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The relations among psychological constructs and empathy were examined using a social information processing perspective. Data were collected on 5-year-old children's emotion regulation, cognitive inhibition, affective perspective-taking, conceptual perspective-taking, and empathy. It was hypothesized that perspective-taking mediates the relation between control processes and empathy and that conceptual perspective-taking moderates the relation between affective perspective-taking and empathy.

Emotional control was related to mothers' reports of their children's empathy. Emotional perspective-taking was related to mothers' reports of their children's empathy, and cognitive perspective-taking was related to children's best score in reaction to emotionally eliciting videos. The mediating hypothesis was not supported. There was a marginal interaction between the two forms of perspective-taking, providing some support for the idea that conceptual perspective-taking may moderate the relation between emotional perspective-taking and children's empathy. Results are discussed in the context of an integrated model of psychological processes that are related to empathy.

COGNITIVE AND EMOTIONAL CONSTRUCTS
AND THEIR RELATION TO EMPATHY
IN YOUNG CHILDREN

by

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CHAPTER I

INTRODUCTION

Imagine an empathic child who witnesses another child being pushed down and getting hurt. The empathic child, a bystander in the incident, might emotionally experience and share the fear, surprise, and pain of the injured child. We might witness a grimace on the empathic child's face and see the distress played out there. Then we might see the child turn away from the incident in an attempt to reduce his or her distress or we might see the child move to help the injured party. It is also possible that the empathic child would protect the injured child from further harm. In this hypothetical scenario all of the outcomes, prosocial and otherwise, were motivated by empathy. Empathy is not only a topic of interest because it is a link in the process leading to prosocial behavior, it is of interest as a process in and of itself. A greater understanding of empathy be used to better understand the processes that lead to prosocial behavior. I propose that examining the relations between cognitive and emotional psychological components and their relations to empathy will increase our understanding of this emotional response.

It has been only relatively recently that empathy has become the subject of study in the developmental and social sciences. One reason that empathy has been considered to be a subject worthy of study is because of its conceptual link to prosocial and socially competent behaviors and development.

A conceptual definition of empathy that is widely accepted today in the social sciences is that empathy is an affective response to the emotional state of another that is congruent with the other's emotional state (Eisenberg, 2003) or more appropriate to the other's emotional state than one's own (Hoffman, 2000). It is reactively experiencing the same or very close to the same emotion that the other is experiencing; it is feeling *with* someone. Following the conceptual link to prosocial behavior (behaviors intended to benefit another), empathy may lead to sympathy (feelings of sorrow or concern for the situation of another and the urge to help) which may lead to prosocial behavior.

Major perspectives

There are two major perspectives or paradigms that have been used to understand empathy. Piaget's cognitive developmental theory and socioemotional-based theories based on evolution and anthropology each have made unique contributions. Though each paradigm has its own point of view on the function and development of empathy, there are some areas in which they overlap.

Piaget's constructivist theory of development focused research on the growing cognitive abilities of children, and this growth affects the development of empathy. Object/person permanence, self-other differentiation, and perspective-taking are the key cognitive developments at the heart of empathy in this perspective (Feshbach, 1978; Thompson, 1987). Because of the focus on cognition, particularly perspective-taking, Piaget's theory has advanced the study of cognitive empathy, or higher-level thinking processes involved in empathic responding. Thus, from this perspective, empathy, cognitive empathy at least, would not be present until children reach the age of about four

or five. Piaget (1965) makes the point that emotions and emotional reactions are also important in assessing situations. Children do not have to rely solely on cognitive abilities to be responsive to the feelings of others; children who should not be able to experience empathy cognitively often react emotionally to the situations of others. Although young children may not be capable of using advanced cognitive processes to fully take the perspective of another, their emotions and emotional reactions still give them the ability to assess a situation, but likely with less accuracy than older children who also utilize their more advanced cognitive capacities during empathy-evoking situations.

The second perspective on empathy is derived from research on socioemotional development and focuses on the importance of emotions and emotional reactions in feeling with and understanding others. Ethological theories and attachment theory are examples of theories derived from the socioemotional domain. In this paradigm empathy is not viewed as an ability that is enabled after a certain amount of time has passed and a certain amount of development has taken place. Instead, empathy is a natural, inborn emotional reaction to a situation that is viewed as serving an adaptive purpose (DeWaal, 1997; Hoffman, 1981; 2000). In social groups empathic reactions create bonds between the person witnessing an event and the person experiencing an event and can promote helping and prosocial behaviors. This mutual helping is necessary for social animals to interact well and prosper. This view emphasizes the “embeddedness” of emotional reactions and exchanges and the importance of emotion in the lives of infants when cognitive development is limited; emotional responses foster attachment to caregivers and help to ensure that the infant will be loved and taken care of (Bowlby, 1969).

Socialization begins at birth and emotions and emotional reactions, empathy among them, are the first tools that infants have at their disposal to shape and be shaped by their social environment. A commonly given example of a prototypical and adaptive empathic reaction is emotional contagion – an emotional reaction that is “caught” from one person to another (e.g., a mother smiling happily at her child and thereby eliciting a smile, which may help to reinforce the mother’s care taking).

The example of emotional contagion can be used to illustrate the differences between the more cognitively based and socioemotionally based perspectives. This process may be viewed as pseudo-empathy by someone who sees empathy as arising from the cognitive understanding of another’s situation or it may be viewed as proto-empathy by someone who sees empathy as an innate emotional reaction that does not necessarily require cognitive effort. The cognitive and socioemotional perspectives are not irreconcilably different, however. The disagreement appears to be based on depth of processing. A socioemotional view of empathy focuses on relatively simple and potentially innate forms of empathy that are adaptive for young infants and for casual evaluations of a situation. By contrast, a cognitive view focuses on in-depth and effortful cognitive processes that may result in a more accurate analysis of a situation so that the empathic experience is a closer match to the actual feelings of another. Thompson (1987) addressed the issue well when he wrote, “It seems most appropriate to regard *both* kinds (affectively based and cognitively based) of empathic responding as anchorpoints on a continuum of empathy” (p. 124). Similarly, DeWaal (1997) states, “Cognitive evolution does not invent new categories of behavior. It works with, rather than replaces, the

ancient emotional infrastructure, transforming it by an ever-greater understanding on the part of the actors” (p. 78). This integration of cognitive and socioemotional perspectives seems to be the most profitable approach. Affective and cognitive components may be present in any empathic reaction and these components may vary by the individual’s motivation, ability, age, or situation. Studying the relations of emotional and cognitive components to each other as well as their relations to empathy will give us a better understanding of empathy.

Manifestations and development of empathy

The definition of empathy as an affective state separates the emotional response (empathy) from the cognitive process that led to it. It also separates empathy from similar emotions such as sympathy. An example would be a child’s feeling of happiness when he or she sees another child excited about a birthday present. Researchers have hypothesized that there are different “forms” of empathy that require different levels of cognitive effort (Hoffman, 2000; Vreeke & van der Mark, 2003). Hoffman defines these forms of empathy as: (1) mimicry, the spontaneous imitation of another’s expressions, vocalizations, etc that results in empathy; (2) classical conditioning, feeling empathy/sympathy for another in the same situation as yourself while experiencing the same distress that they are; (3) direct association, something about the other person’s situation reminds the observer about something that happened to them (empathy triggered via a personal memory); (4) mediated association, language communicates something about the person’s situation that triggers a personal memory; and (5) role-taking/perspective-taking. In an earlier study on information processing and prosocial

behavior, Karniol (1982) made a statement similar to Hoffman's which is applicable to the empathic process as well, namely that most types of prosocial behavior do not require high levels of cognitive effort (such as perspective-taking) because simpler strategies such as direct association may be quicker and easier, though possibly less accurate.

