version for younger children is used, and that other abilities that differentiate young children are assessed. Using measures that rely less on verbal ability would also be helpful.

Additionally, it is recommended that future studies have a larger sample size. Having a larger sample size could facilitate the detection of small but meaningful effects. Finally, it is recommended that future studies strive for a better understanding of English language status for English language learners. The current study found no differences

between English speakers, Spanish speakers, and bilingual participants. However, the level of English exposure at home and the extent of English fluency most likely would affect findings.

### **Conclusion**

Despite these limitations, this study contributes to the literature by addressing how the various aspects of language and emotion knowledge relate to social, behavioral, and academic outcomes. The study highlights the importance of language skills to early academic success. It also highlights the relationship between SES and language skill, and raises the possibility that early childhood enrichment/education can help reduce the gap and the academic consequences associated with low SES. The independent role of emotion knowledge in children's academic and behavioral adjustment was not clearly demonstrated, suggesting that emotion knowledge may be more important for social outcomes or that its importance for academic functioning and classroom behavior might be better revealed through assessments that are not as focused on achievement of academic standards. Furthermore, this study reiterates the importance of controlling for language skills whenever conducting studies on emotion knowledge. Much more research is required to fully grasp how language skills and emotion knowledge jointly affect children's broader outcomes.

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Appendix A  
Cover Letter

Dear Parent/Guardian,

We would like to announce a small study that is being conducted this year with the Friendship School kindergarteners. The study is being conducted by Sarah Hornbach and Professor Audrey Zakriski of Connecticut College, and has been approved by the Friendship School administration including the Superintendents of the New London and Waterford School Districts.

This study will help us to better understand the relationship between language skills and other aspects of children's development including emotion knowledge and social adjustment. All children who participate will be interviewed in school, during times coordinated with the teacher.

Please read and consider signing the attached consent form.

If you have any questions, please feel free to contact the researchers, whose contact information can be found on the following page, or the Friendship School.

Best Regards,

Kathy Suprin  
Director, Friendship School

Sarah Hornbach  
Connecticut College Psychology Honors Student

Audrey Zakriski  
Associate Professor of Psychology

Appendix B  
Informed Consent

I hereby consent for my child to participate in Sarah Hornbach's Connecticut College honors thesis research about receptive and expressive language skills and their relationship to academic and social functioning.

I understand that this research will involve my child participating in an individual assessment, including standardized test for language functioning and emotion knowledge and recognition.

I understand that researchers will be asking the Friendship School to provide information on my child's background and demographics, including: age, race, gender, town of residence, primary language, most recent report card scores, developmental assessment from preschool, number of years in attendance at the Friendship School, special education status, and participation in the reduced lunch program. This information will be matched only by ID number to my child's assessment data.

While I understand that the direct benefits of this research are not known, I have been told that we may learn more about how receptive and expressive language skills are related to broader academic and social functioning.

I understand that this research will take about 20-30 minutes during scheduled school hours, and will be arranged with the classroom teacher. Testing will take place in the back of the classroom or just outside the classroom.

I understand that my child may be asked to discuss their understanding of various words and situations that children commonly encounter. There are no expected risks to participation, but if my child expresses a desire to stop the testing will be stopped.

I have been advised that I may contact the researcher Sarah Hornbach at (512) 636-1249 who will answer any questions that I may have about this study.

I understand that my child may decline to answer any question she or she does not want to answer, and that I may withdraw my child from the study without penalty at any time.

I understand that all information provided by the school, and collected during the assessment will be identified with a code number and NOT my, or my child's, name.

I understand that this study is not meant to gather information about specific individuals and that my child's responses will be combined with other participants' data for the purpose of statistical analyses. I consent to the publication of the study results, and sharing of findings with the school, as long as the identity of all participants is protected.

I understand I will receive a debriefing form further explaining the study and its background once all data has been collected.



I understand that this research has been approved by the Connecticut College Human Subjects Institutional Review Board (IRB) and that concerns about any aspects of this study may be addressed to Associate Professor Audrey Zakriski, Chairperson of the Connecticut College IRB (439-5134).

