

*Endnotes file – Improving Literacy References on C's hard drive*

THE TRANSITION TO SCHOOL

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In the ongoing effort to understand and improve the literacy skills of American children, several important insights have emerged in recent years that have begun to focus and shape theoretical and empirical work. First, it is becoming increasingly evident that meaningful individual differences in important language, cognitive, literacy and social skills emerge before children begin formal schooling in kindergarten or first grade (Morrison, Bachman, & Connor, In press; Shonkoff & Phillips, 2000). Second, this early variability is influenced by a number of factors in the child, family, preschool and larger sociocultural context (NICHD-ECCRN, In Press) (NICHD ECRN, 2004 – Is this the multiple pathways paper?). Third, these contributing influences do not operate in isolation, but interact with each other in complex ways to shape children's variable trajectories (S. A. Storch & G. Whitehurst, 2002) (Storch & Whitehurst, 2003). Finally, recent work has discovered that the early schooling experiences of American children are highly variable, in some cases exacerbating the degree of difference found among children prior to school entry (NICHD-ECCRN, 2002b, in press; Pianta, Paro, Payne, Cox, & Bradley, 2002) (Pianta et al, NICHD refs – I'll need the third grade reference). The cumulative impact of these ongoing trends has been to focus attention on the process of school transition as a unique and important milestone in the academic development of children and as a foundational experience for early school success.

In the present chapter we will first present a working conceptualization (or model) of the nature and sources of children's literacy development across the school transition period, from roughly three years of age to third grade. We will then review the empirical literature on the major factors contributing to school readiness and early reading skill growth. Finally we will consider the implications for research and for improving literacy in America.

### A Working Model of School Transition

Working from an ecological perspective (Bronfenbrenner, 1986) and utilizing a structural modeling framework, scientists have attempted to develop a coherent conceptualization of the process of school transition. Figure 1 depicts a working model of the major factors impinging on children's literacy development and their independent and combined influences over the school transition period. Four features should be noted. First the model includes and distinguishes those processes that occur prior to school entry from those operative once school begins. At the same time the model depicts the continuity of influences (e.g., from parenting) across the two periods.

Second, the model attempts to capture the interplay of distal and proximal factors in shaping children's literacy trajectories. In particular, the mediational role of proximal factors linking distal factors to literacy outcomes is depicted. Hence, in the preschool period the contribution of sociocultural factors, like parental education or income, is shown as operating through their effect on more proximal parenting or preschool influences. Likewise, during early schooling the impact of teacher education or experience is seen in the model as manifesting itself primarily through the ongoing instructional activities of the teacher in the classroom.

Third the model includes some of the important components of influence within each of the larger factors. For parenting, research has highlighted the unique influence of the learning environment, parental warmth/responsivity and control /discipline. Finally the model attempts to depict some of the important interactions among these factors, recognizing the emerging consensus that these factors do not operate in isolation. For example, the home learning environment contributes directly to children's literacy growth but not to their self-regulation skills (Morrison and Cooney, 2002). Yet self-regulation and related social skills are shaped by parental control/discipline strategies and in turn contribute to literacy growth. On a broader plane

accumulating evidence increasingly highlights the need to capture the complex interplay of forces shaping children's literacy trajectories across the school transition period.

### Before Children Get to School

#### *Sociocultural factors*

Several decades of research has documented strong connections between socioeconomic factors (SES) and academic achievement. Likewise, accumulating evidence has established links between race/ethnicity and school success, particularly the persistently poorer performance of African- American students compared to their European-American and Asian peers. These factors are obviously linked, since the poverty rate among Black families in America continues to be higher than it is for White families. Recently, scientists have attempted to disentangle the independent and combined influences of social, economic and racial/ethnic influences on academic development.

#### Socioeconomic Disadvantage and Academic Achievement

Whether measured by income, education or occupational status, socioeconomic factors are substantially linked to a child's school success. The National Assessment of Educational Progress (National Assessment of Educational Progress, 2003; National Center for Educational Statistics, 1999) reports that 9, 13, and 17 year-old students from families with less than high school education scored lower on tests of reading, math and science than did children whose parents completed some education after high school. More significant for our discussion is the recent realization that children from low SES families start school behind their more affluent peers and progress more slowly through the early years of elementary school (K. Alexander & Entwisle, 1988; Stipek & Ryan, 1997). More recent work has unearthed that children from lower

SES families demonstrate delays in language and emergent literacy skills (Raviv, Kessenich, & Morrison, In review)(Raviv, Kessenich & Morrison , in press). In a pioneering study, Hart & Risley (Hart & Risley, 1995) found that preschool children from welfare families had smaller vocabularies compared to children from working class and professional families as early as 3 years of age. Moreover, their rates of vocabulary acquisition were much slower.

