

MODERATION OF THE EFFECTS OF LEARNING
DISPOSITION ON SCHOOL READINESS BY
FAMILY AND CHILD CARE CONTEXTS

By

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CHAPTER ONE

INTRODUCTION

The Problem of School Readiness

The purpose of this study was to assemble a working model of learning disposition, to gather data relevant to this model, and to determine if measures of learning disposition taken in preschool were useful to predict kindergarten school readiness. In general, this model of learning disposition accounted for a significant but small amount of variance in academic and social outcomes, with some factors of family and child care contexts in preschool moderating child outcomes in kindergarten. The focus of the present study was the prediction of readiness for kindergarten, a topic of special interest to early childhood educators since the National Education Goals Panel established in 1990 by the U. S. President and 50 state Governors gave as its first goal that all children in America would start school ready to learn.

As Lewitt and Baker (1995) note, this is a highly laudable goal but one for which there is no consensus on how to measure if children are ready to learn. Developmental status has been shown to be a poor predictor of school success, since development is subject to periods of rapid growth and relative plateaus, as well as individual variations, and a measurement at one point in time is a weak forecaster of future growth (Crnic &

Lamberty, 1994). One would expect the ability to identify colors or count to 100 would be strongly related to later academic success, but in fact these skills depend on previous environmental interactions, and some children progress rapidly when exposed to learning opportunities not available in the past, while others proceed only with difficulty. Measures of general knowledge and social-emotional adjustment alike taken prior to kindergarten entry are surprisingly poor predictors of school success (Meisels, 1999).

In a meta-analytic review of screening tests, La Paro and Pianta (2000) estimated about 25 percent of the variance in academics in second grade was accounted for by academic measures taken in preschool, while 10 percent of the variance in social behaviors in second grade was accounted for by social measures taken in preschool. Although standard screening tests have the power to predict at most 25 percent of children's future performance, delayed entry is often the consequence of not doing well on these tests. The assumption is that by waiting an extra year, the child will gain the skills they need. However, it may be that children who do not do well on academic screening tests are actually the very children who most need kindergarten learning experiences to further their progress. Having the child not enter school or enter a less demanding classroom may deprive the student of experiences that enhance development (Crnic & Lamberty, 1994; Kagan, 1992; Lewitt & Baker, 1995; Meisels, 1999).

A further consequence of delayed entry is that the average age is increased in the kindergarten classroom. Teachers responding to this age increase gradually accelerate their program, making the program more demanding for those entering normally. That children then experience difficulty entering an accelerated kindergarten program where reading is expected confirms parents' and teachers' belief in the necessity of applying

ineffective screening tests, the application of which continue to delay children, increase average kindergarten age, and accelerate programs. Costenbader, Rohrer, and Difonzo (2000) reported about half the 385 districts that responded to their survey advised parents to delay school entry if testing identified their child as unready. There is a real need to develop more accurate assessments of school readiness, and when children truly at risk are identified, to provide solutions more effective than delayed entry.

To address problems of school readiness and to help delineate how to implement the goal of having children start school ready to learn, the National Education Goals Panel created the Goal 1 Resource Group and Technical Planning Group. This Group suggested readiness consists of five essential domains: (1) physical well-being and motor development, (2) social and emotional development, (3) approaches toward learning, (4) language development, and (5) cognition and general knowledge (Kagan, 1992; Kagan, Moore, & Bredekamp, 1995; National Education Goals Panel, 1997a, 1997b, 1998a, 1998b). From among these five domains, approaches to learning was chosen for the present study, not only because the other domains are incomplete predictors of school success, but also because it is the domain most ignored when testing for kindergarten readiness.

Bronfenbrenner's Theory

Curiosity, creativity, independence, cooperativeness, and persistence are characteristics included in the Goal 1 Resource Group and Technical Planning Group's description of approaches to learning as an essential domain of school readiness (Kagan et al., 1995). This list of characteristics is very similar to what Bronfenbrenner (1994)

calls “investigative dispositions.” Investigative dispositions are structuring proclivities by which a person actively structures, initiates, and sustains interactions with people, objects, and symbols, and include “directive beliefs,” viewpoints of oneself similar to locus of control (Rotter, 1966) or self-efficacy (Bandura, 1982) that influence willingness to interact (Bronfenbrenner & Morris, 1998). These personal dispositions can be disruptive to interactions, as with impulsiveness or apathy, or they can be generative, as with curiosity, the tendency to seek out and engage in interactions, responsiveness, persistence, and readiness to defer immediate gratification. Investigative disposition is the first of the three distinctive categories of personal characteristics Bronfenbrenner outlines as most important for the study of interactions between people and proximal processes and contexts: investigative dispositions, resources, and demands. Dispositions include qualities of the person that set in motion and sustain interaction, as described above. Resources consist of the better-known characteristics of health, abilities, experiences, knowledge, and skills. Demands refer to qualities of the person that encourage or discourage responses from the environment, such as mood (depressed, fussy, or happy) and appearance. For Bronfenbrenner, the interactions of these three categories of personal qualities with each other and with proximal processes and contexts over time constitute the major influences on development.

This study viewed Goal 1 Resource Group and Technical Planning Group’s description of the third essential domain of school readiness, approaches to learning, as descriptive of the generative half of Bronfenbrenner’s investigative dispositions. This study’s modeling of approaches to learning was expanded to include his description of negative influences, as disruptive characteristics can make it difficult to engage in

proximal process requiring complex, reciprocal interactions (Bronfenbrenner & Morris, 1998). This study combined disruptive and generative characteristics into a single, functioning characteristic of the child, designated as learning disposition.

Assembly of a Model of Learning Disposition

The concept of learning disposition organized under one umbrella many different aspects of behavior commonly associated with doing well in school: degree of impulsiveness, lack of apathy, tendency to engage in interaction, responsiveness, curiosity, creativity, persistence, and the ability to delay gratification. Although Bronfenbrenner groups these behaviors into disruptive and generative subcategories, this study preferred to identify opposite poles of behaviors from each subcategory and pair them together. This resulted in two basic continuums of behavior, one ranging from apathetic to actively seeking engagement, and the other ranging from impulsive and distractible to persistent. The ability to delay gratification was included with persistence and came under that heading. Curiosity and allied behaviors were grouped under the tendency to engage and became part of that continuum. There was some question about whether creativity could precisely be included under tendency to engage, but as its opposite was not described, which might be dullness, and this opposite would be difficult or inappropriate to measure, creativity was finally included under tendency to engage. In some sense, apathy can be considered a legitimate opposite of creativity.

Cooperativeness was mentioned by Group 1 as part of approaches to learning but was considered by this study to be a social competency and was excluded from the construction of learning disposition, although cooperativeness could be considered an

ingredient of disposition and be included in a future model. It became clear after pairing like behaviors from disruptive and generative groups that the resulting continuums of behaviors represented two major dimensions. Behaviors that ranged from apathy to the tendency to engage represented a dimension of energy and motivational interest, while the continuum ranging from impulsivity to persistence represented a dimension of self-regulation. These, then, were determined to be the two major constituents of learning disposition, motivational energy and self-regulation, with motivational energy ranging from apathetic to actively engaged, and self-regulation ranging from impulsive and distractible to persistent and focused. In its simplest form, there were thus four major categories of behaviors to measure to assemble a working model of learning disposition: (1) apathy and avoidance, (2) tendency to engage in interaction, (3) impulsivity and distractibility, and (4) persistence. Questions relevant to each of these categories were gathered and assembled into a single field that included continuums of both motivational liveliness and self-regulation. Self-regulation was expected to vary among children, but current research suggested motivation was considered to be high across the board for young children, regardless of their status, so the possible lack of variance presented a special challenge to this assembly of learning disposition.

The Problem of Learning Disposition and Motivation

One would expect motivation to be lower in children of low-income and at-risk families. Contrary to expectations, studies show that motivational levels are much the same among at-risk and not-at-risk children (Howse, Lange, Farran, & Boyles, 2003;

Stipek & Ryan, 1997). Howse et al. did observe motivational variation among children, but this variation was not related to risk status. Some studies simply stated motivation does not vary among young children. Ryan and Stipek (1997) concluded motivation is probably not an important correlate or cause of learning. Since preschool children are highly optimistic about themselves and their capabilities, and this optimism varies little from child to child, some studies attribute motivational variation to the child's surroundings. "With regard to classroom settings, although there is minimal variation in achievement motivation among preschool-age children, the variation that exists is significantly associated with classroom context (Shonkoff & Phillips, 2000, p. 157)." That there is little difference among motivational levels in children themselves presents a serious objection to our construction of learning disposition, for if there is little variation in this central part of learning disposition, there is little need to study its effects.

The present study agreed classroom context affects motivation but suggested there is a real sense in which achievement motivation is not the same among preschool children, independently of classroom context. This did not exactly mean current opinions about general motivational levels are mistaken; it means this dilemma was resolved by distinguishing between outlook motivation and behavioral motivation. Data on outlook motivation might be gathered by asking the child how they felt about things, while data on behavioral motivation might come from a teacher who has observed the child in action. While outlook might vary somewhat but be generally high among all children, especially from an adult perspective, actual behavioral motivation should range from apathy to enthusiasm, and from the viewpoint of this study, was expected to vary significantly from child to child.

There are good reasons to expect this variation in behavior. It is likely that enthusiasm to engage in interactions is a characteristic that varies from individual to individual from an early age. Infants with an inhibited temperament tend to develop into children who avoid people, objects, and situations that are unfamiliar. Uninhibited children spontaneously draw near novel persons, objects, and situations. These two temperamental categories are moderately stable from infancy into early adolescence and have been hypothesized to be due, in part, to variation in amygdalar responses to novelty (Schwartz, Wright, Shin, Kagan, & Rauch, 2003). Also indicative of the existence of a relatively stable tendency to engage, Fox, Henderson, Rubin, Calkins, and Schmidt (2001) selected infants 4 months of age for behavior thought to predict temperamental exuberance and followed them through the first four years of life. These children exhibited a high degree of continuity over time in these behaviors.

On the other hand, components of self-regulation such as persistence, distractibility, and willingness to delay gratification are generally accepted as varying among children, so variation in self-regulation was expected. Shoda, Mischel, and Peake (1990), for example, found that adolescents who were able to delay gratification longer as preschoolers were described by their parents as more academically and socially competent and better able to handle frustration and temptation. In their study, delay of gratification was a relatively stable quality that resulted in specific gains that included academic and social outcomes. Deficient delay behavior has also been linked to problems in self-regulatory and academic competence (Mischel, Shoda, & Rodriguez, 1989). The ability to postpone immediate gratification is generally recognized as facilitating the development of self-control and self-regulation (Mauro & Harris, 2000). The present

study therefore expected that both motivational liveliness and self-regulation would vary, and as a result, learning disposition would be a variable quality that could be related to school outcomes.

The Relation of Learning Disposition to Ability

Another question this study confronted was the relation between learning disposition and other personal characteristics of the child described by Bronfenbrenner as useful for the study of interaction with proximal process and contexts: resources (ability) and demands (largely mood). Several studies addressing ability, self-regulatory components of learning disposition, and school outcomes were reviewed. Mood and its relation to school outcomes were left for future study. As one of the three central characteristics of people, mood was considered as a possible covariate when analyzing relations.

Persistence plays an important role when confronting difficult tasks and can be an important asset to children learning letters, sounds, shapes, and numeral recognition. As a part of learning disposition, it may compensate for low ability and produce better than expected developmental outcomes. Newman, Noel, Chen, and Matsopoulos (1998) explored the relationship between five dimensions of temperament and reading achievement in kindergarteners and first graders. Analyses with persistence as the predictor variable and reading achievement as the outcome variable showed that for the group with lower intelligence, persistence predicted reading achievement, while for the group with higher intelligence persistence was not a significant predictor. Persistence was

therefore an element in academic achievement that may be more important for children of low ability. High learning disposition may assist high ability, but where learning disposition may become critical to school readiness is when ability is low and learning disposition is high.

In another study that associated persistence with reading in kindergarten, Schoen and Nagle (1994) investigated the relationship between temperament and school readiness in 152 kindergartners from predominately middle-class homes in South Carolina. Teacher ratings on dimensions of temperament and the Peabody Picture Vocabulary Test-Revised (PPVT-R) were given at the first of the year. The Metropolitan Reading Test (MRT) was given at the end of the year. Regression analysis revealed persistence to be the most significant dimension of temperament. The PPVT-R accounted for 32% of the variance in MRT scores. When persistence was added to the equation, 50% of the total variance was accounted for in MRT scores. This represents an increase of 18% added by persistence. Both Newman et al. (1998) and Schoen and Nagle (1994) link persistence directly with reading ability.

While the Newman et al. (1998) study proposed the self-regulatory part of learning disposition may be critical for school readiness only at the lower end of ability, the Schoen and Nagle (1994) study suggested this portion of learning disposition was important across all levels of ability. Since only the Newman study took into account the IQ of the child, the present study concluded it was more likely that learning disposition would be compensatory at the lower end of the scale. It was hypothesized that under conditions of low ability, ability in preschool would moderate the effects of learning disposition on academic kindergarten school outcomes. When ability was high, high

learning disposition would not result in better academic outcomes than low learning disposition. When ability was low, high learning disposition would result in better academic outcomes than low learning disposition. In this hypothesis, learning disposition played a compensatory role. Presumably, when ability is high, high learning disposition, with its components of enthusiasm and persistence, may assist ability but is unnecessary to achieve reasonably good academic outcomes. High ability alone is sufficient. When ability is low, the level of learning disposition becomes of more critical importance.

The Relation of Learning Disposition to School Outcomes

Learning disposition operates to improve kindergarten academic and social outcomes mainly through the enthusiasm to engage in interactions and through the ability and willingness to persist through difficulty. The tendency to engage in interactions with people, places, objects, and novel situations, to persist on a task, and to be able to delay gratification are likely characteristics of learning disposition in preschool that result in better kindergarten school outcomes. They are emotive and regulatory components that influence cognitive and social abilities considered indicative of school readiness. The purpose of this section was to develop a brief rationale that directly linked the two dimensions of enthusiasm and persistence to developmental outcomes relevant to school readiness.

One of the first prerequisites for writing and reading is the hearing and use of everyday speech, an experience greatly increased by the inclination to engage in interactions. Interactions with objects and symbols of everyday use are also increased. Exuberance, interest in novelty, and the propensity to engage in active interactions with

people, places, and objects lead the young child to inquire, ask, experiment, imitate, and learn. The child is immersed in the constellations of reference which make an object meaningful – the general and specific contexts in which it has occurred, the functions it performs, the place it occupies in daily living, how it relates to our needs and feelings, its flexibility or rigidity, what can and cannot be expected. However, once experienced, the countless former movements of thought are no longer necessary, they are already there for the child in the object; otherwise, once a system of reference was built up, it would take hours to comprehend even one thing in its significance, rethinking through everything. The object has come to “represent” all that information, a re-presentation (Cassierer, 1923), only in an instant, all at once – the translation of an entire history into a single form: cup or spoon. This is similar to what Forman (1983) describes as the atemporalization of action schemes through static representations, and it is how the tendency to engage in interactions potentially influences school outcomes. Willingness to interact draws from the context the relations that make things meaningful.

In a responsive environment, this leads to greater knowledge of colors, shapes, sounds, and situations. If exposed to reading, such children are often anxious to learn to read and have a great interest in learning letters.

In addition to the tendency to engage in interactions with people, objects, and symbols, the ability to persist through difficulty also plays an important part in these developments. As mentioned earlier, persistence is related to reading ability in kindergarten and first grade (Newman et al., 1998; Schoen & Nagle, 1994). Interestingly, it is suggested that on less complex tasks, successful attempts on an activity elicit persistence, whereas on more complex activities persistence is obtained by just the

opposite effect, lack of success and the challenging nature of the task (Vlachou & Farrell, 2000). Some researchers postulate it is exactly the ability to persist in the face of difficulty that may be missing in children diagnosed as having attention-deficit hyperactivity disorder (ADHD). A common complaint is that ADHD children are likely to give up on academic tasks, especially when the task is challenging, although it is difficult to separate inability to persist from inability to accomplish the task (Hoza, Pelham, Waschbusch, Kipp, & Owens, 2001).