\*\*\*\*\*Please keep this form for your information\*\*\*\*\*

## Permission Slip for Language Skills Study

I am at least 18 years of age, and I have read these explanations and assurances and voluntarily consent for my child to participate in this Connecticut College study of language skills, academic and social functioning.

Parent/Guardian Name (printed)\_\_\_\_\_

Parent/Guardian Signature\_\_\_\_\_

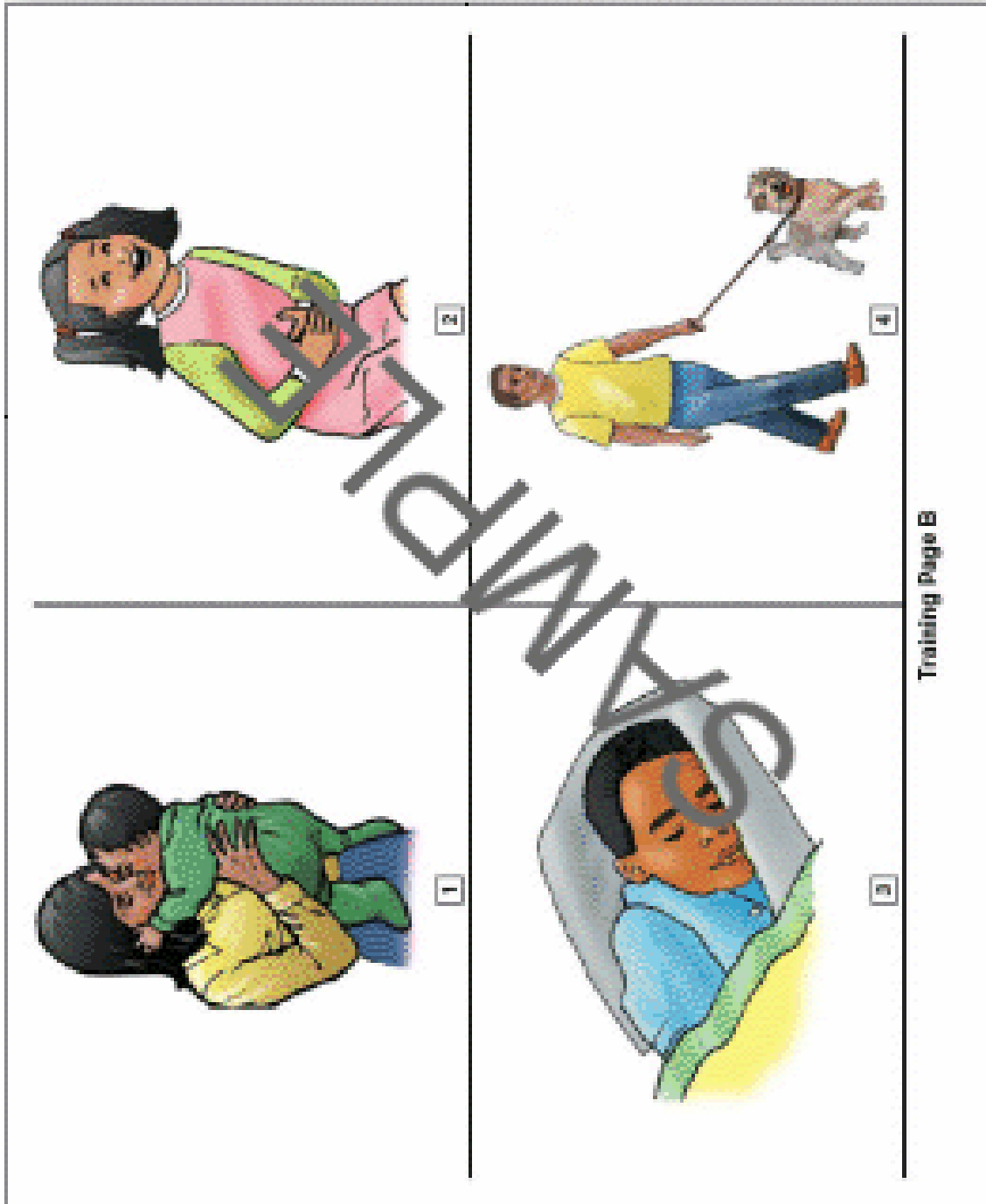
Date\_\_\_\_\_

Child Name: \_\_\_\_\_

\*\*\*\*\*Please return this permission slip to the school with your child.\*\*\*\*\*



Appendix C  
PPVT Sample Page



### Appendix D EVT Scoring Page

- Basal: Five (5) consecutive correct items.
- Ceiling: Five (5) consecutive incorrect items.
- Timing: Allow about 10 seconds for a response to each item.

Score	Item	Stimulus Question	Correct Responses	Incorrect Responses (P = Prompted Responses)	DK	Other
1 0	25	What is this?	pencil	color pen		marker
1 0	26	What do you see?	tortoise	[other animal]		
1 0	27	What shape is this?	heart	black P [other shape]		
1 0	28	What do you see?	duck	bird P quack-quack P		goose P [other animal]
1 0	29	What is this (point)?	moon	circle sky P		night P stars P planet sun
1 0	30	How many balls do you see?	two	(basket)balls P [holds up two fingers] P		[other number]
<b>▼ Start Ages 5–6 Administer Examples 1 and 2 before you start. Teach on the examinee's Start item only.</b>						
1 0	31	What is this?	leaf	feather tree		flower grass
1 0	32	What color is this?	black	ball P		circle P [other color]
1 0	33	What do you see?	drum	band instrument P		boom drummer P
1 0	34	How many balls do you see?	three	(basket)balls P [holds up three fingers] P		[other number]
1 0	35	What is this?	lamp	lantern		lightbulb
1 0	36	What do you see?	watch	belt time P		bracelet clock P

## Appendix E Emotion Naming

PATHS Child Interview

Child ID: \_\_\_\_\_

Interviewer: \_\_\_\_\_

**Identifying Different Feelings** (Derived from the Kusche Affective Interview - Revised (KAI-R))

*OK, first I'd like you to name all the different feelings you can think of.*

Record all responses (put checks after those listed, write in other responses).  
Continue to probe with "Any more?" until the child says no.

- |                        |                  |
|------------------------|------------------|
| a. happy _____         | f. proud _____   |
| b. sad _____           | g. guilty _____  |
| c. mad/angry _____     | h. jealous _____ |
| d. scared/afraid _____ | i. nervous _____ |
| e. love _____          | j. lonely _____  |

Others reported:


**Emotion Recognition** [Derived from the Kusche Emotional Interview (KEI) Form 201]]

Record the number corresponding to the picture the child identifies (1 = top left; 2 = top right; 3 = bottom left; 4 = bottom right). Score 2 when the response is correct; 1 when same valence (positive, negative); 0 = incorrect

Which picture shows a child who feels \_\_\_\_\_?

Trial	Emotion & (correct response)	Child Response	Score (0-2)
1	Love (4)		
2	Sad (1)		
3	Scared/afraid (4)		
4	Excited (3)		
5	Mad/angry (3)		
6	Surprised (4)		
7	Frustrated (4)		
8	Proud (2)		
9	Worried (2)		
10	Happy (2)		

Appendix F  
Emotion Identification Sample Page



## Appendix G

### Emotion Explanation

PATHS Child Interview

Child ID: \_\_\_\_\_

Interviewer: \_\_\_\_\_

[The following was derived from the Kusche Affective Interview - Revised (KAI-R)]

Ask the following questions in regards to the following feelings: happy, sad, mad, afraid. Write child's response verbatim in space provided.

**Knowledge of Self (Self):**

*How do you know when you are feeling \_\_\_\_\_ (happy, sad, etc.)?* (If the child does not understand, say: *Well, if you felt \_\_\_\_\_, how would you know that?*) If the child says "I don't know", say **OK, give me your best guess.** After the child has responded, probe with *Are there any other ways that you know when you are feeling \_\_\_\_\_?* Continue to probe until the child says no.