How does SES affect academic achievement? Despite the strong association of socioeconomic disadvantage and poor school performance, it is not obvious how SES factors operate to shape children's academic trajectories, especially in the preschool years. In their efforts to probe more deeply in to the mechanisms underlying the SES- performance connection, scientists have distinguished between direct and mediated pathways of influence.

Direct pathways reflect influences that operate directly on the child to affect academic performance. For example, poor children are more likely to have experienced negative perinatal events, like prematurity (Saigal, Szatmari, Rosenbaum, Campbell, & King, 1991) or low birth weight, in addition to poorer nutrition and health care in early childhood (Korenman & Miller, 1997), all of which can directly limit a child's cognitive growth and potential. Yet, increasingly, scientists are describing the impact of SES as operating through more immediate influences in the child's environment. For instance, mothers living in poverty are less likely to receive adequate prenatal care, which could contribute, in part, to the connection between SES and prematurity. Researchers describe these as *mediated pathways*, where SES is viewed as a distal variable that exerts its influence through a more immediate or proximal variable. The whole process is described as a *mediated relation*. Scientists are increasingly seeing the effects of SES as mediated through more proximal factors; one of which is parenting. Parents living in poverty are less likely to talk to their preschool children; they communicate with a more limited

vocabulary, offer fewer questions or descriptive statements to them and are more repetitive (Hart & Risley, 1995; Hoff-Ginsberg, 1991). In general, parents with fewer economic and/or educational resources are less likely to provide the stimulating home environments children seem to require if they are to be maximally ready for school. The important insight gained from seeing SES in this mediated fashion is that improving a family's economic circumstances alone may not translate into improved parenting, the more immediate causal agent shaping the child's development.

### Race, Ethnicity and Academic Achievement

Similar issues have surfaced in trying to explain the disparities across racial and ethnic groups in academic attainment. Clearly, race or ethnicity, in and of themselves, are distal variables that won't directly affect academic performance. Their influence must be mediated by more proximal sources. Since most progress in understanding these complex relations comes from the study of differences between African-American and European-American students, we will focus on this issue here (For discussion of other ethnic groups, see Morrison, Bachman & Connor, in press).

#### *The Black-White Test Score Gap*

In general African-American children do not perform as well academically as their European-American counterparts (National Assessment of Educational Progress, 2000). While some variation has been noted over the last three decades, sizable differences have persisted throughout the period in which scientists have been tracking children's performance.

The most common explanations for "the gap" have leaned on socioeconomic and sociocultural factors. In particular, the higher rate of poverty among African American families has been offered as an obvious cause for poorer performance in Black children. Likewise, the

legacy of racial discrimination, which limits opportunities for Black children, has been put forth as a contributor to lower academic attainment.

While these factors are reasonable and, no doubt, play some role in the gap, two recent findings have caused scientists to reassess the nature and sources of the Black- White discrepancies. First, it has become clear that the test-score gap is not limited to lower SES groups (Phillips, Crouse, & Ralph, 1998). Black middle- class children are performing more poorly than their White peers. Second, the gap in academic performance emerges before children begin school (Phillips et al, 1998). These two findings have caused researchers to look more deeply into the proximal environments of Black families for a more comprehensive understanding of the roots of academic problems. For example, studies have found that infant mortality rates are higher in Black families (Center for Disease Control and Prevention, 2000), and more significantly, this difference occurs independently of SES (Schoendorf et al., 1992).

Perhaps the most salient and controversial proximal factor implicated in the Black- White test score gap is parenting. Mounting evidence has pointed to differences across racial groups in the quality of the learning experiences provided to children( Phillips et al, 1998) and other aspects of the literacy environment (See Morrison et al, in press for an overview). These difference also seem to extend to middle-class parenting practices (Bachman, 1999). While the reasons for these differences in parenting are not clearly understood, and there are many distal factors that are implicated (Morrison et al, in press), the focus on parenting and related proximal causes is yielding a clearer, more comprehensive picture of the complex forces contributing to the continued underperformance of Black children.