Persistence allows the contact initiated by enthusiasm to unfold in its complexity. It gives a time and a place for the child to learn from mistakes and make constant corrections, an arena where challenge and skill can interact. It includes the ability to focus attention, stay on task, delay gratification, and endure repeated mistakes. According to executive function accounts, the ability to inhibit disruptive responses and maintain focus has been postulated to arise from an inhibition mechanism (Harnishfeger & Bjorklund, 1993). In contrast, according to accounts that emphasize consciousness, control of behavior is thought to arise from the growth of conscious, intentional processes, as opposed to unconscious, automatic processes (Zelazo & Frye, 1997). In the latter view, it is the ability to reflect on one's own cognitive structures that result in increases in self control and make possible general cognitive and social developments such as theory of mind (TOM).

Learning disposition, then, had the potential to influence development, but before hypotheses were drawn from these effects of learning disposition on school outcomes, it was decided child contexts prior to school entry should first be taken into account. Pianta and McCoy (1997) attempted to identify variables that were predictive of school

difficulties by including contextual factors. They found with their model that included factors from the home environment, 67 percent of children with school problems were identified. Although the ability to predict school success was greatly improved by the inclusion of home contextual factors, it was still the case that 20 percent of children identified as not ready for kindergarten were indeed ready.

Attempts to predict kindergarten readiness should therefore take into account the pervasive influence of both home and child care (Getty, 2002; La Paro & Pianta, 2000; NICHD ECCRN, 2003; Pianta & McCoy, 1997). The quality of parent-child and teacher-child relationships may augment the effects of the child's learning disposition on academic and social outcomes.

The Moderation of Learning Disposition by Family Contexts

Although response to novelty and the ability to self-regulate have biological influences, their basic characters are heavily influenced by patterns of interactions within the mother-child dyad. Identification of some of these parental factors was important for the detection of moderators of learning disposition within the family context. One such factor was suggested by the theory of transgenerational acquisition (Fonagy, 1999) which proposed the quality of caregiver-infant interactions is dependent upon the ability of the primary caregiver to interpret and mirror the child's emotional states, an ability called reflective capacity, or mentalization. The current study considered this theory essential to understanding how parental actions in preschool influence the child's learning disposition in kindergarten. Reflective capacity is the ability of human beings to perceive others as

intentional beings, and is closely allied to theory of mind. The caregiver interprets and mirrors the child's states, comforting, asking questions, and describing. The child finds himself in the eyes of the caregiver. An exaggerated mirror of the child's emotions, when the mother herself becomes alarmed or overreacts, might lead to a sense of terror on the part of the child, while indifference or gross misinterpretation might lead to the child's inability to identify emotions. Exaggeration, indifference, misinterpretation, or cruelties on the part of the parent tilt the balance in the growing child toward fear of exploration, inability to self-regulate emotional states, and a lessened capacity for reflectivity.

On the other hand, reasonably accurate identification of emotions and the giving of comfort allow the caregiver to be used as a recovery station from confusion and danger, regulating the child's emotions, and subsiding the chaos of sensation and fear. The numinous presence of the mother is perhaps the basis for all future methods of recovery from fear of abandonment and disorder (Erikson, 1977) and forms the foundation from which the ability to focus and sustain attention on novel aspects of the world is made possible. Restored by parental regulation of emotions, the child is able to undertake exploration and risk novelty.

The dual dimensions of regulation and engagement in learning disposition therefore find their correlate in the dual nature of parent-child patterns of interaction, including attachment. "And like the other models discussed, the attachment system combines two "antithetical" human propensities: to seek continuity (comfort) in the face of overwhelming change, and change (stimulation) in the face of numbing continuity (Csikszentmihalyi & Rathunde, 1998, p. 671)." Parental reflective capacity was

considered to be an influential behavior moderating both dimensions of learning disposition, self-regulation and the tendency to engage in interactions.

Although it was not possible in the present data set to directly test the reflective capacity of the primary caregiver by the recall of family experiences as described by Fonagy, Steele, Steele, Higgitt, and Target (1994), a question was chosen which reflected parental interest in the mind and behavior of the child. That a parent finds the child interesting for long periods, and learns from the child, was thought to be indicative of a parent more open and highly tuned to the child's behavior and thought. Parents lacking an active curiosity in the changing activities of the child would not be expected to respond with the highest ratings when questioned about learning from the child for long periods. Such a question was chosen as a single indicator of parental reflectiveness and predicted to be a moderator of the effects of learning disposition on academic and social school outcomes. If reflective capacity is linked to learning disposition, higher parental reflectiveness should lead to increased effects of learning disposition on all school outcomes by giving the child a love of interaction and an ability to identify and regulate emotions necessary for persistence.

Other parenting behaviors were identified by Csikszentmihalyi and Rathunde (1998) as relevant to patterns of continuity and change in the child. The child assimilates when a mother is reactive to the desires of the infant. The child accommodates through imitating actions, reacting to stimulation, and adjusting to schedules of feeding. Csikszentmihalyi suggested children socialized in homes that balance assimilation and accommodation develop better capacities to self-regulate attention and respond to the environment in ways that promote growth. The contention was, children need to develop

strong habits of both assimilation and accommodation in a home environment that is both supportive and challenging. He recommended a blending of child-centered and adult-centered approaches as most advantageous for development.

A parenting style that includes being responsive and setting reasonable bounds should improve the child's capacity to self-regulate attention and the willingness to engage in new situations. In a study that found parental responsiveness correlated with social skills in school, Connel and Prinz (2002) concluded a responsive parent-child interaction style explained 17 percent of the variance in teacher ratings of social skills in their sample. Being responsive and setting bounds capture the two commonly accepted dimensions of normal parenting, parental warmth and parental demands, which generate the four fundamental parenting styles: permissive (responsive but not demanding), authoritarian (demanding but not responsive), authoritative (demanding and responsive), and uninvolved (neither demanding nor responsive) (Baumrind, 1991; Maccoby & Martin, 1983).

The current study reasoned a parental style promoting both challenge and support would provide the best preparation for the employment of learning disposition in kindergarten. A mini-model of parent interaction was constructed from this approach, to test in interaction with learning disposition. Questions concerning setting bounds and responsive parenting were combined into a construct, labeled parent-child interaction. This study predicted the resulting model of parent interaction would moderate the effects of learning disposition on academic and social school outcomes because differential parenting styles would allow or disallow the further exercise of the child's learning disposition. It was hypothesized that parent interaction during the preschool years would

moderate the effects of learning disposition on academic and social kindergarten school outcomes. When parent quality was high, high learning disposition would result in better school outcomes than low learning disposition. When parent quality was low, high learning disposition would not result in better school outcomes than low learning disposition. This model is not one of compensation.

Other better-known factors in the family context that were considered relevant to school outcomes were included in the current study as well. The best known of these were maternal education, child ethnicity, and family income. Pianta and McCoy (1997) chose ethnicity and maternal education as the two most important indicators from family contexts in their attempt to predict school readiness. Child ethnicity was included in the present study as a covariate relevant to school outcomes. Maternal education was considered an especially important contributor to both academic and social child outcomes by many studies (Getty, 2002; Loeb, Fuller, Kagan, & Carrol, 2004; NICHD ECCRN, 2003; Peisner-Feinberg et al., 2001). Hoff (2003) found maternal speech differed as a function of SES, and this difference accounted for the size of their child's productive vocabularies. As SES and maternal education level are closely related, this study offered a mechanism - maternal language input to the child - by which both maternal education and SES impact kindergarten outcomes.

However, if maternal speech effects school outcomes through the mother's use of language, it may be operating more through the child's general ability than of learning disposition; but, as another avenue of the influence of family context on school readiness, maternal education was one worthy of exploration. It was hypothesized that maternal education would moderate the effects of learning disposition on both academic and social

kindergarten school outcomes. When maternal education was high, high learning disposition would result in better school outcomes than low learning disposition. When maternal education was low, high learning disposition would not result in better school outcomes than low learning disposition.

Income was often considered an indicator of school risk, so it was hypothesized that family income in preschool would also moderate the effects of learning disposition on both academic and social kindergarten school outcomes. These moderations were expected because both the motivation to achieve academically and social competence should vary with parental education and income. Better education and income should result in a home environment more conducive to safety, exploration, and harmonious personal interactions. All these family factors of the home, including reflective capacity, parent-child interaction, maternal education, and family income, are not alone in providing an environment where the child spends a great deal of time, and child care was another context considered essential when predicting school readiness.

The Moderation of Learning Disposition by Child Care Contexts

Child care is now another long-term influence on the child's development before school entry. As both parents now often work, Vandell and Wolfe (2000) found about 60 percent of children 5 years or younger are in child care on a regular basis, with 44 percent of infants in care for more than 30 hours a week. Given the amount of time children spend in child care, it is necessary to take into account the influence of child care

contexts on development when predicting school readiness (Getty, 2002; La Paro & Pianta, 2000; NICHD ECCRN, 2003; Pianta & McCoy, 1997).

Although the child comes to child care and to school with an already existing model of interaction from the family context, this model is not applied indiscriminately regardless of conditions. Children will still act differentially according to the character of adults and peers with whom they find themselves, and they will still act differentially according to the character of the environment in which they find themselves. It is possible to form new attachments with new people, and although the model developed in infancy with the primary caretaker continues to be the central attractor for relational tendencies, these new attachments will have their own character of security and insecurity.

As Burchinal, Peisner-Feinberg, Pianta, and Howes (2002) point out in their study of the effects of teacher-child interactions on academic and social school outcomes, attachment to the teacher involves much the same elements as parent-child interactions. Under a teacher with whom the child feels safe and secure, the child will be able to achieve better outcomes, as the child feels safe to explore and to learn, and knows if things go wrong, they can be stabilized by the teacher. Burchinal et al. (2002) collected standardized assessments and parent and teacher surveys on 511 children from child care through second grade. Children tended to show better academic skills if parents had more education and had progressive parenting practices. A closer relationship with the teacher was positively related to language skills for African-American children and to reading competence for children with authoritarian parents. In this case, the influence of the teacher-child relationship on academic outcomes was influenced by ethnicity and parenting style.

In a longitudinal study also looking at teacher-child relationships, Peisner-Feinberg et al. (2001) followed 733 children from 4 years old to 8 years old to study the relationship between cognitive and socioemotional development and child care experiences. Results indicated classroom practices were related to language and academic skills, while closeness of the teacher-child relationship was related most especially to social skills. Stronger positive effects of child care quality were apparent for children from at-risk families. They concluded quality child care environments influence both cognitive and social skills, as well as buffering the effects of at-risk environments. In this case, teacher-child relationships were influential on social outcomes for all children, regardless of ethnicity.

Loeb et al. (2004), in a study of 451 children from 12 to 42 months of age residing either in San Francisco or San Jose, California or Tampa, Florida, found positive cognitive effects for children in child care centers whose mothers entered welfare-to-work programs. There were increased cognitive effects when caregivers were responsive, and increased social effects when providers had education beyond high school. In this case, teacher-child relationships have cognitive effects, while the educational level of the teacher related to improved social effects.

From these studies it was concluded teacher-child interaction affects child school outcomes. Some studies suggest this affect is academic, others suggest social. This study predicted the teacher-child interaction would moderate the effects of learning disposition on both academic and social school outcomes. It was hypothesized that teacher-child interaction in preschool would moderate the effects of learning disposition on academic and social kindergarten school outcomes. When the quality of teacher interaction was

high, high learning disposition would result in better school outcomes than low learning disposition. When the quality of teacher interaction was low, high learning disposition would not result in better school outcomes than low learning disposition. It was felt to be likely that good quality teacher-child interactions would let the secure child's learning disposition shine forth, while poor quality teacher-child interactions would inhibit the influence of the child's learning disposition.

Teacher-child interaction is part of a larger context, the context of child care quality. An environment that allows exploration, play, and learning opportunities should allow the child's learning disposition free rein to influence school outcomes. On the other hand, an environment that is poorly organized and has few resources to explore would put severe constraints on the potentially positive influence of high learning disposition. Most central to this study of learning disposition and school outcomes was the study by Fox et al. (2001) which showed that between four months of age and four years of age, orientation toward novelty may change in the case of inhibited children, if exposed to high quality care. As orientation toward novelty is a central feature of learning disposition, and as this study was one of the few found that relates child care quality and the tendency to engage in interactions, it was felt this study offered a clue in current research as to a possible relation between quality care and the enthusiasm to explore. The present study assumed that quality child care would be a moderator of the effects of learning disposition on school outcomes.

It was hypothesized that child care quality in preschool would moderate the effects of learning disposition on both academic and social kindergarten outcomes. When the quality of child care environment was high, high learning disposition would result in

better school outcomes than low learning disposition. When the quality of the child care environment was low, high learning disposition would not result in better school outcomes than low learning disposition.

Hypotheses

1. When child ability is low, ability in preschool will moderate the effects of learning disposition on academic kindergarten school outcomes. When ability is high, high learning disposition will not result in better academic outcomes than low learning disposition. When ability is low, high learning disposition will result in better academic outcomes than low learning disposition. In this hypothesis, learning disposition plays a compensatory role.
2. Reflective capacity of the parent when the child is in preschool, as measured by how educational the parent finds the child's thought and behavior, will moderate the effects of learning disposition on academic and social kindergarten outcomes as measured by the BBCS-R. When reflective capacity is high, high learning disposition will result in better school outcomes than low learning disposition. When reflective capacity is low, high learning disposition will not result in better school outcomes than low learning disposition.
3. Parent interaction in preschool as measured by parent report will moderate the effects of learning disposition on both academic and social

kindergarten school outcomes as measured by the BBCS-R. When parent quality is high, high learning disposition will result in better school outcomes than low learning disposition. When parent quality is low, high learning disposition will not result in better school outcomes than low learning disposition.

4. Maternal education will moderate the effects of learning disposition on both academic and social kindergarten school outcomes as measured by the BBCS-R. When maternal education is high, high learning disposition will result in better school outcomes than low learning disposition. When maternal education is low, high learning disposition will not result in better school outcomes than low learning disposition.
5. Family income will moderate the effects of learning disposition on both academic and social kindergarten school outcomes as measured by the BBCS-R. When income is high, high learning disposition will result in better school outcomes than low learning disposition. When income is low, high learning disposition will not result in better school outcomes than low learning disposition.
6. Teacher-child interaction in preschool, as measured by the Arnett Caregiver Interaction Scale will moderate the effects of learning disposition on academic and social kindergarten school outcomes as measured by the BBCS-R. When the quality of teacher interaction is high, high learning disposition will result in better school outcomes than low learning disposition. When the quality of teacher interaction is low,

high learning disposition will not result in better school outcomes than low learning disposition.

7. Child care quality in preschool as measured by the Early Childhood Environment Rating Scale (ECERS) will moderate the effects of learning disposition on both academic and social kindergarten school outcomes as measured by the BBCS-R. When the quality of child care environment is high, high learning disposition will result in better school outcomes than low learning disposition. When the quality of the child care environment is low, high learning disposition will not result in better school outcomes than low learning disposition.

Definitions

Learning disposition: This refers to investigative characteristics of the child and includes two basic continuums of behavior, one ranging from apathy and disinterest to the enthusiasm to engage in interactions, and the other ranging from distractibility to the willingness and ability to persist through difficulty.

Mood: General emotional stance of the child characterized by emotional states such as being sad, depressed, fussy, happy, or joyful.

Ability: This includes a wide range of interpersonal resources the child possesses, including health, abilities, experiences, knowledge, and skills. In this study, in the absence of IQ scores or other standardized tests, measures of ability consisted of teacher reports on the understanding and vocabulary of the child.

Family context: In this study, family context includes the ability of the parent to reflect upon the mental and physical states of the child and perceive the child as an intentional being (reflective capacity), parent-child interaction, maternal education, and family income.

Child care context: In this study, child care context includes measures of teacher-child interaction and of child care quality.

School readiness: This includes the ability of the child to sit quietly for an age appropriate amount of time, focus on work, work with peers in socially acceptable ways, and accept direction from adults. It also includes the ability and wish to learn from the kindergarten curriculum. The result of such readiness should be acceptable levels of academic and social-emotional progress that can be measured during the kindergarten year.