**Knowledge of Other (Other):**

Then, for the same emotion, ask *How do you know when other people are feeling \_\_\_\_\_ (happy, sad, etc.)?* (If the child does not understand, say: *Well, if another person felt \_\_\_\_\_, how would you know that?*) If the child says "I don't know", say **OK, give me your best guess.** After the child has responded, probe with *Are there any other ways that you would know when other people are feeling \_\_\_\_\_?* Continue to probe until the child says no.

Happy

Self:

Other:

Sad

Self:

Other:

Mad/Angry

Self:

Other:

Scared/Afraid

Self:

Other:



# Appendix H

## Report Card

### THE FRIENDSHIP SCHOOL

GRADE: K HOME ROOM: Dees DATE: March 16, 2010

[REDACTED]  
[REDACTED] CT Dees

#### ASSESSMENT CRITERIA

Code	Definition
E	Exceeds grade level expectations
A	Advanced performance at grade level
P	Performance within grade level expectations
M	More time and practice needed
N/A	Not assessed for this trimester

Reading	T1	T2	T3
Distinguishes/Produces rhyming words	P	P	
Identifies upper and lower case letters	M	M	
Reproduces sounds of letters	M	P	
Matches initial consonants with pictures/words/objects	M	M	
Demonstrates readiness strategies for reading	M	M	
Reads kindergarten sight words	M	M	

Listening/Speaking	T1	T2	T3
Listens actively as others speak		P	P
Responds appropriately to questions		P	P
Uses developmentally appropriate language and grammar		P	P
Expresses ideas, needs, and experiences clearly		P	P
Participates in class discussions		P	P

Writing	T1	T2	T3
Uses writing to convey ideas	P	P	
Uses inventive and conventional spelling	P	M	
Handwriting			
Writes first and last name	P	M	
Uses proper letter formations	M	M	

Social Studies	T1	T2	T3
Map Skills	N/A	P	
Communities		P	P
Families		P	P
Holidays and Famous Americans		P	P

Science	T1	T2	T3
Trees	P	P	
Animals Two by Two	N/A	N/A	
Wood and Paper	N/A	P	

Math	T1	T2	T3
Sorting and Classifying		P	P
Shapes and Patterns		M	P
Exploring Numbers		M	M
Measurement		N/A	P
Comparing, Ordering, and Joining Numbers		N/A	M
Grouping and Separating Numbers		N/A	M
Equal Groups, Sharing, and Fractions		N/A	N/A
Data Analysis and Probability		N/A	N/A
Problem Solving		P	P
Using the language of math to express ideas		M	M

Physical Education	T1	T2	T3
	P	P	



Appendix I  
Debriefing Letter

Dear Parent,

First of all, thank you for allowing your child to participate in this study of language skills and academic and social functioning. We have completed the assessments described in the original cover letter, and are writing to tell you more about the purpose of the study. In this research, we were assessing how children's verbal abilities serve as a predictor of their emotion knowledge, and how this is related to academic and social adjustment in school. Past research has indicated that there is a strong relationship between language skills and social functioning. Emotion knowledge can play an important role in this relationship and can help children develop successful social relationships. Language skills are significant to emotion knowledge because speech may serve as an important mediator to help children express their emotions. We hope to discover how children's exposure to language enhanced early childhood education programs, such as the one offered at the Friendship School, affects their emotion knowledge and social adjustment. General findings of this study will be shared with the Friendship School administration, and will be available in May. Please feel free to inquire about the results at that time if you are interested.

If you are interested in learning more about children's linguistic, social and emotional development, we offer the following websites as resources..

<http://www.nidcd.nih.gov/health/voice/speechandlanguage.asp>

<http://www.casel.org/sel/families.php>

<http://www.meddybemps.com/parentsguide.html>

Sincerely,

Sarah Hornbach  
Connecticut College Psychology Honors Student

Audrey Zakriski  
Associate Professor of Psychology, Connecticut College

Children's Debriefing:

Thank you for playing those games with me! When we were playing those games, I was trying to see how you used words to explain different things, including your feelings. Some times we feel happy and sometimes we feel sad, and it is important to use our words to talk about what we feel. You did a great job! Do you have any questions before we go back to class?