*Early Child Care and Preschool*

Over 60 % of the almost 20 million preschoolers in this country will spend some amount of time in alternate care (K. Smith, 2002). Hence, researchers have become increasingly interested in the psychological consequences of child care for children under 5 years of age as well as its impact on school transition and later school functioning. In addition for children most at risk for school failure, intensive interventions during the preschool years have attempted to help children at risk for academic failure (e.g., children living in poverty) catch up to their peers and be equally ready for school. In this section we will first review the evidence on the impact of childcare on children's cognitive and social development. Next we will summarize the evidence on the outcome of early interventions for at-risk children.

Is day care good or bad for children?

While stated rather simplistically, the above question accurately captures the essence of the debate on the impact of early child care for preschool children. The importance of this question can be appreciated by realizing that the Federal government undertook to fund a major national study of the nature and consequences of early child care in the late 1980's. That study, the NICHD Study of Early Childcare, as well as others, have yielded valuable insights on the role of child care experiences in children's development and school performance.

As we stated above the question of whether childcare is good or bad oversimplifies the issue. Closer examination reveals that two variables – quality and quantity of care – are crucial to understanding the role of child care in children's lives.

In broad terms higher quality childcare produces positive effects on children's cognitive, language and literacy skills (NICHD-ECCRN, 2002a) ( NICHD ECRN,2002) while high quantities of care (defined as more than 30 hours per week) have been associated with poorer



social outcomes (Brooks-Gunn, Han, & Waldfogel, 2002). Even these conclusions do not capture the complexity of the role of childcare. Parents are active agents in choosing alternate care for their child and more educated mothers have been shown to be more sensitive and responsive to their children than mothers with less education (NICHD-ECCRN, 2002a)(NICHD ECRN, 2002). The more educated and responsive mothers likely chose higher quality childcare, monitored it more closely and could afford to pay for it. In fact when direct comparisons have been made between parenting and childcare environments, the impact of the quality of parenting was three to four times greater than that of childcare on children's language and social skills (NICHD-ECCRN, In Press)(NICHD ECRN, 2004). Nevertheless there is early evidence that, independent of quality, children who spend more than 30 hours per week in center-based care may be less socially competent and somewhat more disruptive to other children and teachers (NICHD-ECCRN, 2003).

In summary, in answer to our original question, research over the last two decades permits us to conclude that, in and of itself, day care is neither good nor bad for preschool children. High quality childcare enhances children's cognitive growth, while high amounts of childcare per week may put children at risk for slightly poorer social outcomes.

Are early intervention programs for at-risk students effective?

Here, too, the question of program quality is central to answering this question. High quality interventions can significantly enhance development. But poor quality programs can impede children's progress (Barnett, 1995). High quality preschool interventions have been shown to significantly improve children's prospects for academic success (Barnett, 1995), to promote stronger language and literacy development (Dickinson & Tabors, 2001) and

demonstrate significant return on investment over children's lifetimes (Reynolds, Temple, Robertson, & Mann, 2003).

There are a number of interventions that have been implemented for at-risk children. The most visible (and controversial) is Head Start, the mixed outcomes of which illustrate the crucial importance of ensuring high quality programs for producing consistently positive effects (see Morrison et al, in press for more in-depth review). Some of the more prominent and successful model programs include the Perry Preschool Project (Barnett, 1995), the Abecedarian Project (Campbell & Ramey, 1994), the School Development Program (Haynes, Comer, & Hamilton-Lee, 1988) and the Chicago Title 1 Child- Parent Centers (Reynolds et al, 2003). In virtually every instance, children receiving these interventions showed significantly stronger academic and social skill development compared to equally at-risk children not enrolled in the program.

On balance then the mounting weight of evidence demonstrates that high quality childcare and high quality interventions for at-risk children can and do improve the psychological well-being of preschool children, clearly enhance their school readiness, and improve their chances for successful school transition.

But what defines high quality care? Examining the characteristics of programs that work, like those listed above and others (e.g., Home-School Study, Dickinson and Tabors, 2001), there are at least five crucial elements of high quality early care programs:

1. Strong support for parents. Successful programs coupled intensive intervention with home visits, parent education and parent involvement
2. Intensity. Programs that were more available to children all day, five days a week, like the Abecedarian project, tended to produce stronger, more durable outcomes for children.

3. Starting earlier. Programs that yielded greater cost-benefit-ratios (e.g., Abecedarian and Chicago Title 1) began their interventions when participants were infants.
4. Well-qualified teachers. Programs with more teachers who were certified produced more consistently positive effects than those with fewer who were certified.
5. Rich linguistic and literacy environment. Perhaps most fundamental to success was an explicit focus on improving the language and literacy skills needed for early school success. Included were emphases on vocabulary, syntax, world knowledge, phonology, alphabet knowledge and elementary word decoding.

In summary, the nature of a child's experience in alternate forms of care outside the home can have a measurable effect on subsequent psychological development and preparation for school. While perhaps not as crucial as parenting (to which we will turn next), high quality experiences in a child care environment can improve cognitive functioning in at-risk children. Alternatively, for some children, more than 30 hours per week in child care, particularly prior to one year of age (Brooks-Gunn et al, 2003)) may pose some short-term risks. On this latter point it would, therefore, seem prudent to examine current parental leave policies to see if giving parents more leave time with young infants might reduce the number of hours infants spend in child care and forestall some of the problems that may arise.

### *Parenting*

Throughout the previous sections we have referred to parenting as a critical mediator of the effects of SES, as well as being inextricably linked to the influences of child care. While it would seem obvious that parenting is an important, perhaps the most important, factor shaping a child's development, again, the picture is not so simple. Recent work on the genetic bases of

development has challenged the once dominant position of parental socialization as the shaper of human nature. Further, efforts to improve parenting in at-risk families have proven surprisingly unsuccessful. In this section we will review these issues and, while we will conclude that parenting is a critical source of children's development, we will need to broaden our conceptualization of parenting in order to appreciate its full sweep and power.

*Does parenting matter?*

Until about 20 years ago, parenting was tacitly assumed to be the pre-eminent force shaping children's development (Collins, Maccoby, Steinberg, Hetherington, & Bornstein, 2000; Cowan & Cowan, 2002)(Collis et al, 2002?). Most developmental theories accorded parents primacy over genetics, peers and other contextual influences. Nevertheless, in the past two decades behavior-geneticists and others have challenged this simple view (Plomin, 1990; Rowe, Vazsonyi, & Flannery, 1994). Utilizing twin and related research methods designed to separate genetic from environmental influences, researchers have found that: (1) children's development can withstand substantial variability in parenting practices and emerge intact; and (2) other socializing forces, particularly peers, can exert long-term influence on selected personality traits (Harris, 1995; Rowe et al., 1994).

This work has had the salutary effect of yielding a more balanced view of the complex forces shaping human development. More recent work has attempted to gauge the complex interplay across children's development as affected by parenting along with genetic and other factors (Collins et al., 2000). As an example, in a French study of late-adopted children (3-5 years old) with below average IQ's, those children who were adopted in higher SES families exhibited substantially greater IQ gains (19 points) by 11-18 years of age than did children adopted in to lower SES households (8 points). This finding neatly demonstrates that children

with similar genetic characteristics make differential progress depending on the SES of the family in which they are reared; this difference is, presumably, mediated in part by differing parenting practices.

Can parenting be modified?

One way to examine the power of parenting is to conduct intervention studies to examine whether they actually improve parenting skills and, subsequently, whether there are corresponding increases in children's literacy skills. Two strategies have been adopted: 1) family-focused early childhood education (ECE) coupled with home-based services; and 2) exclusively parent-focused home visiting programs. Recent reviews (Brooks-Gunn, In press) have concluded that home-based interventions alone, without a center-based child-intervention component were surprisingly ineffective in improving children's cognitive skills. Many of these adult-based efforts did not substantially increase parental outcomes (e.g., educational attainment), which, in part, may explain why their children's cognitive performance did not improve (Magnusson & Duncan, In press).

If parenting is so important to a child's development, then why haven't the interventions been more powerful? Actually, there are several reasons these efforts may have fallen short. First, as the authors themselves noted, case managers in these studies quickly found that they needed to deal with a number of family crises and chronic adversities, like inadequate housing, lack of food and heat and legal problems and that it was difficult to move beyond crisis intervention to work on parenting-for-literacy (St. Pierre & Layzer, 1999). In addition, there were sizable differences across families in the uptake of services or the "dosage" effect. Specifically, since participation in these interventions was, ultimately, voluntary, parental participation varied widely, with about half the scheduled visits actually taking place (Gomby,

Culross, & Behrman, 1999). Significantly, when eligible families were split by their participation level, children in families with greater involvement made greater gains than did their peers whose families participated less (Brooks-Gunn, Burchinal, & Lopez, 2001). Finally, it should be noted that smaller, more focused interventions (e.g., around book reading) have yielded measurable gains in children's oral language skills (C. J. Lonigan & Whitehurst, 1998; Payne, Whitehurst, & Angell, 1994; Reese & Cox, 1999; Senechal & LeFevre, 2001).

What is parenting anyway?

Most of the intervention efforts to improve parenting have been relatively limited in time and scope. For example, in the Comprehensive Child Development Program (St. Pierre & Layzer, 1999), parents received training from a home visitor for a maximum of 13 hours ( $\frac{1}{2}$  hour, biweekly), which may be insufficient to promote and maintain lasting change over time in parental habits. Further, interventions that focus primarily on one aspect of parenting may necessarily be limiting their impact. Research over the past 20 years has clearly demonstrated that parenting for literacy involves more than reading to children and even more than providing a rich literacy environment (Morrison & Cooney, 2002).

It has become useful to think of parenting as varying along a number of dimensions (Morrison et al., In press; Morrison & Cooney, 2002), with three proximal dimensions being most salient for shaping literacy skills. These are (1) the family learning environment, (2) parental warmth/responsivity and (3) parental control/discipline. A separate distal dimension posited, parental knowledge and beliefs, operates primarily through the other three proximal sources. These dimensions are conceived to exert independent influences on different aspects of a child's behavior and to be potentially independent of one another (although correlated in most instances). So for example, parents who provide a rich learning environment for their child might

not necessarily also give the child the high degree of emotional warmth needed for emotional security nor the rules, standards and limits needed to develop cognitive or moral self-regulation.

Family Learning Environment. In large national datasets, measures of “cognitive stimulation” or “home learning” have predicted preschoolers’ IQ and receptive vocabulary (Berlin & Brooks-Gunn, 1995; R. Bradley et al., 1994; Johnson et al., 1993; Sugland et al., 1995) Bradley et al., 1993). as well as reading, math and vocabulary skills in elementary school (J. Smith, Brooks-Gunn, & Klebanov, 1997). Recent efforts have focused on identifying more precisely the connections between specific parental behaviors and child outcomes. This work has revealed a high degree of specificity in the impact of the learning environment; namely, parental behaviors, such as book reading, promote language development but do little for specific literacy skills like letter knowledge and word decoding. In contrast deliberate efforts by parents to teach these emergent literacy skills to their children help to promote their alphabet and word decoding skills but do little to enrich vocabulary (Senechal & LeFevre, 2001).

Language-promoting behaviors include frequent labeling and describing objects in the environment (Hart & Risley, 1995; Hoff-Ginsburg, 1991). The overall amount and complexity of parental speech to children predicts their vocabulary and complex grammar acquisition (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). Beyond size and content, the manner of speaking and interacting with children contributes to oral language growth. Children with relatively limited vocabularies in the Hart & Risley 1995 study received a greater proportion commands and prohibitions from their parents. In other work (Tomasello & Todd, 1983) parents who maintained longer periods of joint attention on an object had children with larger vocabularies.

Shared book-reading has been demonstrated to be a powerful tool, for some children, to enhance vocabulary development (Haden, Reese, & Fivush, 1996; C. J. Lonigan & Whitehurst, 1998; Reese & Cox, 1999); but see (Scarborough & Dobrich, 1994). In randomized experiments, book reading styles that involve active labeling and describing illustrations or encouraging and assisting children's storytelling significantly enhances vocabulary development (C. J. Lonigan & Whitehurst, 1998; Whitehurst et al., 1988).

Literacy-promoting activities by parents may require more direct instruction than do those that nurture oral language growth. When parents explicitly teach their children how to name and print letters and words, children's print knowledge improves (Senechal et al., 1998) as does later word decoding and comprehension skills in school (Senechal & LeFevre, 2002).

In summary, parents' efforts to promote language and literacy in their children can substantially improve their development and school readiness. An important insight has been gained in recognizing the high degree of specificity in what parents do and what children learn. