

Maternal Parenting Characteristics and School Involvement: Predictors of Kindergarten Cognitive Competence Among Head Start Children

Anne McDonald Culp

The University of Alabama

Laura Hubbs-Tait

Oklahoma State University

Rex E. Culp

The University of Alabama

Huei-Juang Starost

Oklahoma State University

Abstract: While early childhood theorists emphasize the importance of the parent-child relationship to school performance, research findings on the relationship between parenting characteristics and child cognitive competence vary in their results. Differing results are found in samples of Head Start and non-Head Start families. One hundred fourteen Head Start children and mothers participated in this study. The authors examined the contribution of four separate maternal parenting factors (warmth, punitiveness, intrusiveness, and involvement in school activities). The authors related these factors to child kindergarten competence, as measured by PPVT-R and teacher-rated child's memory of teacher instructions. Correlational analyses indicated that maternal intrusiveness consistently predicted child cognitive competence while children were in Head Start; maternal school involvement predicted cognitive competence while children were in kindergarten. Hierarchical regression analyses showed that when child gender, maternal PPVT-R scores, and child Head Start cognitive competence were controlled, maternal school involvement related positively to kindergarten child memory for instructions; and maternal punitiveness related negatively to kindergarten child PPVT-R scores. Measuring positive and negative emotional involvement separately revealed significant findings on maternal intrusiveness and punitiveness that may have been obscured had these maternal characteristics been measured on the low end of a scale of maternal warmth. Implications for involving Head Start parents in schools are discussed.

Literature Review

The primary goal of Head Start, articulated 30 years ago and recently reaffirmed, is to

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prepare children from low-income homes to enter school ready to learn (Zigler, 1998); that is, the goal is to increase limited early learning experiences so that the children do not start public school at a disadvantage (Ramey, Ramey, & Phillips, 1996). There is growing recognition, however, that contextual factors may enhance or detract from the attainment of this goal (Brody, Stoneman, & McCoy, 1994; Lee & Loeb, 1995; Taylor & Machida, 1994). Thus, researchers, practitioners, and policymakers increasingly have called for research to

identify contextual factors that promote school readiness, including school competence, among Head Start children (National Head Start Association Silver Ribbon Panel, 1990; National Research Council, National Academy of Sciences, 1996; U.S. Department of Health and Human Services, 1993; Zigler, 1998). The current investigation is a response to this call.

One contextual factor that is a major component of Head Start's comprehensive curriculum is parental involvement (McKey et al., 1985; Zigler, 1998). How deeply and in what ways parents become involved in their child's education is multidimensional (Epstein, 1990); it is measurable both in terms of parents' involvement in school activities and of parents' levels of support and nurturance (Zigler, 1998). In the following review, the authors will first examine the separate constructs of nurturant parenting, intrusive parenting, punitive parenting, and parental involvement in school as they have been investigated in the general child development and early childhood literatures. Second, the authors will examine these constructs as they have been investigated in the Head Start population.

Parental Warmth

The importance of parental warmth for the development of children's cognitive competence has been emphasized across a variety of literatures. Early childhood theorists (Bruner, 1982; Vygotsky, 1978) point out the continued importance of the parent-child relationship from birth through the early school years. Specific parenting practices associated with school success include joint activities that encourage children to talk and to act on their environment. A child's cognitive development occurs in social situations that are conducive to positive interchanges (Vygotsky, 1978). For children performing problem-solving tasks, the parent or adult can provide a positive supportive learning situation that includes incremental steps that are repeated and challenging. Once a child has mastered one component of a task, the parent finds constructive ways of challenging the child to

perform more complex approaches (Bruner, 1982).

A number of investigations confirm the importance of parental warmth in promoting young children's cognitive competence (e.g., Barocas et al., 1991; Estrada, Arsenio, Hess, & Holloway, 1987; Grolnick & Ryan, 1989; Hann, Osofsky, & Culp, 1996; Kelly, Morisset, Barnard, Hammond, & Booth, 1996); several studies are particularly pertinent to the current investigation. In a sample of 66 Caucasian middle-class 3rd-through 5th-graders, Grolnick and Ryan (1989) predicted high cognitive competence for children whose parents supported their children's autonomy in carrying out cognitive tasks. Parents were rated high on valuing autonomy when they used encouragement, reasoning, and empathic limit setting. This style of parenting was associated with children who self-regulated positive behavior in school and were highly competent, as rated by the children's own perceptions, the teacher's perceptions, and by standardized math and reading scores on the Metropolitan Achievement Test.

In a longitudinal study of 69 Caucasian adolescent mothers and their children, the strongest predictor of cognitive-linguistic outcomes in preschoolers was maternal warmth, measured as positive affective responses and maternal-child positive verbal exchanges when the children were 20 months. At both 13 and 20 months, the mothers and infants were videotaped during play interaction, and mothers were assessed for positive and negative affective exchanges, and for verbal reciprocity. The predictors of warmth and positive verbal exchanges were significant when predicting 30-month Stanford Binet and 44-month PPVT-R scores, even after demographic risk index factors (conditions of low income, low education, minority status, and absence of male partner) were taken into account (Hann, Osofsky, & Culp, 1996). Likewise, among a sample of 53 high social-risk mothers and their children, mothers' ability to respond warmly and sensitively to their children during play was a significant predictor of their children's Preschool Lan-

guage Scale scores at 36 months and their WPPSI scores at 5 years of age, regardless of the contribution of maternal IQ (Kelly et al., 1996).

Maternal Intrusiveness

Just as maternal warmth and positive interaction with children predict positive cognitive competence, negative parenting practices such as intrusiveness and punitiveness predict negative child cognitive and behavioral outcomes (Egeland, Pianta, & O'Brien, 1993; Jacobvitz & Sroufe, 1987; Olson, Bates, & Kaskie, 1992), and clearly affect school readiness. Maternal intrusiveness, for example, is related to the later development of hyperactive and distractible behavior in kindergarten (Jacobvitz & Sroufe, 1987). Moreover, compared to children of nonintrusive mothers, children whose mothers had been judged to be intrusive when they were six months old were less competent academically, socially, emotionally, and behaviorally in 1st and 2nd grades (Egeland, Pianta, & O'Brien, 1993). Maternal intrusiveness, when operationalized by frequency and level of directive guidance (with taking over a child's puzzle and solving it for the child as the highest level of directive guidance) during a teaching task when children were 6 years old, was significantly inversely correlated with children's Peabody Picture Vocabulary Test (PPVT) scores and teacher ratings of academic competence at ages 6 and 8 years among predominantly Caucasian families, across all socioeconomic levels (Olson, Bates, & Kaskie, 1992).

Maternal Punitiveness

Like intrusiveness, maternal punitiveness is negatively related to children's cognitive competence. Fagot and Gauvain (1997) studied 93 mothers and their children, and found that negative maternal behavior—a combination of both intrusiveness and punitiveness—during interactions with their children, at 18 and 30 months of age, affected the children's cognitive competence at age 5. Maternal punitiveness, such as criticism, verbal punishment, and physical

restraint, at 18 months, was related to more child errors on puzzle completion and performance tasks. Maternal disapproval at 30 months was significantly inversely correlated with children's WPPSI arithmetic subscale scores and significantly positively correlated with teachers' ratings of learning problems at 5 years of age.

Among 120 mother-child pairs interacting during a 24-month play episode at home, Olson et al. (1992) assessed punitive (scolding, restraining, and physical punishing) and nonpunitive (setting clear controls) discipline and related them to later 6-year cognitive abilities. They found that the less punitive the mothers were, the higher the children's 6-year PPVT scores. Likewise, in a study of Caucasian and African American 6th-grade boys, harsh discipline was associated directly with poor grades and low scores on the Comprehensive Test of Basic Skills (Wentzel, Feldman, & Weinberger, 1991).

School Involvement

Parental involvement with the schools (or with homework or other school-related activities) has been found to be a better predictor of children's success in school than parents' own educational backgrounds (Epstein, 1990; Reynolds, 1992; Stevenson & Baker, 1987). In an extensive study of the relationship between parent involvement and children's academic achievement, taken from a low-income sample, Reynolds (1992) found that the highest correlation between measures of school involvement and children's math and reading scores on the Iowa Test of Basic Skills (ITBS) in 2nd and 3rd grades came from teacher ratings of parent involvement. Structural equation modeling likewise revealed a significant relationship between teacher ratings of parental involvement and latent achievement variables (based on ITBS scores) in 2nd and 3rd grade, even after economic, education, and other demographic variables were controlled statistically.

Head Start Studies

More recently, researchers have begun to

ask whether measures of involvement by parents of Head Start children can account for differences in school readiness or school competence in this population of children. Two studies are particularly relevant to the current investigation. Taylor and Machida (1994) studied 63 Head Start children in the fall and spring of one year of their pre-kindergarten attendance at Head Start. Spring outcome variables included children's scores on a developmental measure of learning skills (motor, conceptual, and language skills) and teacher ratings of children's classroom behavior (which included attentiveness to classroom proceedings, as well as cognitive competence measures such as curiosity and inquisitiveness). Two parental involvement measures were included. One was teacher ratings of parent involvement in the schools and in educational activities at home. The second was parental warmth and support, measured by children's responses to the maternal acceptance scale of the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children. Results of both correlational and regression analyses revealed that teacher ratings of parental school involvement predicted children's classroom behavior and learning skills, but that ratings of parental warmth did not.

Mantzicopoulos (1997) investigated the relationship between maternal involvement at school and at home and children's pre-kindergarten competence. Ninety-three Head Start children and their mothers participated. Mothers rated their own parenting style (low to high on warmth, responsiveness, and consistency) with their children, their engagement in home literacy activities, and their educational expectations for their children. Teachers rated maternal school involvement. Children's pre-kindergarten competence was measured by children's own ratings of their perceived cognitive competence, teachers' ratings of children's cognitive competence, mothers' ratings of children's school adjustment, and children's scores on an achievement battery. After controlling for such factors as child gender, child IQ, and maternal educa-

tion, Mantzicopoulos found that mothers' educational expectations predicted children's achievement scores and teacher ratings of cognitive competence. Mothers' ratings of home literacy activities predicted children's ratings of their perceived cognitive competence. Teacher ratings of maternal involvement predicted children's school adjustment during the Head Start year. In contrast, mothers' ratings of their warmth and responsiveness did not predict any of the measures of children's pre-kindergarten cognitive competence.

Thus, a comparison of research results regarding Head Start to research results regarding non-Head Start children points to differences in the relationship between maternal warmth and children's cognitive competence. Studies involving preschool-age children who are not enrolled in Head Start find that maternal positive and negative emotional involvement is related to various measures of children's cognitive competence. Studies employing preschool-age children who are enrolled in Head Start find that maternal positive emotional involvement is not significantly related to children's cognitive competence. One difference between the studies using Head Start versus non-Head Start children is that research on non-Head Start children has included separate measures of parental positive and negative emotional involvement (e.g., Fagot & Gauvain, 1997; Olson et al., 1992), whereas research on Head Start children has included scales with continuous scores or averaged scores across negative and positive emotional involvement. Measures that conceptualize parental involvement as consisting of distinct positive and negative components may be more likely to reveal relationships between parental emotional involvement and children's cognitive competence. Therefore, the authors proposed that measures of maternal positive emotional involvement (warmth) and measures of negative emotional involvement (intrusiveness, punitiveness) would be measured separately and be related to Head Start children's cognitive competence.

Previous research on parental charac-

teristics and involvement by parents of Head Start children underscored the importance of parents during the preschool years. First, parental involvement in school may influence later child cognitive performance solely through its influences on prior child cognitive ability. Second, parental involvement may continue to influence later cognitive competence, even while controlling for any parent influences on prior cognitive ability. Thus, the authors expected parental characteristics and involvement in the schools to predict children's cognitive competence in kindergarten, even when children's previous cognitive competence is controlled.

In summary, the present study examined the hypotheses that four dimensions of maternal parenting characteristics would be related to child cognitive competence as measured by PPVT-R scores and teacher ratings of child memory of instructions: 1) maternal warmth in response to child distress, 2) maternal punitiveness in response to child distress and learning activities, 3) maternal intrusiveness in response to learning activities, and 4) maternal involvement with school activities. Specifically, maternal warmth would predict positive child cognitive competence both in Head Start and in kindergarten (after controlling for child cognitive competence in Head Start). Maternal punitiveness and maternal intrusiveness would predict negative child cognitive competence in Head Start and in kindergarten (after controlling for child cognitive competence in Head Start). Because elementary school involvement was measured after public school entry, the hypothesis about the dimension of maternal involvement in school activities was only tested for kindergarten measures of cognitive competence. The authors hypothesized that parental involvement in school activities during kindergarten would predict kindergarten child cognitive competence, after controlling for child cognitive competence in Head Start.

Method

Participants

Participants were 114 primary caregivers

and their 5-year-old children (63 boys, 51 girls) who had attended Head Start in rural north central Oklahoma and continued in the project through kindergarten. The caregivers (111 biological mothers, 2 grandmothers, 1 stepmother) ranged in age from 19 to 54 years ($M = 29.30$; $SD = 6.04$) on September 1 of their child's pre-kindergarten year in Head Start. Children's ages as of September 1 of their pre-kindergarten year ranged from 4.01 to 4.99 ($M = 4.58$, $SD = .26$). Children's ethnicity was 60% Caucasian, 30% Native American, 6% African American, 3% Hispanic, and 1% multiethnic.

Eighteen percent of the mothers did not have a high school diploma, 37% were high school graduates or had received a GED, 12% were vocational-technical graduates, 26% had attended some college courses, and 7% were college graduates. Twelve percent received welfare (AFDC or TANF), 71% received other forms of public assistance (e.g., food stamps, WIC), and 17% received no assistance (with Native American benefits such as Indian health not included in the category of assistance). Forty-nine percent were married, 16% were remarried, 12% were divorced, 10% had never married, 8% were separated, and 5% were widowed.

Procedure

Mothers and children were recruited in the fall of their child's pre-kindergarten year in Head Start. In the spring of that year, the mothers completed the Computer-Presented Parenting Dilemmas (CPPD), an interactive computer assessment modified from Holden's Computer Presented Social Situations (Holden & Ritchie, 1991). CPPD vignettes were presented on a computer located in a small trailer that was parked at each community's Head Start center. The mothers typed their names, the names of their Head Start children, and the names of other adults in the home into the computer. The computer program personalized the vignettes to include the family members' names. Three vignettes assessed mother's reactions to child distress: 1) the child spilled his/her juice during breakfast and

began crying over his/her mistake; 2) the child had been trying to make a kite, but began crying when he/she had difficulty; 3) the child fell outside, got hurt, and began crying. After reading each vignette, the mother was asked how she would respond to this behavior by her child. Responses included: hug; explanations/reason (e.g., "accidents happen"); ignore it; put child in "time out"; yell; say, "stop crying, because I said so"; treat/bribe; spank. The vignette about the child who could not make the kite included two additional choices: "praise child for what he/she has done and help child figure out what went wrong," and "make the kite yourself." Each response was presented individually on the computer, and the mothers rated each response on a 7-point Likert-type scale, by typing in the number that corresponded to their choice.

In the spring of the children's Head Start year, the children were tested on the revised Peabody Picture Vocabulary Test (PPVT-R) (Dunn & Dunn, 1981), and the teachers completed the California Preschool Social Competency Scale (CSPCS) (Levine, Elzey, & Lewis, 1969).

Between March and May of the children's kindergarten year, the PPVT was administered by research assistants during school hours either in the trailer or in the kindergarten classroom. In April and May, the children's kindergarten teachers completed the CSPCS and the Mother Involvement Questionnaire-Teacher Form (MIQ-T).

Measures

The variables for this study included five maternal involvement predictors derived from the CPPD and the MIQ-T, one child predictor, child gender, and one mother cognitive factor, PPVT-R. There were two Head Start cognitive outcome variables derived from the PPVT-R and the CSPCS; and two kindergarten cognitive outcome variables derived from the PPVT-R and the CSPCS. The means and standard deviations for these variables appear in Table 1.

Predictors: Parental involvement during Head Start. Maternal involvement during the Head Start year was operationalized as three variables from the CPPD—two that summarized negative involvement, and one that summarized positive involvement. Two factors (one positive and one negative) resulted from a factor analysis (component extraction, oblique rotation, and employment of the Kaiser criterion) of the three distress stories of the CPPD. The "maternal warmth" factor consisted of three items: "hug child when child is crying because he/she spilled juice," "hug child when child is crying because he/she cannot fold paper correctly to make kite," and "reason/explain to child that accidents happen when child is crying because he/she spilled juice." The "maternal punitiveness" factor consisted of eight items, six of which loaded positively. These six items included three responses of "spank" in reaction to the child's distress in each of the three distress stories and three

Table 1
Means and Standard Deviations of Maternal Predictors and Child Outcomes

Variable	Mean	Standard Deviation	N
Maternal Predictors			
CPPD Warmth: Head Start	18.53	3.09	113
CPPD Punitiveness: Head Start	11.51	6.44	113
CPPD Intrusiveness: Head Start	3.87	1.57	113
MIQ-T School Involvement: Kindergarten	26.27	8.26	113
PPVT-R: Head Start	88.55	13.62	114
Head Start-Based Child Outcomes			
PPVT-R	89.69	13.85	114
CSPCS Remember Teacher Instructions	9.46	1.94	114
Kindergarten-Based Child Outcomes			
PPVT-R	93.22	13.41	114
CSPCS Remember Teacher Instructions	9.11	2.47	114

responses of “yell at child” in reaction to the child’s distress in each of the three distress stories. The two items that loaded negatively on the “maternal punitiveness” factor were “hug child” when the child had fallen, and was hurt and crying, and “praise child for what he/she has done and help child figure out what went wrong” when the child begins crying in frustration over his/her inability to make the kite. Cronbach’s alphas for the “maternal warmth” factor and “maternal punitiveness” factor in the current sample were .67 and .86, respectively.

The third variable from the CPPD was a one-item response to the child’s frustration over being unable to make the kite. The item response “make the kite yourself” summarized maternal intrusive involvement in children’s cognitive activities and constituted the “maternal intrusiveness” factor.

Predictors: Parental involvement during kindergarten. Maternal school involvement during kindergarten was assessed by teacher ratings. Teachers’ perceptions of maternal involvement were measured by the Maternal Involvement Questionnaire - Teacher form (MIQ-T), developed for this study, which includes five items from Taylor and Machida’s (1994) questionnaire and three items from Reynolds’s (1992) questionnaire. Teachers rated all items on a 1 to 5 Likert-type scale, from very infrequently to very frequently. Sample items included, “this child’s mother responds to requests for information about her child,” “this child’s mother follows through with activities suggested by the teacher,” and “this child’s mother communicates with the school regularly.” Principal components analysis revealed that all items loaded on a single factor, $\alpha = .92$, which we labeled the “maternal school involvement” factor.

Outcomes: Peabody Picture Vocabulary Test. The PPVT-R (Dunn & Dunn, 1981) is a standardized test of receptive Standard American English vocabulary for testing persons 2 through 40 years of age, and is correlated with measures of aptitude and school readiness (Ladd, 1990). Internal consistency (.67 to .88) and construct validity are acceptable (Dunn & Dunn, 1981).

The present study computed and analyzed standardized scores. Research has confirmed the construct validity of the instrument. Specifically, PPVT-R scores are significantly positively correlated with scores on the Wechsler Intelligence Scale for Children-III (WISC-III) Full Scale IQ (.63), Verbal IQ (.65) (Hodapp & Hass, 1997); Full Scale IQ (.77), Verbal IQ (.71), and Performance IQ (.74) (Altepeter, 1989). This scale was administered to the children in Head Start and again in kindergarten.

Outcomes: California Preschool Social Competency Scale. The California Preschool Social Competency Scale (CPSCS) (Levine, Elzey, & Lewis, 1969) is a 30-item teacher rating scale of children’s social competence in the classroom. Ladd (1990) has reported that the CPSCS yields three factors—peer involvement, shares, and task mastery. The cognitive factor—task mastery—was extremely pertinent to the current study. To determine whether the three factors identified by Ladd also could be identified in the current study, factor analysis with component extraction and orthogonal rotation was performed on Head Start teacher ratings. This analysis yielded six factors, the first three of which corresponded to Ladd’s three factors. The same analysis was performed on the teacher ratings for the 119 children who were rated during kindergarten. Across both analyses, the task mastery factor included the same three items: following verbal instructions, following new instructions, and remembering instructions. Cronbach’s alphas for the current sample in Head Start and kindergarten were .81 and .84, respectively. In light of the consistent theme of “instructions,” we renamed the factor “CPSCS Teacher Instructions.” For analysis purposes, this resulted in two variables, the “CPSCS Remember Teacher Instructions—HS” factor and the “CPSCS Remember Teacher Instructions—K” factor, for assessments made during Head Start and kindergarten, respectively.

Control variables. Two predictors, maternal PPVT-R and child gender, served as control variables in all analyses. Children’s gender has been found to be

related to various measures of school adjustment (e.g., Mantzicopoulos, 1997) and cognitive competence (e.g., Stevenson & Newman, 1986), with girls usually outperforming boys prior to the high school years. In addition, research suggests that gender may influence teacher ratings (Grolnick, Benjet, Kuroski, & Apostoleris, 1997).

Previous research documents a significant positive relationship between mothers' and children's PPVT-R scores (e.g., $r = .68$) (Bracken, Howell, & Crain, 1993), the magnitude of which could influence relationships among the maternal involvement predictors and child cognitive competence outcomes in the current study. Thus, mothers completed the PPVT-R during the fall of their children's pre-kindergarten year in Head Start.

Results

Relationship of Maternal Involvement to Head Start Cognitive Competence

Correlations. Correlations among mea-

asures of involvement during Head Start (see Table 2) ranged from very low to moderate, with maternal punitiveness and maternal intrusiveness correlating positively with each other and inversely with maternal warmth. The gender of the child was not significantly correlated with any of the maternal predictor variables. Correlations among child outcome measures during Head Start (see Table 2) were all significant, but of low magnitude.

During Head Start, the correlations between measures of maternal involvement and children's cognitive competence ranged from low to moderate. Maternal intrusiveness was the only maternal variable that was "consistently" significantly correlated with the Head Start cognitive competence variables. A mother's tendency to take over a task from her child was significantly inversely correlated with all three Head Start cognitive outcomes. Maternal warmth was significantly correlated with two outcomes; maternal punitiveness, with one (see Table 2).

Table 2
Correlations of Maternal Parenting Predictors and Child Outcomes

Predictors	1	2	3	4	5	6	7	8	9
Maternal Parenting									
1. CPPD Punitiveness:									
Head Start	-								
2. CPPD Warmth:									
Head Start	-.31***	-							
3. CPPD Intrusiveness:									
Head Start	.25**	-.13	-						
4. MIQ-T School Involvement:									
Kindergarten	-.16*	.07	-.22**	-					
5. Mother PPVT-R	-.10	.05	-.23**	.10	-				
6. Child Gender	.02	.04	-.06	.07	-.05	-			
Child Outcomes									
Head Start Cognitive Competence									
7. Child PPVT-R	-.10	.23**	-.16*	.08	.23**	.16*	-		
8. CPSCS Remember Teacher Instructions	-.11	-.04	-.19*	.18*	.04	.32***	.20*	-	
Kindergarten Cognitive Competence									
9. Child PPVT-R	-.23**	.19*	-.14	.21*	.36***	.18*	.72***	.25**	-
10. CPSCS Remember Teacher Instructions	-.06	.05	-.12	.31***	.15	.28***	.37***	.30***	.34***

Note. Significance tests are one-tailed. Sample sizes range from 113 to 114.
* $p < .05$ ** $p < .01$ *** $p < .001$



Regressions. Hierarchical multiple regressions were conducted for each of the Head Start outcomes. The two control variables (mothers' PPVT-R scores and child gender) were entered on the first step of the regression. Any maternal involvement predictors that were significantly correlated with the outcome were entered on the second step. The results of the regression analyses are depicted in Table 3. The two control variables explained significant variance in each of the cognitive outcomes. Inspection of the beta weights reveals that child gender accounted for the effect in the analysis of how well children remembered teacher instructions and of children's self-assessments of their cognitive competence, whereas mothers' PPVT-R scores explained significant variance in children's PPVT-R scores, with gender only approaching significance. In all cases, the relationship between gender and outcome was due to higher scores for girls than boys.

Maternal involvement during Head Start explained significant variance in children's PPVT-R scores, even after controlling for child gender and the mothers' own PPVT-R scores. Although both maternal warmth and maternal intrusiveness

were significantly correlated with children's PPVT-R scores, only the contribution of maternal warmth was significant in the regression.

The contribution of maternal involvement to teachers' assessments of children's compliance with, and memory for, instructions approached significance. In the regression equation for the CPSCS "remember teacher instructions" factor, the greater the maternal intrusiveness, the lower the teacher ratings of the child's compliance with and memory for instructions.

Relationship of Maternal Involvement to Kindergarten Cognitive Competence

Correlations. Correlations among child outcome measures during kindergarten (see Table 2) ranged from low to moderate and were of similar magnitude to those found during Head Start. Correlations between the same child outcome measures over time were likewise of moderate magnitude with the exception of children's PPVT-R scores. Children's Head Start and kindergarten PPVT-R scores had 52% of their variance in common.

Two of the measures of maternal emotional involvement during Head Start,

Table 3
Regressions Predicting Child Head Start Outcomes

Head Start Outcomes	Block	Predictors	Total R ²	ΔR ²	F	df	beta
PPVT-R	1.	Child Gender		.066	3.87*	2,110	.16+
		Mother PPVT-R					.21*
	2.	CPPD Warmth		.053	3.24*	4,108	.20*
		CPPD Intrusiveness					-.09
			.12**				
CPSCS: Remember Teacher Instructions	1.	Child Gender		.107	6.62**	2,110	.33***
		Mother PPVT-R					.06
	2.	CPPD Intrusiveness		.026	3.25+	3,109	-.17+
			.13**				

Note. ΔR² refers to the change in R² explained by the particular block of predictors.
+p < .10 *p < .05 **p < .01 ***p < .001



warmth and punitiveness, were significantly correlated with children's kindergarten cognitive outcomes. In addition, mothers' involvement during kindergarten, with their children's school work at home and in their children's classrooms, was significantly correlated with PPVT-R scores and teachers' ratings of their children's compliance with and memory for instructions.

Regressions. Hierarchical multiple regressions were conducted for each of the kindergarten outcomes. Three control variables were entered on the first step of the regression—children's gender, mothers' PPVT-R scores, and children's Head Start scores for the same outcome. Any maternal involvement measures that were significantly correlated with the particular child outcome measure were entered on the second step. The results of these regression analyses are depicted in Table 4.

The three control variables explained significant variance in each of the kindergarten cognitive outcomes. In the case of children's kindergarten PPVT-R scores, both mothers' PPVT-R scores and children's Head Start PPVT-R scores contributed signifi-

cantly to the regression. All three predictors together explained 55% of the variance in children's kindergarten PPVT-R scores. In the case of CPSCS teacher instructions, children's gender and compliance with and memory for Head Start teachers' instructions both contributed significantly to the regression. In addition, the contribution of mothers' PPVT-R scores approached significance. All three predictors together explained 14% of the variance in kindergarten teachers' ratings of children's compliance with and memory for instructions.

Maternal involvement during Head Start and kindergarten explained significant variance in children's PPVT-R scores and in children's capacity to remember teacher instructions, even after all three control variables were entered into the particular regression equation. The contribution of punitiveness to the regression equation predicting children's kindergarten receptive vocabulary (PPVT-R scores) was significant; the contribution of mother's involvement during kindergarten approached significance, as well. Together with maternal warmth, these two variables

Table 4
Regressions Predicting Child Kindergarten Outcomes

Kindergarten Outcomes	Block	Predictors	Total R ²	ΔR ²	F	df	beta
PPVT-R	1.	Child Gender	.548	43.61***	3,108	.08	
		Mother PPVT-R				.21**	
		Child PPVT-R: Head Start				.66**	
	2.	CPPD Warmth	.053	2.90*	6,105	-.03	
		CPPD Punitiveness				-.14*	
		MIQ-T School Involvement				.11+	
			.58***				
CPSCS: Remember Teacher Instructions	1.	Child Gender	.145	6.15***	3,109	.22*	
		Mother PPVT-R				.15+	
		CPSCS Remember Teacher Instructions: Head Start				.21*	
	2.	MIQ-T School Involvement	.059	7.98**	4,108	.25**	
							.20***

Note. ΔR² refers to the change in R² explained by the particular block of predictors.
+p < .10 *p < .05 **p < .01 ***p < .001

explained 5% of the variance in children's receptive vocabulary. Similarly, mothers' involvement during kindergarten explained significant variance in children's compliance with and memory for kindergarten teachers' instructions, accounting for 6% of the variance in CPSCS teacher instructions. Although contributions of maternal involvement variables appear small in comparison to the contributions of the control variables, it should be remembered that the entry of control variables in the first block of the regression controls for the variance shared between each of the control variables and maternal involvement during Head Start. Thus, any significant maternal involvement contribution reflects only nonredundant variance, which is explained by that variable in the kindergarten outcome.

Discussion

The researchers hypothesized that four dimensions of maternal parenting characteristics would predict child cognitive competence as a measure of school readiness. Three of the four dimensions—maternal warmth, maternal punitiveness, and maternal school involvement—predicted child cognitive competence beyond that predicted by child gender and mothers' cognitive capabilities. High maternal warmth predicted high PPVT-R scores in Head Start. High maternal school involvement, as rated by the teachers, predicted high kindergarten compliance with and memory for teacher instructions, as rated by the teachers.

The findings regarding maternal emotional involvement extend to the Head Start population the findings of previous research on maternal emotional involvement and children's cognitive competence in non-Head Start children (e.g., Fagot & Gauvain, 1997; Olson et al., 1992). In the current study, the researchers conceptualized maternal emotional involvement with Head Start children as consisting of both positive and negative components, and measured these components separately. The current results underscore the importance of the distinction between positive and negative components of emotional involvement.

First, the correlations between the positive and negative components, although significant in two cases (warmth and punitiveness; punitiveness and intrusiveness), were of only low to moderate magnitude (2% to 10% shared variance), suggesting only a modest overlap among the constructs. Second, although both the positive and negative components of emotional involvement explained significant variance during the pre-kindergarten Head Start year, only one of the negative components of emotional involvement—maternal punitiveness—continued to contribute significantly to the prediction of children's cognitive competence at the end of kindergarten. Without the inclusion of negative maternal emotional involvement in the current study, this relationship would not have been revealed.

The fourth dimension, maternal intrusiveness (mother takes over a task from her child), was the most consistent predictor of all three Head Start competence measures in the correlational analyses. The variance accounted for in the regression equations only approached significance. The most reasonable explanation for the absence of significant regression coefficients is the significant inverse correlation between mothers' PPVT-R scores and intrusiveness. The higher the mothers' intrusiveness score, the lower her PPVT-R score. Thus, the inclusion of maternal PPVT-R scores in the first step of all the regression equations reduced the variance in maternal intrusiveness that could account for children's cognitive competence. Previous studies have not investigated relationships between mothers' cognitive functioning and their intrusiveness. The current study suggests that such a relationship exists and should be investigated in more depth to determine whether overlapping components of mothers' intrusiveness and cognitive functioning have a detrimental impact on children's cognitive functioning.

The current study confirms that the impact of parental school involvement extends beyond the Head Start year into kindergarten. The relationship between children's PPVT-R scores in kindergarten

and teachers' ratings of mothers' involvement in the kindergarten classroom approaches significance, even after control variables have been accounted for. The relationship between teachers' ratings of maternal involvement and teachers' ratings of children's compliance with classroom instructions is significant. This latter effect should be interpreted with caution, due to the shared variance contributed by teachers on the two sets of measures. However, the outcome data on PPVT and CPSCS teacher-instructions underscore the importance of continued maternal involvement in their children's education beyond the Head Start years.

The study extends the existing general literature on maternal involvement and child cognition and adds support to exhortations by researchers and practitioners alike that maternal characteristics at home and in school remain part of the Head Start mission (Parker et al., 1997; Zigler, 1998). The current study finds no relationship between maternal school involvement during the kindergarten year and maternal warmth as measured during the Head Start year. In addition, we find modest inverse correlations between maternal school involvement on the one hand, and between intrusiveness and punitiveness on the other.

Implications

As the one constant in children's course of education is their parents, putting time and effort into helping parents learn new skills is a worthwhile investment. Epstein (1992) urges school administrators, teachers, and psychologists to more actively strive for parent involvement. She recommends emphasizing families' strengths, rather than their weaknesses, and moving from a passive treatment approach to problems to an active prevention one.

The authors have come closer to exploring the conditions under which Head Start staff could help parents set goals and refine their behaviors so that the children benefit in school readiness. Their measures of maternal emotional involvement were gathered during children's pre-kindergarten year

in Head Start. Previous studies (e.g., Hann et al., 1996) measured maternal warmth in infancy and predicted preschool behavior. The importance of measures of maternal emotional involvement during the child's pre-kindergarten year in Head Start is their potential utility in parent education programs within the Head Start curriculum. Head Start staff could discuss the current findings when meeting with parents at home or at the center and demonstrate differences in punitive versus warm responses to their children. The use of the computer vignettes as teaching tools in groups would benefit those parents who may need encouragement from other parents in believing that being punitive and intrusive is not helping their children grow academically. Teaching parents to respond in warm and supportive ways that teach their children to perform tasks autonomously is a challenge, but one worth pursuing.

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