Vreeke and van der Mark (2003) define the forms of empathy as: (1) emotional contagion, roughly analogous to mimicry (a reaction to another's expression that causes the same emotion in the observer); (2) parallel emotions, which encompass classical conditioning, direct and mediated association, and perspective-taking (experiencing emotion as relevant to the self, memories, etc., taking the perspective of the other, and imagining how they are feeling); and (3) reactive emotions, which move a step beyond empathizing and encompass sympathy and the urge to help and which may or may not result in empathetic behavior. Hoffman (2000) also includes this notion of linking the urge to help with prosocial behavior in his section on sympathetic distress. Figure 1 provides a way to contrast the forms of empathy as described by Hoffman and Vreeke and van der Mark.

Forms of empathy as described by Hoffman (2000)					
Mimicry	Classical conditioning	Direct association	Mediated association	Role-taking	
Emotional contagion	Parallel emotions				Reactive emotions (sympathy)
Forms of empathy as described by Vreeke and van der Mark (2003)					

Figure 1. A comparison of the forms of empathy as described by Hoffman (2000) and Vreeke and van der Mark (2003).

Hoffman's (2000) and Vreeke and van der Mark's (2003) different conceptualizations of progressions of empathic "forms" share one thing in common: cognitive efforts become more complex and demanding and this results in the transformation of what is at heart an emotional reaction. As one progresses cognitively, more and more tools become available to create more accurate and sophisticated empathic reactions. These tools can include memories of past events and the ability to apply those memories to the situation of another as well as perspective-taking abilities. These tools may be either emotionally based (as in emotion regulation capabilities and emotional perspective-taking abilities) or they may be cognitively based (as in cognitive control processes and conceptual perspective-taking). The development of empathy, as

described by Thompson (1987), can be viewed as moving along a continuum that can either be very simple and emotional (and somewhat prone to error), cognitively involving and complex, or somewhere between these two extremes.

Few researchers have considered the development of empathy in as much detail as Hoffman (2000) has. In his book, he outlines the developmental progression of empathy across time. To Hoffman, veridical empathy is the last major stage of empathic development and occurs sometime during the second year of life. With veridical empathy children can understand that others' needs and feelings may be different from their own and can adjust their actions accordingly. A growing understanding of emotions and their causes aids in children's empathic responding, and perspective-taking now also contributes to their empathic responses. Veridical empathy allows the basic understanding that all adults use in their empathic responding, though children continue to progress in their understanding of emotion and perspective-taking. Children's empathic abilities are still largely limited to responding situationally (i.e., they do not consider factors beyond those relevant to the situation). Sometime between the ages of six and eight children develop the ability to empathize outside of the situation and consider the life circumstances of others, and they learn to empathize in a more abstract way with groups of others (e.g., a persecuted group of people).

Social Information Processing

A social information processing perspective provides a useful heuristic for studying the proposed integration of cognitive and emotional variables in an empathic response. The model of social information processing proposed by Crick and Dodge

(1994) outlines how individuals interpret and process social information in order to formulate appropriate responses. Social information processing proceeds through a number of steps, though some of the steps feed back on others, and these steps occur relatively rapidly to ensure timely responses. Briefly described, the steps are: (1) encoding of internal and external cues, (2) interpretation of cues, (3) clarification of goals, (4) response construction, (5) response decision, and (6) enactment of behavior. At each step an internal “database” of acquired knowledge affects step outcomes as well (see Crick and Dodge, 1994, for a more in-depth discussion). Crick and Dodge’s model provides a useful tool for the study of interactional processes. To date, proponents of the social information processing model have traditionally addressed the cognitive and social factors that are relevant in each step of the process and left emotional factors for future consideration. Lemerise and Arsenio (2000) have reformulated the social information processing model to include emotional factors as well. Further, Vreeke and van der Mark (2003) present an integration of emotional and cognitive components of empathy that resembles the social information processing approach.

There are two elements in Lemerise and Arsenio’s model that affect what happens at every stage of social information processing and that occupy a central position in the model along with Crick and Dodge’s (1994) database of acquired knowledge. One is emotion processes; these include emotion regulation, moods and background emotions, and temperament or emotionality. The other factor that affects what happens at every stage is the above mentioned knowledge database which includes past experiences; general social, cognitive, and emotional knowledge; and social schemas and scripts

(expectations for the social exchange). These two factors also affect each other. For example, our mood affects what types of memories are salient for recall (Fiedler, 2001) and acquired rules about behavior may temper our natural reactivity in some situations. These two ubiquitous factors affect the encoding of information during the first stage.

Most relevant for empathic responding are the first two steps in social information processing, encoding and interpretation. It is here that immediate, proximal factors (causal and intent attributions, evaluations, affective relationship, and perspective-taking) and influences from the central emotion processes and knowledge base lead to an empathic reaction and affect the level, or depth of feeling, of empathy. The more distal and central factors such as emotion regulation become not just abstract characteristics of the individual and the situation but actual factors in both the interpretive and empathic processes. The other steps in social information processing are less relevant in the formation of empathic responses but are still very interesting for future research and consideration (e.g., those steps potentially leading to prosocial behavior).

Like Lemerise and Arsenio (2000) and Hoffman (2000), I hypothesize that cognitive and emotional constructs work together to form an empathic experience. The next section of the literature review describes two emotional constructs and two cognitive constructs that may be related to each other and to empathy. These constructs are viewed through the lens of a social information processing perspective in order to illustrate how cognitive and emotional constructs may be integrated in empathic responding.

Psychological constructs relevant to empathy

In this section, the four psychological constructs examined in the study are defined and their hypothesized links to empathy are described.

Emotional variable 1: Emotion regulation

Emotion regulation is the ability to control affect internally in response to various situations (Eisenberg, 2000). Some research has shown that emotional reactivity and emotional regulation are temperamentally based and are linked to empathy-related responding (Eisenberg, Fabes, Murphy, Karbon, Smith, & Maszk, 1996). Emotion regulation seems to perform a similar function as cognitive inhibition; by reigning in and controlling the first emotional impulse to a situation, individuals are better able to consider the circumstances and feelings of others and perhaps to act more empathetically.

Emotion regulation may take various forms as children develop different coping strategies to deal with emotional impulses (Gurthrie, Eisenberg, Fabes, Murphy, Holmgren, Maszk, & Suh, 1997). The emotional impulses may be expressed in different ways (such as excitement, frustration, personal distress, etc.). Emotion regulation is the ability to regulate feelings of excitement when children sit, obviously testing the limits of their restraint, to open a present. It can also be observed when children are asked to complete an annoying and frustrating task and then patiently comply and employ strategies to ease their frustration such as self-distraction, humor, and feigning deafness. More specifically related to empathy, research has shown that personal distress to the situation of another may lead to less empathy and less helping (Eisenberg, 2000; Eisenberg et al., 1996). This may be because personal distress, as an emotion that must be

regulated in order to focus on the needs and feelings of others, may overwhelm any feelings of empathy and short circuit any cognitive and emotional processes that would lead to helping. The ability to regulate affect effectively enables an individual to set aside those feelings of personal distress when witnessing someone in need; it enables an other-oriented focus rather than a self-oriented focus. It is this ability to focus on others that is of great importance in an empathic reaction.

In Lerner and Arsenio's (2000) social information processing model that integrates cognition and emotion, emotion regulation is a subcategory of emotion processes. Emotion processes occupy a "central" position in the model, and these processes affect what happens at each stage of social information processing including the interpretive stage (the stage in which the formation of an empathic reaction would be most likely). Thus, emotion regulation may affect empathy directly, perhaps by enabling individuals to control their personal distress, or it may operate by way of another psychological construct.

Cognitive variable 1: Cognitive inhibition

Cognitive inhibition is the ability of individuals to check their first, automatic response to a stimulus, usually in favor of a more complex and cognitively demanding response (Gerstadt, Hong, & Diamond, 1994). It involves the ability to suppress one course of action and instead to access quickly an internalized rule or rules to make a different response. Cognitive inhibition does not involve emotion, but it should be relevant as a component of empathy because it should cause a person to consider a situation in greater depth rather than allowing a quick and automatic response to the

situation of another. As mentioned earlier in the literature review, considering and analyzing the situation of another involves the dedicated use of cognitive processes. It is difficult to consider experiences from someone else's perspective and even more difficult to consider multiple perspectives. Cognitive inhibition should be useful in the analyzing process because it allows a deeper and more insightful perspective-taking experience, albeit at the expense of time and effort. Supporting this idea, Valiente, Eisenberg, Fabes, Shepard, Cumberland, and Losoya (2004) found a link between children's cognitive, effortful control and sympathy.

Cognitive inhibition may not be relevant only to perspective-taking, however. It may also be important in "simpler" forms of empathic reactions as well. In direct and mediated association, empathy may be the result of comparing the situation of another to one's own past experiences (Hoffman, 2000). Even if young children do not use more advanced perspective-taking skills to experience empathy, cognitive inhibition may serve a purpose in these forms of empathic reactions. When reacting to the situation of another, cognitive inhibition may serve to give pause to the thought processes and allow the retrieval of past experiences relevant to the other's situation. Emotion regulation and cognitive inhibition seem to be the same side of different coins. In the present study we test the link between cognitive inhibition and empathy directly and through the mediating variable of perspective-taking, thereby exploring a question not previously addressed in the literature. Testing these hypotheses could show that cognitive variables make significant contributions to what had previously been considered to be a largely emotional process.

Although cognitive control processes are not addressed explicitly in Lemerise and Arsenio's (2000) model, cognitive inhibition would be expected to perform a function similar to emotion regulation and would affect what happens at each stage of social information processing. Based on the integrative model, it is hypothesized that cognitive and emotional control processes are closely linked.

Emotional variable 2: Affective perspective-taking

Affective perspective-taking is the ability to understand the feelings of another by taking their point of view (Harris, Johnson, Hutton, & Giles, 1989). This type of perspective-taking is a good example of the inseparability of cognitive and emotional processes. Cognitive effort is required to take the perspective of another, and knowledge of emotions is also required in order to be able to apply that knowledge to the other's perspective. What is interesting is that, theoretically, other forms of emotional knowledge derived from sources other than perspective-taking could "masquerade" as affective perspective-taking. Emotional knowledge derived from personal past experiences could easily be applied to the situation of another, and it would seem that individuals were taking the perspective of another when they were actually only applying what is relevant from their past to simulate the perspective-taking experience. Affective perspective-taking would be relevant to empathy during the interpretive stage of Lemerise and Arsenio's (2000) model. Affective perspective-taking would allow a more accurate empathic response by enabling children to take into consideration the feelings and desires of others rather than assuming that their own desires in a particular situation would be

relevant to the other (i.e., children using quasi-egocentric empathy versus using veridical empathy) (Hoffman, 2000).

It is particularly interesting to explore the link between affective perspective-taking and empathy for several reasons. The first is that affective perspective-taking has been linked to empathy in older children (Eisenberg, Murphy, & Shepard, 1997). The children who participated in the present project are relatively young, and it will be interesting to see if affective perspective-taking is an important component that is related to the empathic responses in these young children. Affective perspective-taking then may interact with conceptual perspective to give children who are capable of using both of these demanding skills more accurate empathic responses.

Cognitive variable 2: Conceptual perspective-taking

Conceptual perspective-taking is the ability to imagine how things are experienced from another's point of view (Taylor, 1988). This type of perspective-taking may include taking into account how another person perceives and knows about a stimulus and involves incorporating another's perspective into what an individual is experiencing. Conceptual perspective-taking is considered to be a cognitive construct because this type of perspective-taking does not involve emotion. Measurements of conceptual perspective-taking are limited to participants' deductions regarding what another's knowledge and senses tell them.

There is a logical link between conceptual perspective-taking and empathy. For more cognitively-based forms of empathy, such as the forms of perspective-taking outlined by Hoffman (2000) and perspective-taking as it may exist in parallel and

reactive empathy as outlined by Vreeke and van der Mark (2003), perspective-taking takes place first and provides structure for the emotional reaction. Any number of emotional responses may follow perspective-taking, empathy among them. It follows that perspective-taking is a key component in an empathic reaction. Conceptual perspective-taking is a purely cognitive construct, but this type of perspective-taking would be useful in the formation of an empathic response because it would enhance the accuracy of the response. It may be that children are able to take the emotional perspective of another before they can take the conceptual perspective of another. Conceptual perspective-taking may be the more demanding of the two types of perspective-taking because it requires the individual to take so many details about another's situation into account. When conceptual perspective-taking is employed, however, it may enhance the perspective-taking experience and result in an empathic response that has accuracy. Testing the relation between conceptual perspective-taking and the other psychological constructs as well as the relations between conceptual perspective-taking and empathy will help to answer the question as to whether conceptual perspective-taking interacts with affective perspective-taking to alter the accuracy of empathic responding in children.

Research questions

This study investigated the integration of cognitive and emotional constructs in relation to empathy. The integration of cognition and emotion was examined with two main types of cognitive and emotional constructs: control components (emotion regulation and cognitive inhibition) and perspective-taking components (emotional perspective-taking and conceptual perspective-taking). A social information processing

model, specifically the model proposed by Lerner and Arsenio (2000), was used as this model provides a helpful structure for conceptualizing the relations among the psychological components and their relations to empathy. The specific research questions were as follows:

- 1) What are the relations (direct effects) between each of the cognitive and emotional constructs (i.e., emotion regulation, cognitive inhibition, affective perspective-taking, and conceptual-perspective-taking) and empathy?

Hypothesis: Each of the independent variables will be positively related to empathy.

- 2) Are emotional and cognitive control processes (emotion regulation and cognitive inhibition) related to each other and are perspective-taking abilities related to each other (i.e. are there two distinct psychological components to empathy, a control component and a perspective-taking component)?

Hypothesis: Control processes will constitute a distinct area of functioning while perspective-taking abilities will constitute another.

- 3) Do affective and conceptual perspective-taking mediate the relation between control processes and empathy?

Hypothesis: Perspective-taking processes will mediate the relation between control processes and empathy.

- 4) Does conceptual perspective-taking interact with affective perspective-taking to enhance the relation between affective perspective-taking and empathy?

Hypothesis: Conceptual perspective-taking will moderate the relation between affective perspective-taking and empathy.