CHAPTER TWO

LITERATURE REVIEW

The Problem of School Readiness

Tests of School readiness

A variety of developmental and skills tests are used in schools to test for kindergarten readiness. Costenbader et al. (2000) investigated current practices for kindergarten screening by a mail survey to 755 public and private school districts in New York. Fifty-one percent of the districts responded. The most widely used standardized instruments were the Developmental Indicators for the Assessment of Learning (DIAL-R) (26%), the Brigance K & 1 Screen (16%), and the Gesell School Readiness Test (13%). On average 3.58 different professionals in each district participated in the screening of each child. A number of districts reported they used locally developed screening tests (30%).

Skills based screening tests and developmental readiness tests are two categories of tests used to assess children's readiness for kindergarten. Their respective strengths and weaknesses arise from the view of the child upon which they are based. Meisels (1999) identified skills based tests as having an empirical philosophical base, while developmental tests are formulated from what he calls an "idealist" viewpoint.

Empirical orientations view the child's development as being largely composed of information gleaned from external sources. Locally developed tests based on this view might ask children to name colors, recite their address, write their name, and follow simple directions. Standardized tests used across the United States are all very similar to each other and test more general information, including the Iowa Tests of Basic Skills, Comprehensive Tests of Basic Skills, California Achievement Test, and Stanford Early School Achievement Test, typically including subtests such as word analysis, vocabulary, and mathematics. The strength of these large tests is that they are standardized over a wide range of children and offer reasonably objective results. Their weakness is that skills testing actually just tests what children have been exposed to so far in their development. A child who cannot name a wide range of colors may learn them very quickly when the experience becomes available. Then again, the child may not. Present knowledge at preschool age only weakly predicts acquisition of future knowledge. Skills based readiness tests assume a common core of learning, which may or may not have occurred.

Idealists view the child's development as being largely independent of the external environment. If given time to grow, the child will naturally learn to follow directions and engage in on-task behavior. Since development is an unfolding and follows a predetermined sequence, testing determines where in the sequence this child is. The Gesell Readiness Test is an example of this type of test. The child may be asked to build a bridge or tower with blocks. If their expected performance correlates with age expectations, then readiness is reasonably assured. Unfortunately, this type of test is an even poorer predictor of future performance than skills testing. Their weakness is that

development is an uneven process and is subject to periods of rapid acceleration and relative stability. Further, measurement at one point in time cannot show the rate of progress, only the current status. Their strength is they do show if the child is within the normal range of development. They also show where in the developmental sequence the child currently is.

From these descriptions the current study ascertained several variables that would influence results on these tests. First would be the opportunities available to the child in home and neighborhood environments to gain basic information. If the parent says, “Gemme that,” that is quite different than a parent who says, “Honey, would you please pass me the red and blue Spiderman glass?” Maternal education and SES would likely be associated with this variable. Another closely related variable would be environmental expectations or requirements. If a child were asked to memorize their address, they would do well on such a question.

A third variable would be nutrition and health. For example, zinc and iron are important minerals for brain development, and a lack of them might hinder growth. A fourth variable would be the child’s own ability and intelligence. A fifth would be the child’s eagerness to learn. Eagerness to learn may be a function of secure attachment, which encourages safe base exploration, or temperament, or both, besides current environmental situations. Maternal depression, type of attachment, and physiological characteristics of the child such as exuberance are factors likely to influence this variable. Results on screening tests are therefore influenced by a great many variables.

Predicting school success for young children is thus not as simple as it might seem. A prerequisite of identifying colors, counting, and letters and numerals recognition

is exposure to these experiences, which the child may or may not have had. Some children who have not had these experiences may make rapid progress when given exposure, while others may not. Academic measures taken in preschool may not be predictive of academic performance in later grades. Surprisingly, social behaviors in preschool are probably less predictive of future social behaviors than the academic measures are of future academic performance (La Paro & Pianta, 2000).

La Paro and Pianta (2000) conducted a meta-analytic review of screening tests to predict children's competence. They divided readiness assessments into two broad categories, academic/cognitive and social/emotional. About 25 percent of the variance in academics in second grade was accounted for by academic measures taken in preschool, while 10 percent of the variance in social behaviors in second grade was accounted for by social measures taken in preschool. They concluded that factors other than children's skills in preschool account for the majority of individual variability in academic and social performance in the early years. They suggested family income, home, and preschool experiences may be factors.

Because academic and social measures in themselves are not strongly predictive of future school performance, taking into consideration factors such as family context might improve our ability to predict school performance. Pianta and McCoy (1997) attempted to identify variables that were predictive of school difficulties by including some contextual factors. They had two cohorts, $n = 427$ and $n = 352$, that were followed through the first three years of school. Children's competences were assessed prior to school entry. Predictor variables included fine motor skills, general cognitive level, ethnicity, pre-academic skills (copying shapes, letter recognition), and maternal

educational level. Difficulty outcomes were retention, special services, teacher reported behavior problems, and low achievement test scores. The best predictors for identifying school problems were maternal education, Stanford-Binet vocabulary score, and the Fine Motor Index. They found that with their model, 67 percent of children with school problems were identified. In identifying children thought not ready to attend kindergarten, they were right about 80 percent of the time. Although the ability to predict school success is improved by the inclusion of some contextual factors, it was still the case that 20 percent of children identified as not ready for kindergarten were indeed ready.

Developmental tests offer another alternative to skills testing and are considered by many to be indicative of whether or not a child is ready for kindergarten. Costenbader et al. (2000) found 16% of the school districts surveyed in New York were using the Gesell School Readiness Test. Meisels (1999) noted that in the view of many parents and teachers, readiness is an internal process largely independent of environmental influences, and given time, children will be able to sit quietly, focus on work, work with peers in socially acceptable ways, and accept direction from adults. Since development occurs in predefined stages, they argue, it is possible to measure the progress of children as they move through the stages. The Gesell School Readiness Test is often used by those with this view and is used to determine if the child should enter kindergarten, stay at home, or be placed in a “developmental kindergarten.” Meisels said ratings on the Gesell test consistently fall below age expectations, a discrepancy which ranges from 2 months at age 4 to 7 months at age 6. This suggests the test needs recalibration. More importantly, there is a low correlation with follow-up assessments at age 8. This implies

the test is not a good indicator of future performance. Further, the consequence of just waiting until a child is ready may be harmful, because by not entering school or entering a less demanding classroom deprives the child of experiences that may enhance development.

Delaying School Entry

Kagan (1992) concurred that keeping the child out actually hinders development, as learning can promote development (Vygotsky, 1978). To wait to enter school, unfortunately, is often the consequence of not doing well on developmental or skills testing. In the Costenbader et al. (2000) survey, about half of the districts reported that when children are identified as unready, parents were advised to delay school entry. Parents from middle socioeconomic levels tend to hold their children back a year for school entry to help ensure school success, while parents of lower socioeconomic levels very rarely hold their children back (Crnic & Lamberty, 1994; Graue, 1992). This can create a bimodal distribution even more apparent than is usual in kindergarten. Holding a child back has disadvantages, they suggested, as it neglects the fact that learning and skills are dependent on environmental transactions and that learning can lead to development. Crnic and Lamberty pointed out there is little correlation between readiness assessments and later academic success, so children are held back on the basis of unreliable tests.

Besides delayed entry, another alternative for schools is to increase their age of entry. This, however, does not improve the situation. Lewitt and Baker (1995) said while parents are choosing to hold their children back a year, some schools are increasing the

age of entry into kindergarten. Lewitt and Baker pointed out changing entry age does not address age-related variability, it simply increases the average age in kindergarten. They suggested increasing entry age also leads to a more demanding kindergarten curriculum.

To summarize, many schools use standardized and locally developed skills tests, as well as developmental tests, to determine kindergarten readiness. These tests are in general unable to predict future school performance. Even so, parents and schools use these tests to delay entry and to recommend entry. Some schools increase their age of entry to help ensure school success, but this simply increases average age of attendance, as well as making kindergarten more demanding, since older children are attending. Delayed entry can also have the same affect, increasing average age and accelerating the curriculum.

Contributors to Kindergarten Readiness

Given our inability to accurately predict school performance, there is a need to identify essential elements of readiness. Lamberty and Crnic (1994) listed recommendations from a conference conducted in 1992 in Columbia, Maryland, on scientific perspectives on school readiness. They suggested the concept of “readiness” needed to include multiple cognitive, social, and psychological states. “Determinants of readiness to learn in children are many and complexly interwoven (Lamberty & Crnic, 1994, p. 165).” They did not enumerate the specific character of these determinants but gave general categories of influence, including health, family, neighborhoods, schools, and increasing cultural diversity.

Kagan (1992) suggested being ready to learn includes sufficient motivation, health, and developmental status. She was part of the Goal 1 Resource Group and Technical Planning Group of the National Goals Panel that determined readiness consists of five essential domains: (1) physical, (2) social and emotional, (3) approaches toward learning, (4) language usage, and (5) cognition and general knowledge. She recommended age of entry is a clear and equitable way to admit children to kindergarten, and if children are going to be ready for school, the responsibility of school readiness lies with the child, the family, the school, communities, the media, and society as a whole, and the synergy between them. High-quality early care is of special interest, Kagan suggested, given the increase in children attending out-of-home care.

Paying greater attention to family and child care contexts was also recommended by Crnic and Lamberty (1994), who recommended the relationship between these contributors should be studied using something similar to Bronfenbrenner's ecological approach, including as well aspects of health and self. It was a major task of the present study to pick salient features of the child, the family, and of child care which are important contributors to school readiness.

The Theoretical Model of Bronfenbrenner

Which prominent features of the child to choose in predicting school performance presented the current study with complex issues. In considering how research should continue, Bronfenbrenner (1994) noted that with so many personal characteristics to choose from, on what basis does one begin investigations? He first grouped individual characteristics into two general categories. On the one hand, there are measures of ability.

On the other is a more dynamic set of attributes that relate to instigative dispositions. He suggested these two general types of characteristics, ability (resources) and instigative dispositions (force), provide a strategy of choice for analyzing how individual differences interact with proximal processes because both ability and motivational disposition themselves interact, supporting, compensating, or hindering each other. He called this a force-resource model. Force refers to learning dispositions such as curiosity, tendency to engage, and responsiveness. Resource refers to biopsychological liabilities and assets, such as health, abilities, knowledge, skill, and experience (Bronfenbrenner & Morris, 1998). Force and resource can interact and mutually support, compensate for, or hinder each other.

His formulation was revised in 1998 to include a total of three basic person characteristics (Bronfenbrenner & Morris, 1998). He proposed characteristics of people, processes, and contexts, and their lengths of duration, constitute the major influences on development. Within the realm of the people, along with the effects of age, gender, and ethnicity, three distinctive categories are apparent, those of dispositions, resources, and demands. As described above, dispositions include qualities of the person that set in motion and sustain interaction. Resources consist of abilities, experiences, knowledge, and skills. Demands represent an addition to his formulation and refer to qualities of the person that encourage or discourage responses from the environment, such as mood (fussy or happy) and appearance. These three characteristics of the person can augment the impact of proximal processes on development. We were especially concerned here with how the contexts of family and child care could moderate the impact of characteristics of disposition (force) on school outcomes.

Investigative dispositions, or force, can sustain or prevent interaction. Generative dispositions are in contradistinction to disruptive dispositions such as impulsiveness or apathy. Disruptive characteristics can make it difficult to engage in proximal process requiring complex, reciprocal interactions (Bronfenbrenner & Morris, 1998). Generative dispositions include active curiosity, a tendency to initiate and engage interaction alone or with others, responsiveness to others, and readiness to defer immediate gratification. They are the constituents of “structuring proclivities,” by which a person actively structures, initiates, and sustains interactions with people, objects, and symbols, and of “directive beliefs,” viewpoints of oneself similar to locus of control (Rotter, 1966) or self-efficacy (Bandura, 1982) that influence willingness to interact (Bronfenbrenner & Morris, 1998). A central part of one’s investigative disposition is structuring proclivities such as tendency to engage in interaction, ability to persist in activities, curiosity, and ability to delay gratification. Curiosity involves interest in novelty and may be included in tendency to engage in activities, so we may identify three central conceptual qualities of generative learning disposition: tendency to engage, persistence, and ability to delay gratification.

Research on Components of Learning Disposition

Persistence

Persistence is a specific characteristic of “force” which is linked with academic outcomes for children. Newman et al. (1998) explored the relationship between five dimensions of temperament and reading achievement. This was a longitudinal study, and

397 children from middle and upper income groups in the suburbs of Albany, New York, were followed from kindergarten through first grade. A smaller number were followed through third grade ($n = 64$). The five dimensions of temperament were persistence, adaptability, activity level, negative emotionality, and social inhibition, and they were measured either in kindergarten or first grade by a parent questionnaire. The outcome variables were reading measures taken in first grade, gained through the Woodcock Reading Mastery Test (WRMT-R) and teacher ratings of reading. A moderating variable, intelligence, was measured using the Wechsler Preschool and Primary Scale of Intelligence – Revised (WPPSI-R).

Kindergarten measures of negative emotionality ($r = -0.185$) and activity level ($r = -0.201$) were correlated with first grade reading scores. Although persistence in kindergarten was not directly correlated with reading in first grade, regression analysis and the introduction of an interaction term showed intelligence to be a moderating variable of persistence. To examine the moderating effects of intelligence, the entire sample was divided into groups of children of relatively higher intelligence and relatively lower intelligence. Regression analysis with persistence as the predictor variable and reading achievement as the outcome variable showed that for the group with lower intelligence, persistence predicts reading achievement ($p < 0.008$, R was not given), while for the group of higher intelligence, persistence is not a significant predictor ($p < 0.43$). Gender was not a moderating variable between any measured dimension of temperament and reading. A growth curve analysis of those children who were followed through third grade indicated that although kindergarten persistence did not predict reading in first grade, it was a significant predictor for the growth rate of child's reading ability from

kindergarten to third grade ($r = 0.27$). By and large, the correlations in this study are relatively small. Although kindergarten activity level, negative emotionality, and persistence were shown to be predictive of reading achievement in later grades, the actual variance accounted for by temperament variables was not large. Newman et al. hypothesized that temperament measures were obtained from parents, and parents may be less aware of the variability in these qualities than are teachers.

The Newman et al. study illustrates two important facts relevant to the present study. First, Bronfenbrenner's hypothesized relationship between force and resource is clearly shown in that when resources are low (intelligence), force (persistence) is a factor in achievement, while when resources are high, force is less of a determinant. In this case, learning disposition was compensating for low intelligence. This exposed one relationship postulated by the present study, that learning disposition can act as a compensating factor for low ability. Secondly, Newman's study was important because persistence in preschool was related to reading growth in third grade. Although this study did not show preschool persistence related to kindergarten reading, another study (Schoen & Nagle, 1994) that took reports from teachers did show a relationship between persistence at the beginning of the kindergarten year and achievement at the end of that same year.

Schoen and Nagle (1994) investigated the relationship between temperament and school readiness in 152 kindergartners from predominately middle-class homes in South Carolina. Teacher ratings on dimensions of temperament and the PPVT-R were given at the first of the year. The Metropolitan Reading Test (MRT) was given at the end of the year. Regression analysis revealed persistence to be the most significant dimension of

temperament. The PPVT-R accounted for 32% of the variance in MRT scores. When persistence was added to the equation, 50% of the total variance was accounted for in MRT scores. This represents an increase of 18% added by persistence. This amount of variance is higher than reported by Newman et al. (1998), but that study used mother reported measures of temperament, while this study used teacher reported measures. There is also a smaller length of time between predictor and outcome testing, both occurring in a single year within the same classroom. It is possible that teacher reported measures are more accurate, or that the time span is brief, or that the results of this study may not generalize to other situations. In any case, persistence is again shown to be a factor in school achievement of young children.

Motivation and the Tendency to Engage in Interactions

To study the relationship between motivation, self-regulation and early school achievement, Howse et al. (2003), in a cross sectional design, measured motivational and self-regulation abilities of at-risk (low income, n = 85) and not-at-risk (n = 42) kindergarteners and second graders. Motivational measurements were taken by child and teacher questionnaires and included worry about school, perceived competence, attitude toward school, and preference for challenge. Self-regulation measures were actually computerized tasks testing the ability to persist at the task at hand despite distractions. These results were compared to measures of school achievement determined by kindergarten and second grade math and reading standardized tests, including the Test of Early Reading Ability (TERA), Test of Early Math Achievement (TEMA), Peabody Individual Achievement Tests for reading (PIAT-R), and math (PIAT-M).

MANCOVAs revealed at-risk kindergarteners demonstrated lower persistence than not-at-risk kindergarteners. Kindergarteners and second graders at-risk scored lower on measures of school achievement. Regression analysis revealed younger children's ability to regulate attention was a predictor of their reading scores. Motivation as judged by teachers also predicted reading scores. Self-regulation and motivation together accounted for 36% of the variability in reading achievement for kindergarteners, $p < .001$. At-risk and not-at-risk factors had no effect on this relationship. In this study, both motivation (worry about school, perceived competence, attitude toward school, and preference for challenge) and self-regulation (persistence) were correlated with reading achievement for younger children, although this was a cross sectional study and could not show the ability to predict future performance.

At least one study failed to show a relationship between motivation and school achievement. Stipek and Ryan (1997) followed 88 children from either the beginning of their preschool year or their kindergarten year to the end of their next year in schooling. Cognitive (Woodcock-Johnson Achievement Test, McCarthy Scales, and Peabody Individual Achievement Test) and motivational measures (Young Children's Feeling About School) were taken at the beginning of the children's school year, and cognitive measures were again given at the end of the following year. It was apparent economically disadvantaged children did much poorer on all tests of academic performance than did advantaged children. Although both disadvantaged and advantaged children improved after a year of schooling, these differences were maintained a year later. It was also apparent there were few motivational differences between disadvantaged and advantaged children on measures of self-confidence, attitude toward school, expectations for success,

dependency, and preference for a challenge. They concluded motivation is probably not an important correlate or cause of learning. It is generally thought that motivation does not vary significantly among young children (Shonkoff & Phillips, 2000).

Carlton (1999) specifically examined motivational measures and their relation to measures of school readiness. Fifty kindergarten children from a suburban school district participated. At the beginning of the kindergarten year, motivation measures were collected from parents, teachers, and children. Parents completed a survey and a child motivational scale. Teachers completed behavioral and academic scales. Data from children were collected through two self-report scales and from observations. The self-report scales were for perceived competence and for intrinsic motivation. Persistence, preference for a challenge, and help and approval seeking were coded from a videotaped puzzle activity.

These views of motivation were compared with measures of achievement, behavior, and intelligence (DABERON-2, Social Skills Rating Scale, Kaufmann Brief Intelligence Test), given at the end of the kindergarten year. By including motivation in a regression model, Carlton was able to create what she felt was a good predictor of academic competence. The six variable model included age, previous school experience, social skills, parent rating of competence, intrinsic motivation (persistence and preference for a challenge), and puzzle completion. The strongest individual predictor was social skills, though it is not clear just how much variance in academic achievement was accounted for by her model. These predictors were less predictive for boys than for girls. These predictors also worked well for white children but were not significant predictors for black children. This study's results were somewhat confusing and not clearly stated.

Persistence was measured just as a length of time on task and neglected the fact that some children may complete tasks much more quickly than others. Only those children who had great difficulty with the puzzle task and yet continued to work would be rated high in persistence. In any case, persistence at the beginning of the kindergarten year was not shown to be a significant contributor to academic performance at the end of the kindergarten year.

One's orientation toward novelty may be indicative of learning disposition. Exuberance likely remains relatively constant from birth, but inhibition and fear of novelty may or may not change as the child encounters a wide range of experiences. Fox et al. (2001) selected infants 4 months of age for behavior thought to predict temperamental exuberance and followed them through the first four years of life. These children exhibited a high degree of continuity over time in these behaviors. Of infants selected for behavioral inhibition at 4 months, some changed from inhibited to uninhibited, while others did not. Change in behavioral inhibition was linked to nonparental care. The study by Fox et al. (2001) concluded that between four months of age and four years of age, orientation toward novelty may change in the case of inhibited children, if exposed to high quality teacher care.

It is likely that enthusiasm to engage in interactions is a characteristic that varies from individual to individual. Infants with an inhibited temperament tend to develop into children who avoid people, objects, and situations that are unfamiliar. Uninhibited children spontaneously draw near novel persons, objects, and situations. These two temperamental categories are moderately stable from infancy into early adolescence and

have been hypothesized to be due, in part, to variation in amygdalar responses to novelty (Schwartz et al., 2003).

Ability to Delay Gratification

The ability to delay gratification was a characteristic of learning disposition linked to school outcomes. Shoda, Mischel, and Peake (1990) found that adolescents who were able to delay gratification longer as preschoolers were described by their parents as more academically and socially competent and better able to handle frustration and temptation. This implied it is likely a stable quality that results in specific gains for the individual who is able to delay gratification, gains that included both academic and social outcomes. On the other hand, deficient delay behavior has been linked to problems in self-regulatory and academic competence (Mischel et al., 1989). The ability to postpone immediate gratification was generally recognized as facilitating the development of self-control and self-regulation (Mauro & Harris, 2000). Long-term outcomes associated with children's ability to delay gratification in preschool included higher achievement scores in adolescence (Mischel et al., 1988). It is possible that mother-child attachment quality is a factor linked to children's delay behavior (Jacobsen, Huss, Fendrich, Kruesi, & Ziegenhain, 1997). The ability and willingness to delay gratification is very likely an important component of improved cognitive outcomes in school environments.

Persistence on a task, tendency to engage in interactions, and ability to delay gratification are all characteristics of investigative disposition. These three components are emotive qualities that could have an influence on specific cognitive, including knowing colors, letters, numerals and counting, sizes, comparisons, and shapes.

Tendency to engage may be a moderately stable category of behavior that, if relatively uninhibited and exuberant, leads the child to gain greater knowledge by continuous and lively interaction with people and surrounding environments. This interest in novelty and the desire to undertake a challenge and become competent and to test one's abilities is a driving force that could result in greater school readiness. The ability to persist at difficult tasks is also directly linked to academic achievement. Persistence is an important attribute in learning to read, constructing puzzles, and attempting any difficult task for the first time. Children who were better able to delay gratification as preschoolers showed greater academic gains as adolescents than those who were less able to delay gratification. Delaying gratification was recognized as important to self-regulation in general, as well as being an ingredient in academic readiness for young children.

It was concluded that the tendency to engage in interactions with people, places, objects, and novel situations, to persistence on a task, and to be able to delay gratification are all characteristics of learning disposition that result in better school performance. They are non-cognitive, emotive components that influence cognitive, rational abilities considered indicative of school readiness.

Family Context and School Outcomes

Maternal Education, Child Ethnicity, and Family Income

Maternal education is correlated with both academic and social child outcomes (Getty, 2002; Hoff, 2003; Loeb et al., 2004; NICHD ECCRN, 2003; Peisner-Feinberg et

al., 2001). In work already described above, Pianta and McCoy (1997), in their construction of an improved screening test for kindergarten, chose ethnicity and maternal education as the two most important indicators from family contexts.

Getty (2002) examined the relationship between parents' perceptions of school readiness and their children's performance as measured by the Work Sampling System Checklist. Participants were 72 kindergarten children and their parents from one elementary school in Maryland. Parent ratings were collected in September. In November, teacher ratings were taken using three levels: needs development, in process, or proficient. The relation between parent's perceptions and their children's performance was then examined.

Parents ranked social development as the highest component of school readiness. Literacy skills were rated fourth in importance. No significant relation was found between parent's perceptions and their children's performance. Factors having the strongest influence on children's actual performance were mothers' education, child's gender, child's birth date, and prior childcare. Mother's education was identified as having a primary influence on performance and a key factor in improving readiness. Although this study was small and essentially taken at one point in time, numerous other studies have confirmed the importance of maternal education to academic and social outcomes (Loeb et al., 2004; NICHD ECCRN, 2003; Peisner-Feinberg et al., 2001). A possible mechanism by which the mother's education level influences child outcomes was promoted by Hoff (2003), who found maternal speech differed as a function of SES, and this difference accounted for the size of their child's productive vocabularies.

Family income as a measure of home resources and socioeconomic state was found to be another popular indicator linked to academic outcomes. Using data from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-00, Lin (2003) explored the relationship between parental involvement and 16,125 kindergartners' academic performance. Five parental involvement composites were constructed, including school involvement, home learning activities, home resources, extracurricular activities, and use of community resources. The relationship of these factors to kindergartners' reading, math, and general knowledge skills at the end of the year were examined using a regression model. School involvement and home resources were the strongest predictors of academic achievement for all children. Extracurricular activities were associated with achievement for all except Black and low-income children. Parental involvement tended to be larger for Asians, Black, and low-income children. White and non-poor children seemed not to be influenced by parent involvement as much as minority and poor children did, probably benefiting from more advantageous SES backgrounds.

Parental Interaction

Parent-child interaction is another family variable thought to impact child outcomes. Connel and Prinz (2002) examined the role of parenting behavior as a predictor in increased school readiness and social skills development among a low-income, minority sample of kindergarten children. At entry to kindergarten, 47 participants, all of whom participated in a free lunch program, completed a screening inventory of academic readiness. Parents were administered surveys pertaining to

preschool experience and parent behaviors. Parents also participated in videotaped parent-child interaction tasks. At the end of the year, kindergarten children completed a battery of early cognitive and communication skills development. Teachers also completed a brief survey of academic readiness and social skills development at the end of the year.

Results suggested a responsive parent-child interaction style promoted enhanced teacher ratings of readiness and social skills development. Well-structured and responsive parenting behaviors contributed 17 percent to the variance of teacher ratings of social skills. Less support for improved cognitive and communications skills development was found.

Csikszentmihalyi and Rathunde (1998) outlined elements of what they felt was a parenting style that would be optimal for development. When a mother is reactive to the desires of the infant, she accommodates, and the child assimilates. In other situations, the mother assimilates and the child accommodates through imitating actions, reacting to stimulation, and adjusting to schedules of feeding. Accommodation on the part of the mother is associated with love, while assimilation is associated with discipline. Over time, Csikszentmihalyi suggests children socialized in homes that balance love with discipline develop better capacities to self-regulate attention and respond to the environment in ways that promote growth. The contention is that children need to develop strong habits of both assimilation and accommodation in a home environment that is both supportive and challenging. He recommends a blending of child-centered and adult-centered approaches as most advantageous for development.

Fonagy (1999), in a theory called transgenerational acquisition, proposed the quality of caregiver-infant interactions is dependent upon the ability of the primary caregiver to interpret and mirror the child's emotional states, an ability he calls reflective capacity, or mentalization. Reflective capacity is similar to theory of mind and is the ability of human beings to perceive others as intentional beings. The caregiver interprets and mirrors the child's states, comforting, asking questions, and describing. The child finds himself in the eyes of the caregiver as the caregiver interprets his emotional states. An exaggerated mirror of the child's emotions, when the mother herself becomes alarmed or overreacts, might lead to a sense of terror on the part of the infant, while indifference or gross misinterpretation might lead to the child's inability to identify and regulate emotional states. Exaggeration, indifference, misinterpretation, or cruelties tilt the balance toward insecure attachment, as well as a lack of ability in the growing child for reflective capacity.

Fonagy tested mothers on their reflective capacity and then tested the infant-mother quality of attachment. He predicted mothers in the deprived group would in general have children more securely attached to them if their reflective function rating was high. All 10 of the mothers in the deprived group with high reflectiveness ratings had children who were secure with them, whereas only 1 out of 17 of deprived mothers with low ratings had securely attached children (Fonagy et al., 1994). They concluded that the cycle of disadvantage, where insecure infants grow to become caregivers with insecure children, might be interrupted if the caregiver has acquired a capacity to reflect productively on mental experience (Fonagy et al., 1994).

As an example of parental behavior patterns relevant to dimensions of self-regulation and exploration in the child, a study by Fonagy et al. (1991) was considered. He gave 96 mothers Adult Attachment Interviews (AAI) before birth, after which they assessed their infants using the Strange Situation Procedure at 12 months (46 boys, 50 girls). Approximately 75% of secure mothers had secure infants at 1 year. Dismissing adults were strongly linked to anxious/avoidant infants, but preoccupied adults were linked only with insecure infants, not the type of insecurity. Anxious/resistance attachment was not well predicted by AAI.

Child Care Context and School Outcomes

In addition to family context, child care context was considered another long-term influence on the child's development before school entry. As both parents now often work, Vandell and Wolfe (2000) found about 60 percent of children 5 years or younger are in child care on a regular basis, with 44 percent of infants in care for more than 30 hours a week. Given the amount of time children spend in child care, the present study considered it necessary to take into account the influence of child care contexts on development when predicting school readiness, a decision supported by research (Getty, 2002; La Paro & Pianta, 2000; NICHD ECCRN, 2003; Pianta & McCoy, 1997).

In a longitudinal study, Peisner-Feinberg et al. (2001) followed 733 children from 4 years old to 8 years old to study the relationship between cognitive and socioemotional development and child care experiences. Classroom practices were measured using the Early Childhood Environment Rating Scale (ECERS), the Caregiver Interaction Scale (CIS), the UCLA Early Childhood Observation Form (ECOF), and the Adult

Involvement Scale (AIS). Individual child assessments included the PPVT-R, the Woodcock-Johnson Tests of Achievement – Revised (WJ-R), and the Classroom Behavior Inventory (CBI), a teacher survey. Demographic information came from parent surveys. Results indicated classroom practices were related to language ($R^2 = .18$) and academic skills ($R^2 = .08$), while closeness of teacher-child relationship was related most especially to social skills ($R^2 = .56$). These effect sizes were for when the child was in child care. Effects were less in kindergarten, and much less in second grade. Stronger positive effects of child care quality were apparent for children from at-risk families. They concluded quality child care environments influence both cognitive and social skills, as well as buffering the effects of at-risk environments.

Further evidence of quality child care buffering the effects of at risk family contexts is provided by Hubbs-Tait et al. (2002), who considered whether family risk moderated the relationship between attendance and child outcomes in Head Start. Participants were 94 children attending Head Start in 1996 in rural Oklahoma. Head Start classrooms were determined to be of good quality (ECERS). Family risk factors included low income, low cognitive stimulation, and caregiver intrusiveness and depression, measured from videotapes and questionnaires and summed into a cumulative risk index ranging from 0 to 4. Outcomes were child receptive vocabulary (PPVT-R), social functioning, and following instructions (teacher reported). Mothers' receptive vocabulary was measured and entered as a control variable for these outcomes. Results suggested for children from high-risk families, greater attendance in Head Start resulted in higher receptive vocabulary scores on the PPVT-R. Greater attendance for children from low risk families did not result in higher receptive vocabulary scores. These results imply

attendance in Head Start compensated for conditions in high-risk families and increased the vocabulary for these children.

Some of the mechanisms by which quality child care influences child outcomes are elucidated by Loeb et al. (2004). They found positive cognitive effects for children in child care centers whose mothers entered welfare-to-work programs. There were increased cognitive effects when caregivers were responsive, and increased social effects when providers had education beyond high school. Participants were 451 children from 12 to 42 months of age residing either in San Francisco or San Jose, California or Tampa, Florida. Child care quality was measured using the ECERS, the Family Day Care Rating Scale (FDCRS), and the Arnett Scale of Caregiver Behavior. Cognitive and language proficiencies were measured using subscales of the MacArthur Communicative Development Inventory (CDI) and the Family and Child Experiences Survey (FACES). Social development was assessed using the Child Behavior Checklist (CBCL).

Burchinal et al. (2002) collected standardized assessments and parent and teacher surveys on 511 children from child care through second grade in order to study the effect of the teacher-child relationship on school outcomes. Children tended to show better academic skills if parents had more education and had progressive parenting practices. A closer relationship with the teacher was positively related to language skills for African-American children and to reading competence for children with authoritarian parents. Most central to this study of learning disposition and school outcomes was the study by Fox et al. (2001) which showed that between four months of age and four years of age, orientation toward novelty may change in the case of inhibited children, if exposed to high quality teacher care. It was reasonable to assume that quality child care would be a

moderator of the effects of learning disposition on school outcomes. Many studies reviewed highlighted the importance of quality child care for academic and social achievement.

Summary of Literature Review

From the review of relevant research this study concluded current preschool screening tests which did not consider contextual factors such as family and child care identified only a small amount of students who will be successful in kindergarten (Crnic & Lamberty, 1994; La Paro & Pianta, 2000; Lewitt & Baker, 1995; Meisels, 1999). Failing screening tests often resulted in delayed entry (Costenbader, Rohrer, & Difonzo, 2000). Many children who were held back might in fact demonstrate school readiness if there were more effective screening tests. Holding children back increased the average age of children in kindergarten, which over time accelerated programs and made readiness more difficult to achieve for students entering normally (Crnic & Lamberty, 1994). In an effort to develop better methods of predicting school success, this study reviewed the National Education Goals Committee's recommendations of domains essential for school readiness (Kagan, 1992; Kagan et al., 1995; National Education Goals Panel, 1997a, 1997b, 1998a, 1998b). From these domains approaches to learning was chosen as a domain often overlooked in predicting school readiness.

Bronfenbrenner's theory was reviewed, as one of its three essential characteristics of people bore obvious similarities to approaches to learning. It was ascertained that the characteristic "investigative dispositions" that might offer new perspectives on how proximal processes interact with child characteristics to produce academic and social

outcomes relevant to kindergarten readiness (Bronfenbrenner, 1994; Bronfenbrenner & Morris, 1998). Investigative dispositions relevant to school outcomes were designated as “learning dispositions.”

Research was reviewed to construct a list of the components of learning disposition relevant to school outcomes. Components included both disruptive and generative behaviors, including distractibility, avoidance, apathy, tendency to engage in interaction, curiosity, persistence, and the willingness to delay gratification. Several studies showed persistence to be linked to academic outcomes, especially for child of low ability (Newman et al., 1998; Schoen & Nagle, 1994). This implied learning disposition may perform a compensatory role in some instances. This research formed the basis of the first hypothesis, that child ability in preschool would moderate the effects of learning disposition on academic outcomes in kindergarten.

Some current research on motivation was reviewed which suggested motivational liveliness is much the same among all young children (Shonkoff & Phillips, 2000; Stipek & Ryan), 1997), while others suggested it does vary among children but this variance is not connected to whether they are at-risk or not (Howse, Lange, Farran, & Boyles, 2003). Other research was explored that suggested motivational liveliness, including exuberance and response to novelty, does in fact vary among children from an early age (Schwartz et al., 2003; Fox et al., 2001). The relevant of parenting behaviors to learning disposition was considered by reviewing research that pointed to the reflective capacity of the caregiver to correctly identify and mirror the infant’s emotional states as central to the the child’s ability to regulation emotions and explore the immediate surroundings (Fonagy, 1999; Fonagy et al., 1994). Review of other research relating to family context revealed

maternal education, child ethnicity, family income, and parental interaction as contextual factors probably related to school outcomes (Connel & Prinz, 2002; Csikszentmihalyi & Rathunde, 1998; Getty, 2002; Hoff, 2003; Lin, 2003; Loeb et al., 2004; NICHD ECCRN, 2003; Peisner-Feinberg et al., 2001; Pianta and McCoy, 1997). From this research, hypotheses 2, 3,4, and 5 were drawn: respectively, parental reflective capacity, parent-child interaction, maternal education, and family income in preschool would be moderators of the effects of learning disposition on kindergarten school outcomes.

Review of child care research suggested general child care quality and teacher-child interaction were variables in the preschool classroom that might relate to kindergarten school outcomes (Burchinal et al.,2002; Getty, 2002; La Paro & Pianta, 2000; Loeb et al., 2004; NICHD ECCRN, 2003; Peisner-Feinberg et al., 2001; Pianta & McCoy, 1997). The current study drew hypothesis 6 from this research, than teacher-child interactions would be a moderator of the child's learning disposition. Of the most salient interest, Fox et al. (2001) showed that between four months of age and four years of age, orientation toward novelty may change in the case of inhibited children, if exposed to high quality teacher care. As orientation toward novelty is a central feature of learning disposition, the conclusions of Fox et al. formed the basis for the final contention of this study, that quality child care would moderate of the effects of learning disposition on school outcomes.

CHAPTER THREE

METHOD

Participants

Participants in this study were drawn from centers that participated in the 2001-2002 Center Validation Study for Reaching for the Stars, a program which provides a rating system to inform parents of quality criteria met by child care programs in the state of Oklahoma. Data collection for a longitudinal research project began in January of 2004. It is from this larger research project that data for the present study were gathered. Seventy-six centers representing different quality criteria levels were visited across the state. Observations were made in 108 preschool classrooms, with forty-four centers having one classroom and 32 having two classrooms. From 1 to 12 children from each classroom were included in the study, for a total of 454 children.

From the original 454 children, second year data was collected in the spring of 2005 for 244, which after discounting children with missing information on parental child rearing practices left 205 for the present study. Of these 205 children, 69.6% were Caucasian, 12.1% African American, 8.7% American Indian, 6.3% bi-ethnic, 1% Hispanic, and 2.3% other. English was the primary language spoken in 100% of the homes. Gender was evenly distributed, with 51% male and 49% female. Ages of children ranged from 31 to 69 months, with a mean of 51 months, giving an average age of 4 years

3 months at the time of the first data collection. These children were given the Bracken school readiness and social awareness subtests during this first year. Percentile scores on the Bracken school readiness subtests 1-6 ranged from 2% to 98%, with a mean of 54.3%. Percentile scores on the Bracken self/social awareness subtests ranged from 0.4% to 99.6%, with a mean of 44.5%.

Children lived in a variety of family configurations, with 61% living with their mother and father, 27.6% living with their mother, 6.3% living with a parent and step-parent, 2.9% living with grandparents, and the remaining 2.2% living in other circumstances, including living with the father, grandmother, or other adult or relative.

Demographic information was provided for 192 mothers in the final data set, ranging in age from 20 to 49 years of age, with an average age of 30. Level of education completed by mothers included 3.2% less than high school, 18% high school or vocational school, 30.2% some college, 13.8% associates degree, 23.8% bachelors degree, 3.7% with some graduate work, and 6.7% with a graduate degree. Information was provided for 130 fathers in the final data set, ranging from 20 to 75 years of age, with an average age of 33 years. Level of education completed by fathers included 6.9% less than high school, 28.8% high school or vocational school, 27.3% some college, 6.1% associates degree, 20.5% bachelors degree, 1.5% some graduate work, and 6.1% graduate degree.

Household income ranged from less than \$5,000 to more than \$250,000 a year, with a median family income between \$36,000 and \$40,999 a year. Of these families, 14.9% earned less than \$16,000, 35.6% between \$16,000 and \$40,999, 31.7% between \$41,000 and \$74,000, and 17.8% earned \$75,000 or more per year.

Teachers in classrooms involved in the study were 99% female and ranged in age from 10 to 56, with a mean age of 37. Years of experience ranged from 1 to 34 years, with a mean of 10.4 years. 16.9% were single, 16.4% were separated, divorced, or widowed, and 66.7% were married or single with a partner.

Procedures

The Department of Human Services, Division of Child Care sent a letter to child care program directors, announcing the longitudinal research project and its importance for the field of child care. Program directors were then contacted by phone, the project was described, and when verbal consent was obtained, visitation dates were set up. The first visit to the center consisted of classroom observations, distribution of questionnaire packets, and completion of Teacher Training and Education Forms by all full time teachers. On the first visit, target preschool classrooms were observed for three hours. The following instruments were among those used during observations in the spring of 2004: Early Childhood Environment Rating Scale (ECERS-R) and the Arnett Caregiver Interaction Scale (CIS). Target preschool teachers were asked to complete other information packets.

Each child received a questionnaire packet for a parent to complete. The packet included two questionnaires, one on family involvement with the child care center and one that collected demographic information. These questionnaires took about 20 minutes to complete. The complete questionnaires were collected by the teacher and given to the data collector during the second visit.

Participating preschool teachers were asked to complete questionnaires on each child, which took about 20 minutes per child. These questionnaires included the Social Skills Rating Scale (SSRS), Health and Well-Being Teacher Checklist, Math and Physical Knowledge, Approaches to Learning, and other items. These questionnaires were also picked up during the second visit. One week after the first observational visit, another morning classroom observation took place. Some of the instruments included in this second visit were the Learning Center Quality, Classroom Experience, and other measures of classroom quality. The third visit to the classroom lasted up to three days, which involved assessing each target child individually. The Bracken Basic Concept Scale (BBCS-R) was among the instruments administered to each child.

The gathering of second year data in the spring of 2005 included the administration of the BBCS-R to 244 children out of the original 454 involved in first year data collection. This test included both the Bracken Self/Social Awareness subscale and the School Composite subscale as measures of social and academic progress, respectively.

Measures

Only some of the many measures taken in the larger research project were relevant to the present study. Information gathered on predictor variables fell into three main categories: child, family, and child care. Information gathered on outcome variables fell into two main categories, academic and social.

Measures of the Child

Ethnicity. Information about ethnicity was obtained from parent demographic surveys obtained in the spring of the first year of data collection while the child was in preschool. Ethnicity included eight categories: American Indian, Asian, Black, Hispanic, Pacific Islander, White, Biracial, and other.

Mood. Information on child mood during the preschool year was obtained by teacher report from the SSRS and included five questions, each ranging on a scale from 1 to 5: 1 = "not at all like"; 2 = "very little like"; 3 = "somewhat like"; 4 = "much like"; 5 = "very much like." The five questions were, "laughs and smiles easily and spontaneously", "is agreeable and easy to get along with", "is almost always light-hearted and cheerful", "gives a good report of what he/she has seen or done", and "is usually sad, solemn, and serious looking." The scale was reversed on this last question, after which the scores on all four questions were added together and divided by four to form the construct mood. Cronbach's alpha for this construct was .752. Mood was one of the three main characteristics of a person described by Bronfenbrenner and was constructed in this study as a possible covariate to be used in regression analysis.

Ability. The test of ability was obtained in the spring of the preschool year by teacher report (SSRS) on four questions, each ranging on a scale from 1 to 5: 1 = "not at all like"; 2 = "very little like"; 3 = "somewhat like"; 4 = "much like"; 5 = "very much like." The four questions were, "quick to grasp meaning of what is told", "uses long words and sentences for his/her age", "uses a large and varied vocabulary for his/her age", and "has a good fund of information for a child his/her age." Questions were added

together and divided by four to form the construct ability. Cronbach's alpha for this construct was .865.

Learning Disposition. Information on learning disposition was obtained in the child's preschool year by teacher report (SSRS) on twelve questions, each ranging on a scale from 1 to 5: 1 = "not at all like"; 2 = "very little like"; 3 = "somewhat like"; 4 = "much like"; 5 = "very much like." Questions were grouped under four basic categories of behavior: apathetic, engaging, impulsive or distractible, and persistent.

Questions on apathy were, "remains passive even when presented with something interesting", "often fails to react to daycare activities", "shows little interest in special events or activities", and "has a low level of interest and enthusiasm."

Questions on the tendency to engage were, "does interesting and original things", "shows curiosity about many things", "thinks up interesting things to do", and "has lots of ideas for pretend activities."

Questions on impulsive and distractible were, "gets angry quickly when prevented from doing what he/she wants", "switches from one activity to another frequently", and "forgets what was doing and goes on to something else on the slightest distraction."

The question on persistence was, "stays with a job until it is finished, even if it is difficult."

Questions pertaining to impulsiveness and apathy were reversed in scale. Questions relating to impulsiveness and persistence were combined to form a persistence scale, with questions from each of these categories comprising one-half of the total score persistence. Questions relating to apathy and tendency to engage were combined to form an engagement scale, with questions from each of these categories comprising one-half of

the total score of engagement. Cronbach's alpha for the subscales of engagement and persistence were .84 and .70, respectively. The engagement scale and persistence scale were finally combined to form learning disposition. Cronbach's alpha for this construct was .851.

Measures of the Family Context

Maternal Education and Family Income. Information concerning maternal education and family income was obtained during the preschool year from the parent demographic questionnaire. Maternal education was on an 11 point scale, ranging from 1 = "less than 6th grade" to 11 = "post-master's work." Family income was on a 14 point scale, ranging from 1 = "less than \$5,000" to 14 = "over \$250,000."

Parent-child Interaction. Information on parent-child interaction was obtained by parent report. There were ten questions, each ranging from 1 = "not at all descriptive of me" to 7 = "highly descriptive of me." Questions gathered for parent-child interaction came under under two basic categories: setting appropriate bounds, and being responsive.

Questions on setting appropriate bounds were "I expect my child to be grateful and appreciate advantages" and "I encourage curiosity/exploration/questions." Questions on being responsive were, "I respect my child's opinion and encourage him/her to express it", "A child should be given comfort and understanding when scared/upset", "I express affection by hugging/kissing/holding my child", "I find some of my greatest satisfaction in my child", "I joke and play with my child", "My child and I have warm

intimate moments together”, “I make sure my child knows I appreciate what he/she tries to accomplish”, and “I encourage my child to talk about his/her troubles.”

All ten questions were added together to form the construct parent-child interaction, so questions relating to responsiveness composed most of the construct. Cronbach’s alpha for this construct was .788.

Parental Reflective Capacity

A single item measure was taken of parental reflective capacity, “I find it interesting/educational to be with my child for long periods,” on the same 7 point scale described above. There can be no measure of Cronbach’s alpha on a single item, so the reliability of this single measure was not established.

Measures of Child Care Context

Arnett Caregiver Interaction Scale. Observed teacher involvement was a composite constructed from measures obtained through the Arnett Caregiver Interaction Scale (CIS). The CIS is a 26 item scale assessing the quality and content of the teacher’s interactions with children (Arnett, 1989). Items measure the emotional tone, discipline style, and responsiveness of the caregiver in the classroom. Items are organized into the following four subscales: (1) positive interaction (warm, enthusiastic, and developmentally appropriate), (2) punitiveness (hostility, harshness, and use of threat), (3) detachment (uninvolvement and disinterest), and (4) permissiveness. Cronbach alphas usually range from .81 to .91 (Layzer, Goodson, & Moss, 1993) for most samples. Inter-rater reliability coefficients normally range from .75 to .97 (Jaeger & Funk, 2001).

Early Childhood Environment Rating Scale. The ECERS is an environmental assessment designed to assess group programs for children of preschool through kindergarten age, 2½ through 5. The ECERS-R consists of 43 items organized under seven subscales: (a) Space and Furnishings; (b) Personal Care Routines; (c) Language-Reasoning; (d) Activities; (e) Interaction; (f) Program Structures; and (g) Parents and Staff. Each item is presented as a 7-point scale, with descriptions for 1 (inadequate), 3 (minimal), 5 (good), and 7 (excellent). Cronbach's alpha is listed as .96. For this sample, the alpha was .92.

Outcome Measures

Bracken Basic Concept Scale Revised. Outcome academic and social measures were taken in kindergarten from subscales of the Bracken Basic Concept Scale-Revised. The Bracken is a standardized test designed to “assess the basic concept development of children in the age range of 2 years 6 months through 7 years 11 months (Bracken, 1998, p. 1).” This test includes the Self/Social Awareness subscale, as well as the School Readiness Composite (SRC) subscale which is composed of six subscales: colors, letters, numbers/counting, sizes, comparisons, and shapes. Internal consistency reported by Bracken (1998) is sound with an average alpha coefficient of .91 across six age levels. Test retest reliability for the SRC was listed as .88. A variety of validity measures were also reported in the manual.

A revision of the Bracken Basic Concept Scale, BBCS-R measures educational concepts in 11 subtests. The first six categories comprise the School Readiness

Composite (SRC), used to assess children's concepts relevant to preparation for formal education. The specific content of the first six subtests is as follows:

1. Colors: primary colors and basic color terms
2. Letters: uppercase and lower case
3. Numbers/Counting: numeral recognition and quantity-numeral association
4. Sizes: one, two, and three dimensions
5. Comparisons: objects matching based on salient characteristics
6. Shapes: recognition of one-, two-, and three-dimensional shapes

Data Analysis

Descriptive Statistics

The distribution of learning disposition was determined by graphing learning disposition using a histogram that showed the curve of the distribution, the mean, and the standard deviation. In this histogram, learning disposition was plotted against its frequency of occurrence, with bar graphs showing the number of occurrences at different values of learning disposition (Figure 1). Histograms were constructed for child ability (Figure 2) and mood (Figure 3) as well.

Variables of the study were put into a table detailing variables involved, including the construct, type of instrument or source, the number of items and/or subscales, time of administration, source of the information, and associated Cronbach's alphas (Table I). A table of descriptive statistics, including means, standard deviations, and ranges for all

regression variables, was constructed (Table II). Pearson correlations were calculated for all regression variables and put into table form (Table III).

Moderation of Learning Disposition by Moderator Variables

A variable may be considered a moderator if the impact of the predictor variable on the criterion varies according to the level of the moderator. A variable may be considered a mediator if it is in a causal chain, where a predictor influences another predictor, which in turn influences the criterion (Holmbeck, 1997; 2002).

The current study hypothesized child, family, and child care variables would moderate the effects of learning disposition on school outcomes. Moderation is an interaction effect, so statistical analysis for this relation uses the interaction of main effects to determine if moderation is occurring. The method of Moderator Multiple Regression (Aiken & West, 1991; Holmbeck, 1997; 2002; Jaccard, Turrisi, & Wan, 1990) can be used for detecting moderator variables. Moderator variables are detected by first entering the main effects into the regression equation and then entering the interaction term. If significant change occurs in R^2 with the addition of the interaction term, the moderator variable is interacting with the main variable.

The same analysis may also be run with covariates, main effects, and the interaction term all entered simultaneously. The semi-partial coefficient of the interaction term squared is the amount of change in R^2 that can be attributed to the introduction of the interaction term. The semi-partial squared is thus the amount of variance accounted for by the interaction term (Pedhazur, 1982). Accordingly, this method was used to determine significant interactions, as the same results may be obtained more efficiently.

Means were first ascertained for all variables to be entered. Two separate data files were set up for this, one for child and family variables ($n = 205$) and one data file for child care variables ($n = 42$). The smaller subset was due to the fact that ECERS was available for only 42 classrooms. Means from appropriate data files were subtracted from all main variables to center them, giving each variable a mean of zero. Once they were centered, interaction terms were produced by multiplying possible moderators with learning disposition. Centering variables before creating interaction terms helps remove the correlations that would otherwise result between main effects and the interaction term, helping to avoid multicollinearity problems for the regression (Holmbeck, 2002). Centering also makes post hoc probing easier should interactions be found. The significance of the main effects and the interaction term are not changed by centering (Holmbeck, 2002).

The covariate, main effects, and interaction term were then entered simultaneously and run for ability, mother's education, family income, parent-child interaction, and parent reflectiveness, with a separate regression to test each of these moderator variables. Overall R^2 and semi-partial coefficients of each term were recorded from each regression to determine contributions of main effects and interaction terms. Table IV lists results for ability and family context moderator variables with academic outcomes. Table V lists results for ability and family context moderator variables with social outcomes. If any of the interaction coefficients were large enough to attain significance ($p < .05$), the regression was marked for post hoc probing to determine the relations involved.

A final set of equations concerning child care context were run on the smaller data file ($n = 42$), and were run in the same manner as the first set of equations above. Moderator variables tested included child care classroom quality (ECERS) and three variables of teacher-child interaction (CIS), sensitivity, harshness, and detachment. Results were recorded from these regressions as well and put into Table VII for child care quality and Table VIII for the three moderator variables of teacher-child interaction.

All regressions were run with continuous variables with the exception of the test of moderation by ability. Low ability was expected to moderate learning disposition, while other ranges of ability were not expected to be moderators. This was considered a question of group membership, and ability was coded as a dichotomous variable, with the low ability group receiving a dummy coding of 1 and all other members receiving a coding of 0. Regression analysis then proceeded with the dichotomous group value and centered learning disposition as main effects and an interaction term created by multiplying the group value (0 or 1) by the centered value of learning disposition. Membership in low ability was determined by taking all cases below 1 standard deviation ($n = 36$), then increasing this amount to include a greater number of cases in this lower group ($n = 49$). There were 49 cases coded as 1 and 186 coded as 0.

Post Hoc Probing

Post hoc probing proceeded with all interactions that proved significant. Both learning disposition and the moderator variable were first centered by subtracting their respective means, giving them a mean of zero. Then two additional values were created from the centered moderator, one with its standard deviation subtracted from each case,

the other with the standard deviation added to each case. The goal was to generate slopes one standard deviation above and below the mean.

Terms for post hoc probing were entered simultaneously into a regression to get the coefficients for the slope and the intercept to generate an equation for a line. One regression included the high moderator, learning disposition, and their interaction term. The other included the low moderator, learning disposition, and their interaction term. A third line with a coefficient and intercept from the original regression was generated as a line of the mean. If zero is substituted for the moderator and interaction term in each of these equations, one is left with an equation of a simple line, with the coefficient of learning disposition being the slope of the line, and the constant term the intercept. Using their respective slopes and intercepts, high, medium, and low moderator lines were computed and graphed with the outcome variable and learning disposition on the axis. Each line was a series of points which were the predicted values of the outcome at each value of learning disposition when the moderator is above the mean, at the mean, or below the mean.

CHAPTER FOUR

RESULTS

Descriptive Statistics

Visual inspection of histograms revealed a balanced distribution for learning disposition (Figure 1) and ability (Figure 2). Child mood (Figure 3) tended to be high, with a mean of 3.99 on a 5 point scale. Descriptive statistics for all variables are listed in Table 1. Mother's education had a mean of 6.66 (between "some college" and "associate's degree") with a standard deviation of only 1.77 (ranging from "high school" to "bachelor's degree"). Maternal education was therefore reasonably high, with little deviation. Income had a somewhat wider deviation of 3.56 on a 14 point scale, with the mean income being in the range of \$30,000 to \$40,000.

Measures of parental behavior based on parent report had means near the high end of their scales. Parental reflectivity ranged from 1 to 7 with a mean near 6 and a standard deviation of 1.27. Parent-child interaction ranged from 1 to 7 with a mean of 6.60 and a standard deviation of .45, thus showing almost no movement away from the high mean.

Scores of child care quality ranged from 27 to 48, with a mean of around 41 and a standard deviation of 4.88. This suggests quality was well into the higher half of the distribution. Teacher sensitivity was also generally high, with scores ranging from 20 to

40 and a mean of 33. Teacher harshness and detachment both had means near the lower end of their scales.

Identification of Covariates

Gender, age, and mood were determined to be weakly correlated with Bracken academic and social subscales and so were eliminated as possible covariates. Child ethnicity was more strongly related (Table III) and was entered as a covariate in all equations. Each equation contained four variables: child ethnicity, learning disposition, a main effect to be tested, and an interaction term. All were entered simultaneously to test hypotheses.

Test of Hypothesis Concerning Moderation by Ability

The measure of child ability was taken from teacher report, designated as ability (T), and tested in interaction with learning disposition. Moderation was expected to occur for academic outcomes only for children in the lower ability group. Tables III and IV list all regressions on the entire data file for both academic and social outcomes and revealed no interaction effects for ability. The regression run testing the significance of group membership in the lower level of ability, with the dichotomous group value coded as 1 or 0, also failed to show any interaction effects.

Tests of Hypotheses Concerning Moderation by Family Context

Maternal education, family income, parent reflectivity, and parent-child interaction during preschool were hypothesized to moderate the effects of learning disposition on both academic and social outcomes in kindergarten. This was expected because higher maternal education, family income, parent reflectivity, and parent-child interactions would result in an environment where high learning disposition was enabled, encouraged, and rewarded, amplifying the usefulness of its application.

Referring to Tables IV and V, no interactive effects for mother's education were apparent. In fact, mother's education itself bore little relation to either academic or social outcomes. This was contrary to expectations. Mother's educational level was reasonably high, and a possible reason for this lack of correlation in the current sample was that education was at a generally high enough level to prevent lack of mother's education from negatively impacting school outcomes.

Income also gave no evidence of interaction with learning disposition, although it was related in and of itself to both academic and social outcomes. For academic outcomes, the overall R^2 was .14, with income having a change in R^2 of .028 ($p < .013$). For social outcomes, the overall R^2 was .104, with income having a change in R^2 of .036 ($p < .006$). As expected, income displayed some correlation with academic and social outcomes.

Regression results for the single question assumed to be indicative of parent reflectivity are shown in Tables IV and V. Interactions were apparent for both academic

and social outcomes. For academic outcomes, the overall R^2 was .120, with learning disposition have a change in R^2 of .054 ($p < .001$), reflectivity insignificant, and the interaction term having a change in R^2 of .019 ($p < .041$). For social outcomes, the overall R^2 was .107, with learning disposition have a change in R^2 of .038 ($< .005$), reflectivity insignificant, and the interaction term having a change in R^2 of .040 ($p < .004$). Post hoc analysis of moderation by reflectivity is shown in Figure 4. Higher learning disposition leads to higher Bracken self/social awareness scores in kindergarten when parental reflectivity in preschool is high.

Parent-child interaction gave no indication of interaction or significance as a main effect. A consideration of the distribution of parent-child interaction in the data sample provided one reason for the lack of correlation. The value for this variable ranged from 1 to 7, but the mean was 6.59. The variance was heavily top-laden, with most all parents rating near the highest rating possible for this variable.

Tests of Hypotheses Concerning Moderation by Child Care Context

Results for regressions involving child care quality (ECERS) and teacher sensitivity, harshness, and detachment are shown in Tables VII and VIII. For academic outcomes, no significant interactions were apparent for any of these variables. Learning disposition and child care quality were significant as main effects for academic outcomes. For the regression on child care quality with academic outcomes, the overall R^2 was .299, with learning disposition having a change in R^2 of .086 ($p < .039$) and ECERS have a change in R^2 of .104 ($p < .025$). Teacher sensitivity and harshness showed little relation to academic outcomes. For the regression on teacher detachment, which approached but

did not achieve significance, the overall R^2 was .274, with learning disposition having a change in R^2 of .097 ($p < .013$) and teacher detachment having a change in R^2 of .006 ($p < .057$). Learning disposition and child care quality demonstrated a relation to academic outcomes, though there were no interaction effects.

Interestingly, no interaction effects or main effects were apparent for teacher-child relationships as measured by the CIS when social outcomes were considered. A significant interaction was apparent for child care quality. For the regression on ECERS with social outcomes, overall R^2 was .301, with learning disposition having a change in R^2 of .123 ($p < .015$), ECERS insignificant, and the interaction term having a change in R^2 of .173 ($p < .004$). These results suggested the interaction between learning disposition and child care quality accounted for about 17% of the variance in social school outcomes for kindergarten in this data set ($n = 42$). Although the data set was small, this constituted one of the most significant findings of the current study.

Post hoc probing proceeded for ECERS scores. Graph 6 shows the interaction for ECERS. When child care quality was high, higher learning disposition resulted in much higher social scores. When child care quality was medium, higher learning disposition resulted in moderately higher social scores. When child care quality was low, higher learning disposition resulted in a slight drop in social scores.

This study concluded child care quality demonstrated direct relations with academic school outcomes. A reasonably strong interaction effect was apparent for learning disposition and ECERS scores of child care quality when the outcome was social. No significant main or interaction effects were noted for teacher-child interaction for academic or social outcomes.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

Summary of Results

Learning disposition in preschool demonstrated effects on academic and social kindergarten outcomes. These effects were moderated by some features of family and child care contexts. Moderation by these variables means the same level of learning disposition resulted in different school outcomes, according to the level of the moderator.

Descriptive Statistics

The histogram for learning disposition revealed a balanced distribution. This means there were differences among children in level of learning disposition in this sample. That preschool children differ in motivational enthusiasm concurs with the results of Schwartz et al (2003) and Fox et al. (2001) who noted an orientation toward novelty and exuberance do differ among children from an early age and remain relatively stable characteristics of the child in later years. That motivational enthusiasm bears a significant relation to school outcomes disagrees with the viewpoint of Ryan and Stipek (1997), who concluded motivation was probably not an important correlate or cause of learning. It may be that Ryan and Stipek measured outlook motivation, which may not differ much among preschool children, while this assembly of learning disposition was in

part composed of behavioral motivation, which does differ and is related to school outcomes.

Measures of family and child care contexts in general did not include a substantial portion of low cases and in several instances had high means and small standard deviations. Maternal education had a mean around “associate’s degree,” and the mean category of income was \$30,000 to \$40,000. Reflectivity and parent-child interaction had means even nearer the high end of their scales. Child care quality and measures of teacher-child interaction were also generally positive. In terms of the child’s development, there may be thresholds in these variables beyond which substantial increases in their values do not result in large effects on child developmental outcomes. Family and child care variables in this sample generally had high means which may have reduced the visible impact on outcomes.

Identification of Covariates

Pearson correlations (Table III) showed mood was related to ability ($r = .52$) and learning disposition ($r = .74$). However, its relation to academic outcomes ($r = .17$) and social outcomes ($r = .08$) was much smaller. Given its high correlation with the main effect of learning disposition and its low correlation with kindergarten outcomes, it was eliminated as a possible covariate. A positive mood would enhance both ability and learning disposition, and its high correlation with these other child characteristics is probably an indication of this.

Test of Hypothesis Concerning Moderation by Ability

Learning disposition operates to improve academic school outcomes mainly through the enthusiasm to engage in interactions and through the ability to persist through difficulty. Ability and mood also play their part in school outcomes and may interact with learning disposition. This study proposed an unusual hypothesis for the moderation of learning disposition by ability. The current study hypothesized that under conditions of low ability, ability in preschool would moderate the effects of learning disposition on academic kindergarten school outcomes. When ability was high, high learning disposition would not result in better academic outcomes than low learning disposition. When ability was low, high learning disposition would result in better academic outcomes than low learning disposition.

Regression analysis revealed no interaction of ability with learning disposition when run on the whole group, or when run as a test of group membership in the low ability group. These results do not support the conclusions of Newman et al. (1998) who found persistence was a significant predictor of reading ability only for lower ability students. Within the limitations of the current study's measures of ability and learning disposition it may be concluded that within this sample, ability did not moderate the effects of learning disposition on academic outcomes. This could have been due to the inability of learning disposition to compensate for low ability in the achievement of satisfactory school outcomes.

Tests of Hypotheses Concerning Moderation by Family Context

Maternal education, family income, parental reflectivity, and parent-child interactions were hypothesized to moderate the effects of learning disposition on both academic and social kindergarten school outcomes. This would be because higher levels of these environmental factors would result in a home where high learning disposition was promoted, encouraged, and rewarded, amplifying its effect. Maternal education in fact had little correlation with academic or social outcomes and demonstrated no interaction effect. These findings are in contradiction to studies that found maternal education to be a significant factor in school outcomes (Getty, 2002; Loeb et al., 2004; NICHD ECCRN, 2003; Peisner-Feinberg et al., 2001). It was considered possible that maternal education was at a generally high enough level to prevent lack of mother's education from negatively impacting school outcomes. Only 3.2% of mothers had an education less than high school. It is likely increments in maternal education have much less of an effect once the level of high school is achieved (Shonkoff & Phillips, 2000). Family income displayed correlations with academic and social outcomes as expected but gave no evidence of interaction with learning disposition.

Interactions with learning disposition on both academic and social outcomes were apparent with the single measure of parental reflectivity used in this study. The interaction term accounted for 1.4% of the variance in academic outcomes and 4% of the variance in social outcomes. This study concluded the parental ability to perceive and mirror mental and emotional states of the child during preschool moderated the effects of learning disposition on kindergarten outcomes. These were small but significant effects. These results support the relevance of parental reflectivity to child exploration and self-

regulation, as proposed by Fonagy (1999). It is interesting to note this measure of parental interest in the activity and thought of the child showed no relation to kindergarten outcomes in and of itself, but as a moderator significantly moderated learning disposition to alter both academic and social outcomes. This reveals the complex nature of family context variables when considering their importance to child developmental outcomes.

Parent-child interaction gave no indication of interaction or significance as a main effect. Lack of interaction was probably due to the distribution of this variable, which was top-heavy and deviated little from the mean. The mini-model of parent-child interaction used in the current study was also probably a weak model, not only relying on too few questions to reliably determine parenting style, but also perhaps missing an essential character of parenting, psychological control (Barber, 1996). Though both authoritative and authoritarian parents are demanding, authoritative parents tend to be low in psychological control, while authoritarian parents tend to be high. This parenting behavior was not taken into account, and was a manner of parenting certainly relevant to the child's enthusiasm to engage in and to sustain interactions.

For variables of family context, this study concluded maternal education in this sample was high enough to prevent a negative impact on developmental outcomes. Parent-child interaction showed little relation to kindergarten child outcomes in this sample because it was reported to be almost universally high. The construct itself also likely needed improvement in its design. Income showed importance as a small but significant main effect. Parental reflectivity in preschool moderated the effects of learning disposition on both academic and social child outcomes in kindergarten.

Tests of Hypotheses Concerning Moderation by Child Care Context

An environment that allows exploration, play, and learning opportunities should allow a child's higher learning disposition to blossom and should result in better developmental outcomes. Such an environment should also have enough structure to encourage or direct those of more apathetic or troublesome dispositions. On the other hand, an environment that is poorly organized and has few resources to explore would put severe constraints on the potentially positive influence of a higher learning disposition, as well as being unable to counter apathy or redirect disruption. The current study hypothesized that child care quality in preschool would moderate the effects of learning disposition on both academic and social kindergarten school outcomes.

As part of the overall quality of the environment, teacher-child interactions were also expected to moderate the effects of learning disposition. It was felt to be likely that good quality teacher-child interactions would let the secure child's learning disposition shine forth, while poor quality teacher-child interactions would inhibit the potentially positive influence of a child's higher learning disposition.

Child care quality (ECERS) in preschool contributed as a main effect to kindergarten academic outcomes, accounting for about 10% ($p < .025$) of the variance. Child care quality was a significant moderator of the effects of learning disposition on kindergarten social outcomes, with the interaction term accounting for around 17% of social variance. Figure 7 illustrated this interaction. High learning disposition resulted in different outcomes according to the quality of the environment. As quality of child care environment increased, social scores were higher. Gross motor equipment, use of

language, music, and promoting diversity, for example, could be elements of an early childhood environment promoting academic achievement. Safety and personal care routines could give a sense of security essential for improved social outcomes. Results of the importance of child care quality in general support the conclusions of other recent studies (Getty, 2002; La Paro & Pianta, 2000; NICHD ECCRN, 2003; Pianta & McCoy, 1997).

Teacher-child interactions were also expected to moderate learning disposition. Good quality teacher-child interactions would let the secure child's learning disposition prosper, while poor quality teacher-child interactions would inhibit the positive influence of a child's higher learning disposition. Teacher measures from the CIS on sensitivity, harshness, and detachment showed no interactive or main effects, though detachment approached significance as a main effect for academic outcomes. Since teacher-child interactions have been shown to be important to school outcomes, these results failed to support the conclusions of Burchinal et al. (2002) and Peisner-Feinberg et al. (2001) that showed teacher-child interactions are important aspects of early child care that influence school outcomes for children. Results of the current study on the lack of correlation between teacher-child interactions and the learning disposition of the child may have been due to the generally positive interactive abilities of teachers in this sample.

Conclusions from Results

Learning disposition was a viable characteristic of young children useful in helping to predict kindergarten school readiness. It significantly affected both academic

and social outcomes, but the effect size was small. It operated to improve academic and social outcomes through the enthusiasm to engage in interactions and through the ability to persist through difficulty. Parental reflectivity and quality of child care in preschool moderated the effects of learning disposition on kindergarten outcomes. For an adult to find a child interesting and educational for extended periods implied a parental ability to discover and potentially mirror mental states of the child, a capacity in preschool which influenced child exploration and persistence and increased academic and social child outcomes in kindergarten. Finally, quality environments in child care were considered essential for kindergarten academic and social readiness. Moderation by family and child care characteristics demonstrated the importance of taking into account multiple contexts when predicting kindergarten school readiness.

The results of the current study point to two nodes as being effective intervention points to produce improved school outcomes. First, improving the ability of the parent to perceive and mirror mental states of the child throughout the preschool years could have the consequence of improving child exploration and persistence involved in learning disposition. Secondly, improving child care quality in preschool would have substantial, positive effects on both academic and social kindergarten outcomes.

Limitations of the Present Study

One limitation of the current study was that child and parent behaviors were not directly observed. Mood, ability, and learning disposition were based on teacher report. Although possibly more reliable than parent report, teacher report was subject to the likes and dislikes of particular teachers. An objective measure based on observation of the

behavior of the child would more accurately determine the child's tendency to engage in interactions with people, objects, and symbols, as well as providing a better measure of distractibility and persistence. Parenting behaviors were based on parent report. Parents could easily mark high regardless of their actual behavior. Questions from parents and teachers may have occasionally been statements of belief rather than behavior, two categories that do not always match each other.

This study's measure of ability was also limited. Fine motor control, general health, and standardized measures of intelligence were not used, all factors of potentially great importance to school outcomes. Limitations were also apparent for the measure of parental reflectivity. Although the size of the data set was respectable, this measure rested upon a single question, providing no measure of the reliability of information gathered. Finally, small sample size was a limitation of the ECERS regressions, which had a data set of 42, limiting generalization of results.

Suggestions for Further Analysis

With a larger number of cases, it might have been possible to combine child, family, and child care factors into a single equation predicting school readiness. Another factor could be included in such an equation as well. There was likely a large variation in quality among kindergarten classrooms, and this variation in classroom quality may in fact account for a proportion of the variation in child school outcomes previously assigned to the child or former child contexts. It would be most advantageous to add the quality of the current kindergarten classroom in which the child is currently situated as a covariate. The definition of ability could also be enlarged to include not only the fine

motor control and intelligence of the child, but also measures of reflective capacity of the individual, whether child or adult.

Although learning disposition, ability, and mood were gathered from questions pertaining only to their respective natures, it was interesting that for each child, all three were correlated (Table II). A study that would include all three characteristics of the child taken by objective measures could take into account their simultaneous influence on each other, and this tri-functioning could then be considered in relation to proximal processes, contexts, and outcomes. The same three characteristics would also be indicative of parent and teacher functioning, so the tri-functioning of adults could be considered in relation to the child's as well. If such an analysis were possible, ideally the tri-functioning of every family member would be taken as representative of family context, and the tri-functioning of all nearby teachers and student-friends of the child being studied would be taken as the child care context. New statistical methods would probably have to be developed to handle the complexity of all the interrelationships, but it would quite possibly be a more realistic model of child and environmental interactions giving rise to development.

Consideration of outcomes other than those related to school readiness might reveal different associations and moderations. Ability might interact with learning disposition in ways not presently anticipated when confronting tasks of artistic creation in music, visual arts, and theater. How family contexts relate to the child's learning disposition when considering life enjoyment or the development of spirituality might uncover new interdependencies. The relation of child care contexts to learning disposition

might reveal new insights when considering helpfulness to others or the ability to function independently in new situations.

Learning disposition in this study proved to be an interesting and useful construct, helpful in combining several distinctive parts of the child's personality into a unified, functioning characteristic, which in turn interacted with family and child care contexts to produce outcomes relevant to kindergarten school readiness. The arrangement of this disposition was intimately tied to adult-child interaction patterns having consequences for life-long learning processes.

Learning Disposition and the Evolutionary Context

Bronfenbrenner's theory proved useful for the study of child, family, and child care contexts. In this spirit of considering child characteristics within their contexts, the current study attempted to place learning disposition and its relation to school readiness within the broadest possible context, that of evolution: "Life moves toward incorporating more and more of its environment into itself and toward reducing the effects of external perturbations (Sameroff, 1983, p. 288)." This incorporation is evident in the gradual transition from the soft eggs of fish to the hard shelled eggs of birds and reptiles to the formation of the mammalian baby within the body. This process may have given rise to multi-celled organisms in the first place.

Human thought accomplishes the same incorporation by changing the structure of thought to account for discrepancies in perception. This is greatly facilitated by the retention of plasticity throughout the lifespan. Plasticity of thought in humans is believed

to arise from neoteny, the retention of child-like traits well into adulthood (Bjorklund & Green, 1992; Csikszentmihalyi & Rathunde, 1998).

Learning disposition, through the eagerness to explore novel aspects of surroundings and the fortitude to focus and persist through difficulty by the self-regulation of stress, is the vehicle that assists intelligence in sorting out, organizing, and incorporating the world into itself. The loving gaze and smile of the caregiver is the keystone for this incorporation and the origin of both comfort and the willingness to undertake accommodation, the two characteristics of learning disposition that influence school outcomes.

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TABLE I

Table of Variables

Construct	Type of Instrument	Number of Items or Subscales	Time of Administration	Source of Information	Cronbach's Alpha
Child					
Child Ethnicity	Questionnaire	8 pt scale	Spring, 2004	Parent	NA
Mood	Questionnaire	5 items	Spring, 2004	Teacher	.75
Ability	Questionnaire	4 items	Spring, 2004	Teacher	.87
Learning Disposition	Questionnaire	12 items	Spring, 2004	Teacher	.85
Family Context					
Mother's Education	Questionnaire	11 pt scale	Spring, 2004	Parent	NA
Household Income	Questionnaire	14 pt scale	Spring, 2004	Parent	NA
Reflectivity	Questionnaire	1 item	Spring, 2004	Parent	NA
Parent-Child Interact	Questionnaire	10 items	Spring, 2004	Parent	.79
Child Care Context					
Child Care Quality	ECERS	72 items	Spring, 2004	Observation	.92
Teacher Sensitivity	CIS	Sensitivity subscale	Spring, 2004	Observation	.81
Teacher Harshness	CIS	Harshness subscale	Spring, 2004	Observation	.81
Teacher Detachment	CIS	Detached subscale	Spring, 2004	Observation	.81
Kindergarten Outcomes					
Academic Readiness	BBCS-R	Academic subscale	Spring, 2005	Child	.91
Social Readiness	BBCS-R	Self/social subscale	Spring, 2005	Child	.91

TABLE II

Descriptive Statistics for Regression Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Child Ethnicity	205	1.00	8.00	5.31	1.77
Mood (T)	205	2.40	5.00	3.99	0.69
Ability (T)	205	1.00	5.00	3.45	0.93
Learning Disposition (T)	205	7.00	20.00	14.34	2.71
Mother's Education	188	3.00	11.00	6.66	1.77
Household Income	200	1.00	13.00	7.81	3.56
Reflectivity (P)	197	1.00	7.00	5.98	1.27
Parent-Child Interact (P)	189	3.90	7.00	6.60	0.45
ECERS Score	42	27.67	48.16	40.64	4.88
Teacher Sensitivity (CIS)	205	20.00	40.00	33.15	4.77
Teacher Harshness (CIS)	205	9.00	25.00	12.74	2.54
Teacher Detach (CIS)	205	9.00	13.00	10.30	0.78
Bracken Academic	205	66.00	134.00	103.39	13.09
Bracken Self/Social	205	2.00	17.00	10.19	2.75

Note: P = Parent Report T = Teacher Report CIS = Caregiver Interaction Scale

TABLE III

PEARSON CORRELATIONS AMONG ALL VARIABLES

	Child Ethnicity	Mood (T)	Ability (T)	Learning Disposition (T)	Mother's Education	Household Income	Reflectivity (P)	Parent- Child Interact (P)	ECERS Score	Teacher Sensitivity (CIS)	Teacher Harshness (CIS)	Teacher Detach (CIS)	Bracken Academic
Child Ethnicity													
Mood (T)	.03												
Ability (T)	.18*	.52**											
Learning Disposition (T)	.14*	.74**	.60**										
Mother's Education	.14	.08	.20**	.04									
Household Income	.12	.10	.18**	.09	.52**								
Reflectivity (P)	-.01	.12	.00	.01	-.18*	-.06							
Parent-Child Interact (P)	-.05	.13	.09	.13	-.10	-.02	.48**						
ECERS Score	-.14	.02	.14	.08	.00	-.02	-.02	-.13					
Teacher Sensitivity (CIS)	.17*	.02	.16*	.13	.04	-.08	-.11	-.12	.51**				
Teacher Harshness (CIS)	-.21**	-.10	-.17*	-.13	-.05	-.02	.01	.08	-.16	-.48**			
Teacher Detach (CIS)	-.08	-.03	.02	-.07	.00	-.09	.07	.08	.17	-.18**	-.01		
Bracken Academic	.21**	.17*	.33**	.27**	.12	.21**	.01	.07	.31*	.08	-.08	.01	
Bracken Self/Social	.19**	.08	.15*	.20**	.09	.23**	.01	-.02	.04	.04	-.04	-.16*	.58**

** Correlation is significant at the 0.01 level (2-tailed). Caution: Reading of insignificant correlations for extended periods may result in drowsiness. Do not operate heavy machinery for 20 minutes.

* Correlation is significant at the 0.05 level (2-tailed).

Note: T = Teacher Report P = Parent Report CIS = Caregiver Interaction Scale

TABLE IV

Bracken School Readiness Composite: Results for Interactions between Learning Disposition and Child Ability and Family Context

		Beta	t	Sig.	Semi Partial	Change in R Squared
Ability (T) Model R2 = .145 N = 205	df reg = 4; df residual = 200					
	Child Ethnicity	.170	2.540	.012	.166	.028
	Learning Disposition (T)	.107	1.318	.189	.086	.007
	Ability (T)	.221	2.652	.009	.173	.030
	Ability X Learning Disp.	-.049	-.717	.474	-.047	.002
Mother's Education Model R2 = .103 N = 188	df reg = 4; df residual = 183					
	Child Ethnicity	.193	2.686	.008	.188	.035
	Learning Disposition (T)	.198	2.784	.006	.195	.038
	Mother's Education	.090	1.228	.221	.086	.007
	M Ed X Learning Disp.	-.008	-.108	.914	-.008	.000
Income Model R2 = .143 N = 200	df reg = 4; df residual = 195					
	Child Ethnicity	.181	2.684	.008	.178	.032
	Learning Disposition (T)	.228	3.381	.001	.224	.050
	Household Income	.168	2.509	.013	.166	.028
	Income X Learning Disp.	.063	.949	.344	.063	.004
Reflectivity (P) Model R2 = .120 N = 197	df reg = 4; df residual = 192					
	Child Ethnicity	.174	2.523	.012	.171	.029
	Learning Disposition (T)	.236	3.425	.001	.232	.054
	Reflectivity (P)	.017	.257	.797	.017	.000
	Reflect X Learning Disp.	.141	2.057	.041	.139	.019
Parent-Child Interact (P) Model R2 = .106 N = 189	df reg = 4; df residual = 184					
	Child Ethnicity	.171	2.399	.017	.167	.028
	Learning Disposition (T)	.236	3.298	.001	.230	.053
	Parent-Child Interact (P)	.065	.878	.381	.061	.004
	PInteract X Learning Disp.	.057	.762	.447	.053	.003

Note: P = Parent Report T = Teacher Report

TABLE V

Bracken Self/Social Awareness: Results for Interactions between Learning Disposition and Child Ability and Family Context

		Beta	t	Sig.	Semi Partial	Change in R Squared
Ability	df reg = 4; df residual = 200					
Model R2 = .067						
N = 205	Child Ethnicity	.163	2.335	.021	.159	.025
	Learning Disposition (T)	.162	1.906	.058	.130	.017
	Ability (T)	.027	.308	.759	.021	.000
	Ability X Learning Disp.	.005	.076	.940	.005	.000
Mother's Education	df reg = 4; df residual = 183					
Model R2 = .075						
N = 188	Child Ethnicity	.172	2.348	.020	.167	.028
	Learning Disposition (T)	.156	2.158	.032	.153	.023
	Mother's Education	.037	.494	.622	.035	.001
	M Ed X Learning Disp.	.093	1.258	.210	.089	.008
Income	df reg = 4; df residual = 195					
Model R2 = .104						
N = 200	Child Ethnicity	.149	2.158	.032	.146	.021
	Learning Disposition (T)	.155	2.255	.025	.153	.023
	Household Income	.192	2.801	.006	.190	.036
	Income X Learning Disp.	.046	.672	.503	.046	.002
Reflectivity (P)	df reg = 4; df residual = 192					
Model R2 = .107						
N = 197	Child Ethnicity	.135	1.943	.053	.133	.018
	Learning Disposition (T)	.197	2.847	.005	.194	.038
	Reflectivity (P)	.019	.275	.784	.019	.000
	Reflect X Learning Disp.	.203	2.936	.004	.200	.040
Parent-Child Interact (P)	df reg = 4; df residual = 184					
Model R2 = .080						
N = 189	Child Ethnicity	.148	2.046	.042	.145	.021
	Learning Disposition (T)	.206	2.832	.005	.200	.040
	Parent-Child Interact (P)	-.019	-.255	.799	-.018	.000
	PInteract X Learning Disp.	.073	.973	.332	.069	.005

Note: P = Parent Report T = Teacher Report

TABLE VI

Bracken School Readiness Composite: Results for Interactions between Learning Disposition and Child Ability Groups

N = 205 df reg = 4; df residual = 200; total = 204		Beta	t	Sig.	Semi Partial	Change in R Squared
Ability Groups Model R2 = .135 Low Ability Group = 1 All Other = 0						
	Child Ethnicity	.192	2.880	.004	.189	.036
	Learning Disposition (T)	.119	1.321	.188	.087	.008
	Ability Group (T)	-.155	-1.804	.073	-.119	.014
	Ability Grp X Learning Disp.	.071	.704	.482	.046	.002

Note: T = Teacher Report

TABLE VII

**Bracken School Readiness Composite and Self/Social Awareness:
Results for Interactions between
Learning Disposition and Child Care Quality**

N = 42 df reg = 4; df residual = 37; total = 41		Beta	t	Sig.	Semi Partial	Change in R Squared
ECERS						
Model R2 = .299						
Academic Outcomes						
	Child Ethnicity	.335	2.407	.021	.331	.110
	Learning Disposition (T)	.305	2.138	.039	.294	.086
	ECERS	.329	2.341	.025	.322	.104
	ECERS X Learning Disp.	.054	.380	.706	.052	.003
ECERS						
Model R2 = .301						
Social Outcomes						
	Child Ethnicity	.252	1.812	.078	.249	.062
	Learning Disposition (T)	.363	2.552	.015	.351	.123
	ECERS	.012	.083	.934	.011	.000
	ECERS X Learning Disp.	.432	3.029	.004	.416	.173

Note: P = Parent Report T = Teacher Report CIS = Caregiver Interaction Scale

TABLE VIII

**Bracken School Readiness Composite and Self/Social Awareness:
Results for Interactions between
Learning Disposition and Teacher-Child Interaction**

N = 42 df reg = 4; df residual = 37; total = 41		Beta	t	Sig.	Semi Partial	Change in R Squared
T Sensitivity (CIS) Model R2 = .187 Academic Outcome						
	Child Ethnicity	.287	1.914	.063	.284	.110
	Learning Disposition (T)	.320	2.019	.051	.299	.086
	T Sensitivity (CIS)	.006	.040	.968	.006	.104
	Sensitive X Learning Disp.	.006	.033	.974	.005	.003
T Sensitivity (CIS) Model R2 = .164 Social Outcome						
	Child Ethnicity	.254	1.674	.103	.252	.062
	Learning Disposition (T)	.327	2.035	.049	.306	.123
	T Sensitivity (CIS)	.061	.381	.705	.057	.000
	Sensitive X Learning Disp.	.222	1.323	.194	.199	.173
T Harshness (CIS) Model R2 = .202 Academic Outcome						
	Child Ethnicity	.254	1.626	.112	.239	.081
	Learning Disposition (T)	.315	2.126	.040	.312	.089
	T Harshness (CIS)	.085	.526	.602	.077	.000
	Harsh X Learning Disp.	.070	.453	.654	.066	.000
T Harshness (CIS) Model R2 = .141 Social Outcome						
	Child Ethnicity	.215	1.326	.193	.202	.064
	Learning Disposition (T)	.276	1.796	.081	.274	.094
	T Harshness (CIS)	.074	.440	.662	.067	.003
	Harsh X Learning Disp.	-.127	-.794	.433	-.121	.040
T Detachment (CIS) Model R2 = .274 Academic Outcome						
	Child Ethnicity	.331	2.218	.033	.311	.057
	Learning Disposition (T)	.370	2.597	.013	.364	.097
	T Detachment (CIS)	.352	1.962	.057	.275	.006
	Detach X Learning Disp.	.099	.538	.594	.075	.004
T Detachment (CIS) Model R2 = .282 Social Outcome						
	Child Ethnicity	.112	.756	.455	.105	.041
	Learning Disposition (T)	.194	1.368	.180	.191	.075
	T Detachment (CIS)	-.305	-1.708	.096	-.238	.004
	Detach X Learning Disp.	.157	.858	.396	.120	.015

Note: T = Teacher Report CIS = Caregiver Interaction Scale

Distribution of Learning Disposition

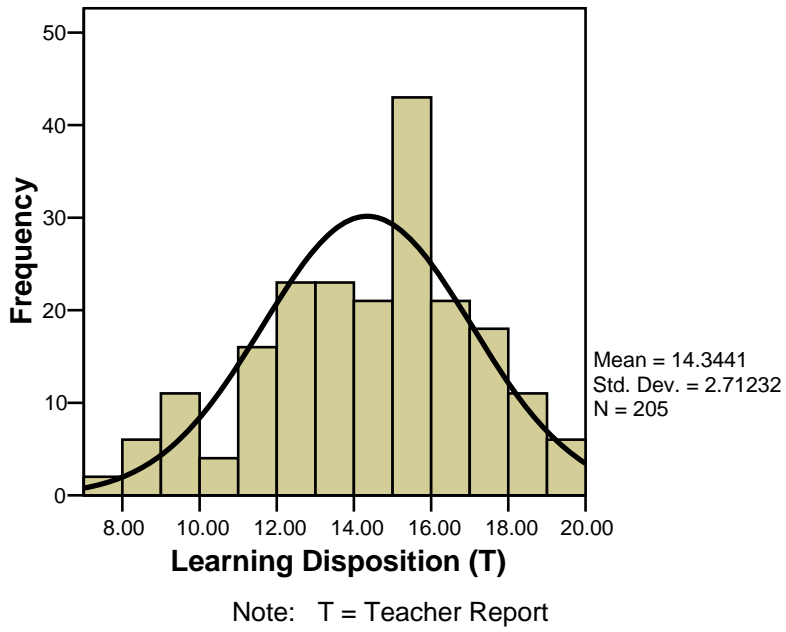


Figure 1. Distribution of Learning Disposition

Distribution of Ability

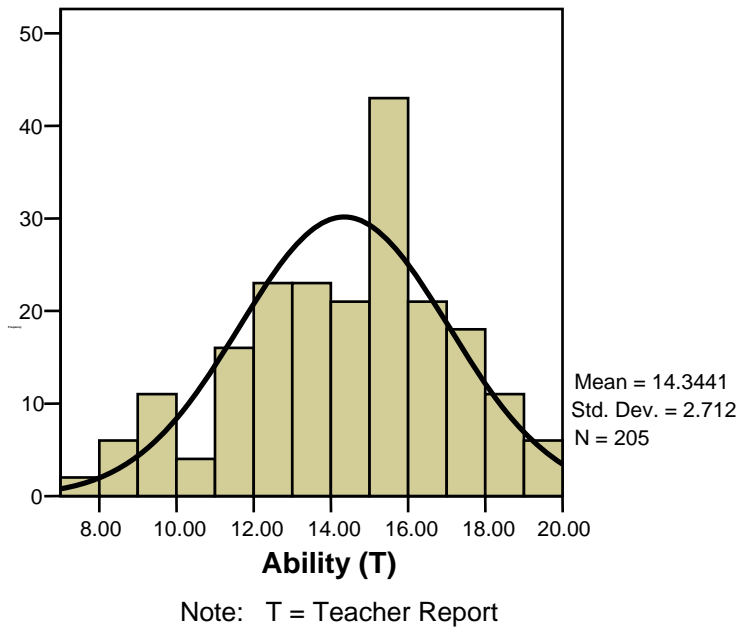


Figure 2. Distribution of Ability

Distribution of Mood

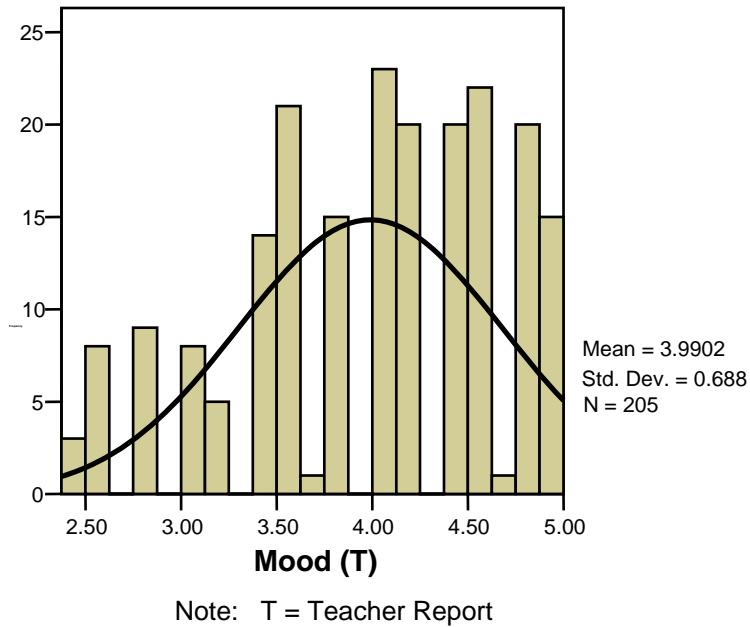


Figure 3. Distribution of Mood

Academic Outcomes on Learning Disposition at Three Levels of Reflectivity

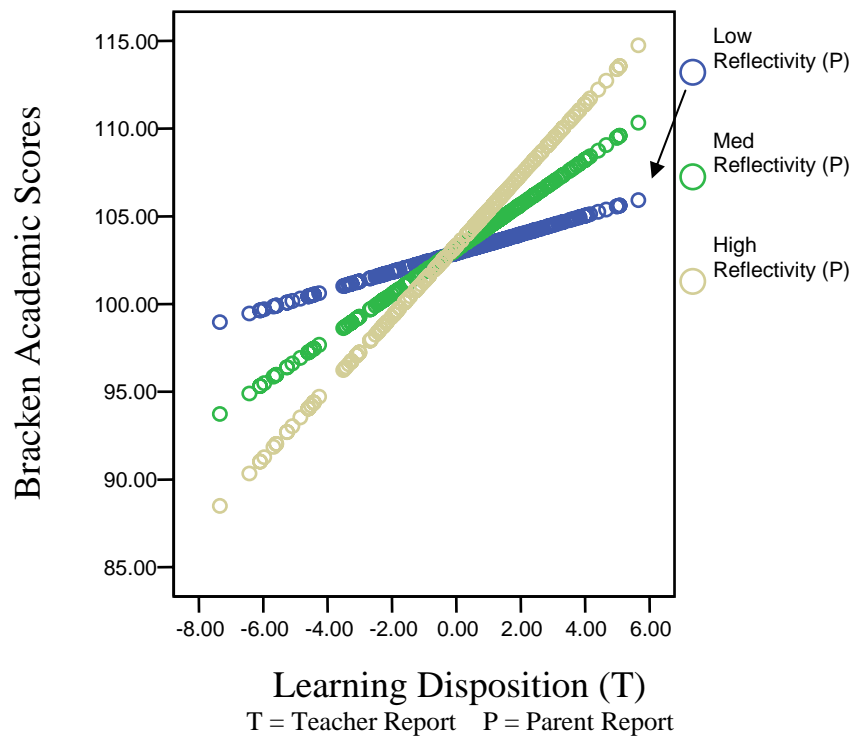


Figure 4. Interaction of Reflectivity (P) with Learning Disposition

Social Outcomes on Learning Disposition at Three Levels of Classroom Quality

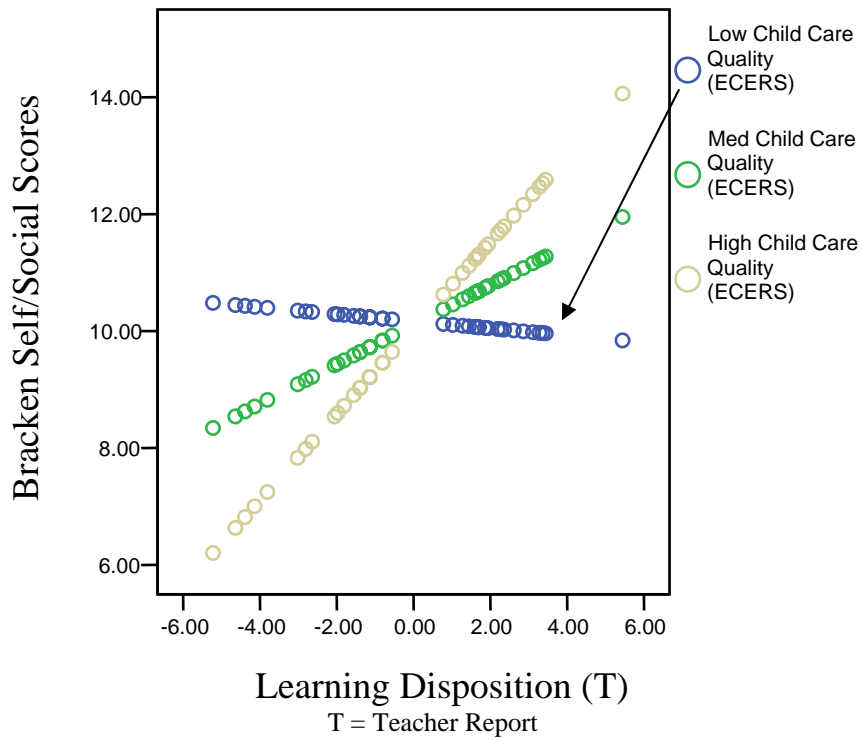


Figure 5. Interaction of Child Care Quality with Learning Disposition

VITA

Glen David Emerson

Candidate for the Degree of

Doctor of Philosophy

Thesis: MODERATION OF THE EFFECTS OF LEARNING DISPOSITION ON
SCHOOL READINESS BY FAMILY AND CHILD CARE CONTEXTS

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Pages in Study: 108

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Scope and Method of Study: The purpose of this study was to assemble a working model of learning disposition, to gather data relevant to this model, and to determine if measures of learning disposition taken in preschool were useful to predict kindergarten school readiness. Participants were 205 children from child care centers throughout Oklahoma. It was hypothesized characteristics of the child, family context, and child care context would moderate the effects of learning disposition on kindergarten school outcomes. Multiple regression equations and post hoc graphing were used to test hypotheses.

Findings and Conclusions: This study concluded that learning disposition was a viable characteristic of young children useful in helping to predict kindergarten school readiness. It significantly affected both academic and social outcomes, but the effect size was small. It operated to improve academic school outcomes through the enthusiasm to engage in interactions and through the ability to persistent through difficulty. Two interaction effects were apparent in this study: (1) a single measure of parental reflectivity moderated the effects of learning disposition on both academic and social outcomes, and (2) quality child care in preschool moderated the effects of learning disposition on kindergarten social outcomes. Parental reflectivity highlights the importance of the primary caregiver's ability to interpret and mirror the child's emotional states, which is conducive to both academic and social kindergarten readiness. Moderation by child care quality points to the importance of high quality child care environments in preschool for kindergarten social outcomes.

ADVISOR'S APPROVAL: _____