Strengths of the study

Traditionally, empirical investigations of empathy have focused on the link between empathy and prosocial behavior; two meta-analyses have summarized these findings (Eisenberg & Miller, 1987; Underwood & Moore, 1982). This study contributes to the study of empathy and the psychological constructs involved in empathic responses. The study is one of the first to explore the integration of emotional and cognitive components in empathic responding. Though some researchers have investigated some of the components proposed to contribute to empathy that are proposed here, a search of the literature has failed to find any studies where all of these cognitive and emotional components are considered simultaneously as contributors to empathy.

CHAPTER II

METHOD

Participants

The sixty participants and their families all live in the central North Carolina area. Descriptive information for the sample is presented in Table 1. The participant children were fairly evenly divided by sex (33 males and 27 females), were on average 61 months old, and came from families with a wide range of incomes. Mothers of the children tended to be highly educated with 59 % having a college degree of some type.

TABLE 1. Descriptive Information of Study Demographic Variables

	<i>M (SD)</i>	<i>%</i>
Child age	60.95 (4.49)	-
Sex (male)	----	55
Ethnicity	----	----
White	-	70
Black	-	20
Other	-	10
Maternal education	----	----
HS or less	-	5.1
Some college	-	35.6
College graduate	-	59.3
Income	----	----
< \$36,000	-	31.5
\$36 - \$60,000	-	29.6
> \$60,000	-	38.9

Because the participant children and their families had participated previously in a similar but larger study, they were compared to those that participated in the original study to see if there were any differences between the samples. The two groups (those that participated in the follow-up study and those that did not) were compared using Chi-

square and *t*-tests on demographic information to see if any differences existed. Chi-square tests revealed that there were no group differences in children's sex or ethnicity. Family income and mother's level of education, the two other demographic comparison variables, were treated as continuous. An independent samples *t*-test showed that there were no group differences on family income. The mothers in the families that participated in the follow-up study had significantly higher education levels ($M = 4.60, SD = 1.61$) (between 15 and 16 years of education) than the mothers in the families who chose not to participate ($M = 3.88, SD = 1.52$) (between 13 and 14 years of education), $t(138) = -2.66, p = .009$.

Procedure

Participants from the previous study were re-contacted and asked if they would like to participate in a follow-up visit. The first sixty families who agreed were scheduled for a visit to the research center at their convenience. The visit took approximately one hour and during that time children completed tasks measuring cognitive inhibition, affective perspective-taking, conceptual perspective-taking, and empathy. Mothers also completed two questionnaires, one assessing their child's emotion regulation abilities and one assessing their child's empathy. At the conclusion of the visit children selected a prize from a treasure chest and mothers were given gift certificates for their participation.

Measures of control processes

Emotion regulation: Children's emotion regulation was measured through mother report. The Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997) includes 24 items (e.g., "My child is prone to angry outbursts") and uses a 4-point Likert scale for

responding. There are two factors in the ERC- lability/negativity and emotion regulation. These two factors were significantly and negatively correlated ($r = -.35, p = .007$). The composite score exhibited good internal consistency ($\alpha = .84$) and was used for data analysis.

Cognitive inhibition: Children's cognitive inhibition was measured by the Children's Stroop Task (CST; Gerstadt, Hong, & Diamond, 1994). In this task children are shown a deck of cards with one of two pictures on a card. There are sixteen cards total (two for training and fourteen for the scored test) divided equally into two types. One type of card is white and has a yellow sun on it and the other type is black and has a moon and stars on it. Children are asked to say the *opposite* of what they see on the card (i.e., for the card with a sun they are asked to say "night" and for the card with the moon they are asked to say "day"). After a brief training period the task was administered and scored. One point was given if the child answered correctly; once the child passed the training the scores can range from 0 to 14. If children failed the training their scores were considered invalid. The total score on the CST was used in data analysis.

Measures of perspective-taking processes

Affective perspective-taking: Children's affective perspective-taking was measured using a vignette/story task involving puppets, adapted from Denham (1986). Children were told stories involving a puppet of the same sex as the participant child (Mandy for girls and Johnny for boys) and different emotions (happy, sad, angry, and scared). There were 17 vignettes total. The first four presented unequivocal situations to the participant child (e.g., receiving some ice cream). The other scenarios had two

possible emotions for the puppet. Which one the experimenter enacted was dependent upon what mothers reported (a priori) about their child's likely emotional response to a scenario. In these affective perspective-taking stories, the experimenter enacted the opposite emotional response for the puppet (i.e., the one not chosen by the mother as the participant child's likely or typical response). The purpose of using the opposite emotional response is to make sure that children were actually taking the emotional perspective of the other (the puppet) rather than responding based on what their own emotional reaction would be. Two points were given if the child correctly identified the emotional response of the puppet, one point was given if the child gave the correct valence (positive or negative), and no points were given for an incorrect response (wrong emotion and wrong valence). This measure demonstrated acceptable reliability ($\alpha = .80$). Because the unequivocal and equivocal scores were highly correlated, $r(60) = .55, p < .001$, the total score was used for data analysis.

Conceptual perspective-taking: Taylor (1988) developed a measure using partially covered pictures to evaluate children's conceptual perspective-taking abilities. In this task children were introduced to a puppet (Elmo, the Sesame Street character) who was going to look at some pictures. The puppet was wearing "special earmuffs" so that he could not hear what the child and the experimenter were talking about; he could only see what was happening. After introducing the puppet to the child, the puppet was placed in the experimenter's lap so that he could not see the picture. First, the entire picture was shown to the child and what is happening in the picture was explained. Three pictures were used in this task: one of a mouse and a cat (the training picture), one of a witch and a jumping

rabbit, and one of an elephant and a giraffe sitting down. There were five different pieces of paper, each with a different part cut out to reveal a different piece of the picture. The picture was covered with a piece of paper so that only part of the picture underneath could be seen. The different pieces were designed to reveal either none of the characters, no parts of the characters that would enable identification, or obvious identifying parts of the characters. The child was reminded once more that the puppet could not see the picture because he was in the experimenter's lap and he could not hear what was said because he was wearing his special ear muffs. The puppet was then allowed to look at the picture and the child was asked what the puppet could see by posing the questions in a forced choice yes/no format (e.g. "Does Elmo know there's a rabbit in the picture? Does Elmo know there's a witch in the picture?"). After the participant answered the questions for one picture Elmo was again placed in the experimenter's lap before the next picture was shown and the process was repeated. For this task children's scoring patterns were categorized: No pattern, 'No' bias (children answer no to all questions), 'Yes' bias (children answer yes to all questions) receive a score of 1, Level 1 (children answer no when all of the characters in the picture are covered but answer yes when a nondescript or unidentifiable part of a character can be seen) receives a score of 2, and Level 2 (children answer no when all of the characters are covered or when only a nondescript or unidentifiable part of a character can be seen but answer yes when an obvious and characteristic part of the character can be seen) receives a score of 3. Children were given a score of 1 for a correct answer and a 0 for an incorrect answer. The pattern of scores was then categorized into the described levels. For this task the child's score was based

upon the category into which he or she fell. Because most children scored at the low end of this task, the summed scores for the two trial pictures were then categorized dichotomously: either children could not perform the task (i.e., had no pattern or a yes/no bias on both trials) or could perform the task (i.e., completed at least one of the trials successfully and had at least a total score of 3). This dichotomous scoring was used in data analysis.

Measures of empathy

Bryant Empathy Index: This index measures children's trait empathy across different contexts and situations. An adapted version of this index was used for the study. Because the children in the study were so young there was concern that they might not be able to comprehend the format or remember their own responses to the situations in the index (see Roberts & Strayer, 1996 for their use of the index with 5-year-old children). Thus, the questions were reworded so that mothers could report on their children's emotional responses (e.g. "I sometimes cry when watching a sad movie" was reworded to say "My child sometimes cries when watching a sad movie"). Though Bryant (1982) reported both sex differences in empathy and cross-sex differences in empathy (i.e., females reported more empathy towards females in the index and males reported more empathy towards males), most researchers using the index take the total score. For this reason the questions were also reworded to be gender neutral (e.g., "My child becomes upset when he/she sees another child being hurt"). This resulted in eighteen questions rather than the original twenty-two (for a copy of this measure please contact the author). The initial assessment of reliability for the total scale was unacceptably low ($\alpha = .42$). An

exploratory factor analysis was conducted to identify possible subscales. This analysis indicated that seven of the items comprised a subscale with adequate reliability ($\alpha = .65$). This subscale was used in data analysis.

ECS Video task: This task was designed to tap children's situational empathy and was based on Strayer's (1993) video task. Children were shown several paper faces (happy, mad, sad, scared, and OK) and were told that they would be using the faces to show how they felt after watching videos and how they thought the children in the videos felt. The four videos were clips from movies that depicted situations in which children were happy, sad, scared, or angry. After each video children were asked how they felt and why they felt that way. Then children were asked how they thought the child in the video felt and why he or she felt that way. The empathy continuum scoring system (Strayer) was used to score children's responses. Children's total score for each vignette was coded based on their reported felt emotion, the emotion of the character in the story, and the attribution they made for why they felt the way they did. The total ECS score was the sum of the four scores on the vignettes. The scoring manual is provided in the appendix. A second rater independently scored 20% of the children's responses for reliability purposes; agreement was 92%.

Intensity of children's emotions was not used in the scoring system. As a result, affective matching scores could range only from 0 (no match) to 1 (affective match), as opposed to Strayer's original scoring from 0 to 3. In the two studies reported by Strayer alpha coefficients for the ECS scores were .74 and .83. In the current study the ECS scores exhibited acceptable reliability ($\alpha = .74$). Consistent with the study from which the

measure was drawn (Strayer), children in the current study tended to score at the low end of possible scores. Because of this, children's single best ECS score was selected as an additional measure of empathy.

CHAPTER III
RESULTS

Preliminary analyses

Preliminary analyses were conducted to examine the key study variables (control, perspective-taking, and empathy) before testing the hypotheses. Descriptive information of all study variables, including reliabilities, is presented in Table 2.

TABLE 2. Descriptive Information of Study Variables of Interest

	<i>M (SD)</i>	%	α
Control			
Cognitive	10.08 (3.18)		NA
Emotional	77.64 (6.71)		.84
Perspective-taking			
Cognitive (score 3 or higher)		66.7	NA
Emotional	26.38 (4.78)		.80
Empathy			
Total ECS (video)	14.70 (8.19)		.74
Best ECS (video)	5.92 (2.84)		NA
Bryant Empathy Index	5.92 (1.35)		.65

All of the variables were normally distributed with the exception of the measure of conceptual perspective-taking which was re-coded to be a dichotomous variable. Correlations between the demographic variables and empathy were examined to determine if any control variables were required (Table 3).

TABLE 3. Pearson Correlations between Measures of Empathy and Demographics

	Child age	Child sex	Family income	Mother education
Total ECS	-.09	.10	.30*	.24 ⁺
Best ECS	-.07	.03	.14	.14
Bryant empathy	.15	.09	-.14	-.11

Note. ⁺ $p < .10$, * $p < .05$.

In analyses with the best ECS score as an outcome, income was used as a covariate because the total ECS score was related to family income. The measures of empathy were not significantly related to any other demographic variable.

As part of the preliminary analyses, correlations between control and perspective-taking and empathy were examined (Table 4).

TABLE 4. Pearson Correlations between Measures of Empathy and Control and Perspective-taking Variables

	Total ECS	Best ECS	Bryant empathy	Cog control	Emo control	Cog persp taking	Emo persp taking
Total ECS	-	.86**	.05	.06	-.02	.23 ⁺	.23 ⁺
Best ECS		-	.09	.05	-.04	.31*	.15
Bryant empathy			-	.11	.29*	-.07	.25 ⁺
Cog control				-	.12	.15	.31*
Emo control					-	.07	.25 ⁺
Cog persp taking						-	.31*
Emo persp taking							-

Note. ⁺ $p < .10$, * $p < .05$, ** $p < .01$.

Both cognitive perspective-taking and emotional perspective-taking were marginally related to the total ECS score. There were no relations between control abilities and the

total ECS score. Only cognitive perspective-taking was related to the best ECS score. Mothers' reports of children's emotional regulation was significantly related to mother reports of children's empathy. Children's emotional perspective-taking was marginally related to mother reports of empathy. The two measures of control were not correlated with each other but the two measures of perspective-taking were.

Relations between cognitive and emotional variables and empathy

Separate regression analyses were used to examine the relations between, first, control abilities and, second, perspective-taking abilities with the measures of empathy. Table 5 displays the regression of empathy on control measures. Separate analyses were conducted for each of the three measures of empathy. Because income was included as a covariate in analyses involving the total ECS score, it was entered as the first step. Both control variables were entered simultaneously in a second step. With the best ECS score and the subscale of the Bryant Empathy Index as dependent variables, only cognitive and emotional control were entered in a single step.

TABLE 5. Regression Analyses Predicting Empathy from Cognitive and Emotional Control

	ECS Total					Best ECS					Bryant Empathy Index				
	B	SE	β	ΔR^2	$F(3, 53)$	B	SE	β	ΔR^2	$F(2, 56)$	B	SE	β	ΔR^2	$F(2, 55)$
Step 1															
Income	.73	.32	.30*	.09	5.25*	-	-	-	-	-	-	-	-	-	-
Step 2															
Control				.00	.03				.01					.09	
-Cognitive	.08	.36	.03			.06	.12	.06			.03	.06	.08		
-Emotional	.02	.17	.01			-.02	.06	-.04			.06	.03	.28*		
Adj. R^2				.04	1.71				-.03	.14				.06	2.69 ⁺

Note. ⁺ $p < .10$, * $p < .05$.

Results of the regression analyses with both the total ECS score and the best ECS score as the dependent variable were insignificant; cognitive and emotional control accounted for very little variance. In the third test reports of emotional regulation were significantly related to the mother report of children's empathy though the overall results were only marginally significant.

The same procedure was followed when examining the relation between perspective-taking and empathy; for the best ECS score and the subscale of the Bryant Empathy Index the two perspective-taking variables were entered in a single step. When examining the total ECS score income was entered in step 1 as a covariate and then the perspective-taking variables were entered. Table 6 displays the results of the analyses of the relation between perspective-taking and empathy.

TABLE 6. Regression Analyses Predicting Empathy from Cognitive and Emotional Perspective-taking

	ECS Total					Best ECS					Bryant Empathy Index				
	B	SE	β	ΔR^2	$F(3, 53)$	B	SE	β	ΔR^2	$F(2, 59)$	B	SE	β	ΔR^2	$F(2, 55)$
Step 1															
Income	.73	.32	.30*	.09	5.25*	-	-	-	-	-	-	-	-	-	-
Step 2															
Persp-tak				.07	2.11				.10					.09	
-Cognitive	3.58	2.43	.20			1.72	.79	.29*			-.47	.39	-.17		
-Emotional	.23	.25	.13			.03	.08	.06			.08	.04	.30*		
Adj. R^2				.11	3.23*				.06	3.03 ⁺				.05	2.47 ⁺

Note. ⁺ $p < .10$, * $p < .05$

When examining the links between perspective-taking and the total ECS score, the overall model was significant, though the individual perspective-taking variables did not contribute significantly. Cognitive perspective-taking was related to the best ECS score but the results for the overall model were only marginally significant. Perspective-taking was marginally related to scores on the mother report on the subscale of the Bryant Empathy Index. In this case emotional perspective-taking was related to the subscale of the Bryant Empathy Index but cognitive perspective-taking was not.

It was not possible to test the hypothesis that perspective-taking abilities would mediate the relation between control abilities and empathy. According to the Baron and Kenney (1986) approach to mediation, in order to test a mediating hypothesis each of the independent variables must be significantly related to the dependent variable. Only the report of children's emotion regulation was related to any of the measures of empathy; it was related to the subscale of the Bryant Empathy Index. Emotional perspective-taking was only marginally related to this measure of empathy. Thus, a test of mediation was not appropriate or supported.

To test the question of whether an interaction between cognitive and emotional perspective-taking was related to empathy, another set of regression analyses were conducted using guidelines provided by Whisman and McClelland (2005). First, interaction terms were created by centering the perspective-taking variables and then multiplying them. When investigating the total ECS score, family income was entered as a control variable in the first step, emotional and cognitive perspective-taking were entered as a block in the second, and the interaction between the two was entered in the

third step. When examining the children's best ECS score and the subscale from the Bryant Empathy Index, perspective-taking variables were entered as a block in the first step and the interaction term was entered in the second step. The interaction term did not add significantly to any of the models except in the case of the total ECS score; though neither emotional perspective-taking or cognitive perspective-taking was significantly related to total ECS scores alone, the interaction between the two was marginally significant; children who were able to use cognitive perspective-taking reported more empathy in response to video vignettes than those who could not use cognitive perspective-taking (presented in Table 7 and Figure 2).

TABLE 7. Hierarchical Regression Analysis Predicting Empathy from Perspective-taking including Interaction

	ECS Total					Best ECS					Bryant Empathy Index				
	B	SE	β	ΔR^2	$F(3, 53)$	B	SE	β	ΔR^2	$F(2, 56)$	B	SE	β	ΔR^2	$F(2, 55)$
Step 1															
Income	.73	.32	.30*	.09	5.25*	-	-	-	-	-	-	-	-	-	-
Step 2															
Perspective taking				.07	2.11				.10	3.03 ⁺				.09	2.47 ⁺
-Cognitive	3.58	2.43	.20			1.72	.79	.29*			-.47	.39	-.17		
-Emotional	.23	.25	.13			.03	.08	.06			.08	.04	.30*		
Step 3															
Emo PT x Cog PT	.83	.47	.29	.05	3.10 ⁺	.21	.16	.23	.03	1.83	.04	.08	.10	.01	.31
Adj. R^2				.15	3.30*				.08	2.66 ⁺				.04	1.73

Note. ⁺ $p < .10$, * $p < .05$.

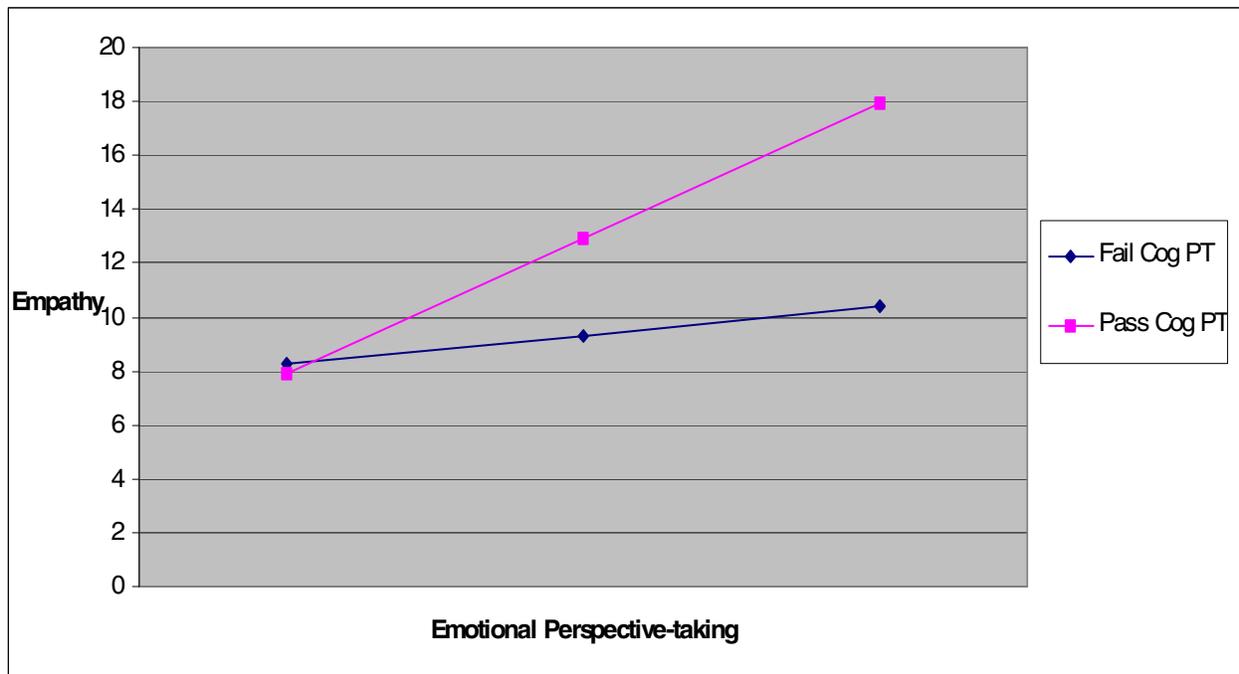


Figure 2. Graph of the interaction between emotional and cognitive perspective-taking.

CHAPTER IV

DISCUSSION

Empathy is an important affective response that is related to prosocial behavior (Eisenberg & Miller, 1987). To date there are no studies that have attempted to uncover all of the emotional and cognitive constructs that facilitate or are related to empathic responding. The current study investigated the links between young children's control abilities, perspective-taking abilities, and empathy. Three measures of empathy were used as the dependent variables: the total ECS score, the best ECS score, and a subscale of the Bryant Empathy Index. Children's control abilities were unrelated to empathy with the exception that children's ability to regulate their emotions was related to mothers' reports of their children's empathy. Cognitive or conceptual perspective-taking was related to children's best ECS score, and emotional perspective-taking was related to mothers' reports of their children's empathy. The proposed mediational hypothesis, that perspective-taking abilities would mediate the relationship between control abilities and empathy, was not supported because control abilities and perspective-taking abilities were not both significantly related to any single indicator of empathy. The moderating hypothesis, that emotional and cognitive perspective would interact, was partially supported. Although children's total ECS score was not predicted by cognitive or emotional perspective-taking individually, the interaction between the two was marginally significant. The analyses used in the current study detected some significant

relations between control and perspective-taking and empathy and in several cases detected statistical trends. Emotion regulation was related to one measure of empathy, mother reports of their children's empathy. Emotional perspective-taking was related to mother reports of children's empathy as well. Cognitive perspective-taking was an important factor in children's empathy for characters in video vignettes. Additionally, there was a nearly significant interaction between perspective-taking and empathy in response to video vignettes; children who are able to take the cognitive or conceptual perspective of another and who are able to take someone's emotional perspective had more empathic responses to the characters in the videos. Overall, perspective-taking abilities accounted for small effects in empathy (ranging from 7 to 13% of the variance), though these effects were not always statistically significant. Nevertheless, the results, when appraised from the view of an exploratory pilot study, are encouraging.

The results of the present study add to our knowledge of the early development of empathy in several ways. Research has been conducted on control abilities and their relations to empathy and on perspective-taking abilities and their relations to empathy, but prior studies have not combined the two in a theoretically driven attempt to explain the mental processes that are linked to empathic reactions. We found important relations between children's psychological abilities, especially perspective-taking, and empathy and detected several statistical trends. What the study most lacked was sufficient power to detect the relations between empathy and the control and perspective-taking constructs. A larger sample would have provided the power needed to detect significant findings.

In the current study emotion regulation was related to mothers' reports of their children's empathy. Generally, relations between emotion regulation and empathy, when found, have been small to moderate. Ungerer et al. (1990) found that poor regulation was related to very young children's personal distress when faced with another's emotional situation. Personal distress is thought to be an emotional reaction that inhibits empathy (Eisenberg et al., 1996). Similarly, Eisenberg et al. found that empathy-related responding (sympathy in this case) in kindergarten to second grade children was related to their abilities to regulate emotionally. Eisenberg (2000) suggests that the relations between empathy and emotion regulation are complicated and may depend on the types of measures employed to gauge the relation between empathy and emotion regulation. The study of this relation may be in the beginning stages; measures of empathy and emotion regulation vary considerably from study to study, and no consistent relations have been found.

In the current study cognitive control on a Stroop-like day/night task was unrelated to any measure of empathy. Other researchers have found different results; Rothbart, Ahadi, and Hershey (1994) found a relation between mothers' ratings of children's effortful control and their empathy as reported by mothers, though the results of the study may suffer from a shared method bias. It should be noted that there are no studies that have specifically evaluated the relation between cognitive control and empathy, though the study by Rothbart et al. evaluated the similar construct of effortful control. The importance of cognitive control is theoretically rather than empirically based (Hoffman, 1981).

Results from the current study offered support for the hypothesis that emotional perspective-taking is related to empathy; children's performance on an emotional perspective-taking task and mothers' reports of children's empathy were significantly related. Previous research on perspective-taking and empathy has shown mixed results. In one study preschool children's affective perspective-taking abilities were unrelated to their prosocial behavior/empathic responding (Hughes, White, Sharpen, & Dunn, 2000). Eisenberg et al. (1997) found the reverse; emotional perspective-taking was related to empathy in a sample of older children. It is interesting to note that the literature suggests that emotional perspective-taking is important for older children (Eisenberg et al.) but not younger, preschool children (Hughes et al.), yet in the current study of preschool children emotional perspective-taking and empathy were related.

In our study cognitive perspective-taking was related to children's most empathic reaction to characters' emotional situations in video vignettes (i.e., their best score on the ECS). The hypothesis that cognitive perspective-taking would be related to empathy was theoretically driven. Bengtsson (2003) conducted the only study that addressed this topic; he found that children's self-reported empathy was related to their reactions to emotion-eliciting vignettes but not to the cognitive perspective-taking children used in interpreting the vignettes.

There are difficulties inherent in the measurement of a subjective, affective state such as empathy. An insider perspective elicited by self-report is the most common way of studying affective states. This may be a problem, however, when children are too young to competently read a questionnaire or can not accurately recall their behaviors

and emotions. Coding facial expressions and making inferences about affective states from facial expressions is an alternative approach to measuring empathy but this approach was not used in the present study because empathy can not be differentiated from empathy-related responses such as sympathy or personal distress (Zhou, Valiente, & Eisenberg, 2003). Physiological measures have also been used but the same limitation applies; it is impossible to differentiate empathy from a similar emotion such as sympathy. Parent or teacher reports of children's empathy are commonly used, but a criticism of this method is that parents and teachers can only report on what they observe and reporting on another's emotional state, especially a specific emotion like empathy, can be difficult.

The age of the participant children in the present study posed additional problems. This study evaluated empathy at what may be the earliest time at which children can reliably report on their empathic reactions. Widen and Russell (2003) investigated children's performance on free labeling of facial expressions. They found that children's use of emotion labels increased with age in a systematic manner. That is, young children (2-to-3-year-olds) tended to use "happy" to describe any positive emotional expression and "sad" or "angry" to describe any negative emotional expression. Older children (4-year-olds) also labeled faces as happy, sad, or angry, but these labels were more narrowly, or selectively, applied. Moreover, 4-year-old children also used labels such as scared, surprised, and disgusted. These labels were also more selectively applied. It seems that young children label emotions according to broad categories based on valence, such as *good* (happy) or *bad* (sad or angry). With age, children begin to develop more

specific labels (such as surprised, scared, or disgusted) with which to label facial expressions of emotions. The existing literature indicates that young children can recognize and label facial expressions and emotional states. Children may also be able to understand and label their own internal emotional state, but accurately labeling their own emotions in response to the situation of another may be problematic. Given the possible range on one measure of empathy, the ECS, the relatively low scores obtained on children's self-reports to emotionally eliciting videos provide evidence of this. Comparable scores were obtained by Strayer (1993). Similarly, Bryant (1982) administered self-report questionnaires to young children and found the reliability of the measure bordered on unacceptable.

Concerning the measures employed in the current study, there was little evidence for convergent validity as the two main measures of empathy (the ECS and the subscale of the Bryant Empathy Index) were uncorrelated. There are several potential explanations for the lack of relationship. Neither of the measures of empathy has been used previously in the form administered in this study. The children in the current study were also among the youngest with which similar measures have been used. The ECS measured empathy at the youngest age at which children can complete the measure, and the subscale of the Bryant Empathy Index was converted from a child self-report to mother-report. Furthermore, the ECS is a state measure of affect; it measures empathy with unfamiliar individuals in a particular context. The Bryant Empathy Index measures trait empathy for familiar or at least known individuals across many different situations. There may be a lack of convergence because children who are normally empathic with family, friends,

and familiar individuals (and who are reported to be so by their mothers) were aware that the videos were “make-believe” or did not feel emotionally responsive to videos with unfamiliar characters. Conversely, it may be that the mother report of empathy was simply a poor measure; it initially had low reliability and the subscale obtained by factor analysis had only borderline acceptable reliability. It may be difficult for parents to report on the empathic reactions of their young children with any real reliability or accuracy.

The two empathy measures were related to control and perspective-taking in different ways. The best ECS score was related to cognitive-perspective-taking and the total ECS score was marginally related to the interaction between emotional and cognitive perspective-taking. The mother report of empathy was related to emotion regulation and emotional perspective-taking. Another measure of empathy that used a different method could have helped to resolve the lack of convergence by identifying which measure of empathy was the more valid.

The current study served a purpose as a theoretically driven, exploratory pilot study; it revealed interesting but inconsistent relations between young children’s empathy and control and perspective-taking abilities. Clearly there is a need for reliable and valid measures of empathy that can be used with young children. In future research it would be valuable for investigators to use multiple informants reporting on each construct and different methods (e.g., questionnaire, experimenter observation, child task) of measuring each variable. Employing a multi-trait multi-method approach would allow investigators to test the validity of measures as well as form a better overall picture of the relations between control, perspective-taking, and empathy.

Ideally a multi-method approach would take into account that empathy is both a trait and a process. Empathy exists as a trait in that it defines a general way in which individuals normally react emotionally to situations that involve others. A trait measure of empathy attempts to establish how individuals react empathetically in general (as in the mother report of empathy). A process measure of empathy is used to investigate how empathetically individuals react in a specific context or when presented with a specific scenario (as in the case of the ECS). A process measure of empathy can be used to investigate how empathetically individuals respond to specific individuals, groups of individuals, emotions, intensities of emotions, etc. Methodological advances in video coding now allow participants to view themselves in social interactions and report on their thoughts and subjective states without the drawback of retrospective reports; the actual emotional and cognitive processes leading to empathy can be reported on almost as soon as they occur. Such a comprehensive study would help to create new measures of empathy and validate existing measures with children of different ages. It would also help to define the psychological characteristics that are important in the experience of empathy and the behaviors that are driven by it.

REFERENCES

- Aguinis, H. (2004). *Moderated regression*. New York: Guilford.
- Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173-1182.
- Bengtsson, H. (2003). Children's cognitive appraisals of other's distressful and positive experiences. *International Journal of Behavioral Development*, *27*, 457-466.
- Bowlby, J. (1969). *Attachment and loss: Vol. 1. Attachment*. New York: Basic Books.
- Bryant, B.K. (1982). An index of empathy for children and adolescents. *Child Development*, *53*, 413-425.
- Crick, N.R., & Dodge, K.A. (1994). A review and reformulation of social-information-processing mechanisms in children's social adjustment. *Psychological Bulletin*, *115*, 74-101.
- Denham, S.A. (1986). Social cognition, prosocial behavior, and emotion in preschoolers: Contextual validation. *Child Development*, *57*, 194-201.
- DeWaal, F. (1997). *Good natured: The origins of right and wrong in humans and other animals*. Cambridge: Harvard.
- Eisenberg, N. (2003). Prosocial behavior, empathy, and sympathy. In M.H. Bornstein, L. Davidson, C. Keyes & K. Moore (Eds.) *Well-being: Positive development across the life course*. (pp. 253-265). Mahwah, NJ: Laurence Erlbaum.

- Eisenberg, N., Fabes, R.A., Gustavo, C., Speer, A.L., Switzer, G., Karbon, M., & Troyer, D. (2002). The relations of empathy-related emotions and maternal practices to children's comforting behavior. *Journal of Experimental Child Psychology, 55*, 131-150.
- Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology, 51*, 665-697.
- Eisenberg, N., Murphy, B.C., & Shepard, S. (1997). The development of empathic accuracy. In W.J. Ickes (Ed.), *Empathic Accuracy* (pp. 73-116). New York: Guilford Press.
- Eisenberg, N., Fabes, R., Murphy, B., Karbon, M., Smith, M., & Maszk, P. (1996). The relations of children's dispositional empathy-related responding to their emotionality, regulation, and social functioning. *Developmental Psychology, 32*, 195-209.
- Eisenberg, N., & Miller, P.A. (1987). The relation of empathy to prosocial and related behaviors. *Psychological Bulletin, 10*, 91-119.
- Feshback, N.D. (1978). Studies of empathic behavior in children. In B.A. Maher (Ed.), *Progress in experimental personality research* (Vol. 8, pp. 1-47). New York: Academic Press.
- Fiedler, K. (2001). Affective influences on social information processing. In J.P. Forgas (Ed.) *Handbook of affect and social cognition*. (pp. 163-185). Mahwah, NJ: Laurence Erlbaum.

- Gerstadt, C.L., Hong, Y.J., & Diamond, A. (1994). The relationship between cognition and action: performance of children 3½ - 7 years old on a Stroop-like day-night test. *Cognition*, *53*, 129-153.
- Gurthrie, I.K., Eisenberg, N., Fabes, R.A. Murphy, B.C., Holmgren, R., Mazsk, P., Suh, K. (1997). The relations of regulation and emotionality to children's situational empathy-related responding. *Motivation and Emotion*, *21*, 87-108.
- Harris, P.L., Johnson, C.N., Hutton, D., & Giles, A. (1989). Young children's theory of mind and emotion. *Cognition and Emotion*, *3*, 379-400.
- Hoffman, M.L. (1981). Is altruism part of human nature? *Journal of Personality and Social Psychology*, *40*, 121-137.
- Hoffman, M.L. (2000). *Empathy and Moral Development: Implications for Caring and Justice*. New York: Cambridge.
- Hughes, C., White, A., Sharpen, J., & Dunn, J. (2000). Antisocial, angry, and unsympathetic: "Hard-to-manage" preschoolers' peer problems and possible cognitive influences. *Journal of Child Psychology and Psychiatry*, *41*, 168-179.
- Karniol, R. (1982). Settings, scripts, and self-schemata: A cognitive analysis of the development of prosocial behavior. In N. Eisenberg (Ed.), *The development of prosocial behavior* (pp. 251-278).
- Lemerise, E.A., & Arsenio, W.F. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development*, *71*, 107-118.
- Piaget, J. (1965). *The moral judgement of the child*. New York: Free Press.

- Roberts, W., & Strayer, J. (1996). Empathy, emotional expressiveness, and prosocial behavior. *Child Development, 67*, 449-470.
- Rothbart, M.K., Ahadi, S.A., & Hershey, K.L. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly, 40*, 21-39.
- Shields, A. & Cicchetti, D. (1997). Emotion regulation among school age children: The development and validation of a new criterion q-sort scale. *Developmental Psychology, 33*, 906-916.
- Strayer, J. (1993). Children's concordant emotions and cognitions in response to observed emotions. *Child Development, 64*, 188-201.
- Taylor, M. (1988). Conceptual perspective-taking: Children's ability to distinguish what they know from what they see. *Child Development, 59*, 703-718.
- Thompson, R.A. (1987). Empathy and emotional understanding: The early development of empathy. In N. Eisenberg and J. Strayer (Eds.) *Empathy and its development* (pp. 119-145).
- Underwood, B., & Moore, B. (1982). Perspective-taking and altruism. *Psychological Bulletin, 91*, 143-173.
- Ungerer, J.A., Dolby, R., Waters, B., Barnett, B., Kelk, N., & Lewin, V. (1990). The early development of empathy: Self-regulation and individual differences in the first year. *Motivation and Emotion, 14*, 93-106.
- Valiente, C., Eisenberg, N., Fabes, R.A., Shepard, S.A., Cumberland, A., & Losoya, S.H. (2004). Prediction of children's empathy-related responding from their effortful control and parents' expressivity. *Developmental Psychology, 40*, 911-926.

- Vreeke, G.J., & van der Mark, I.L. (2003). Empathy, an integrative model. *New Ideas in Psychology*, 177-207.
- Whisman, M.A., & McClelland, G.H. (2005). Designing, testing, and interpreting interactions and moderator effects in family research. *Journal of Family Psychology*, 19, 111-120.
- Zhou, Q., Valiente, C., & Eisenberg, N. (2003). Empathy and its measurement. In C.R. Snyder (Series Ed.) and S.J. Lopez (Vol. Ed.). *Positive psychological assessment: A handbook of models and measures*. pp. 269-284. Washington: APA.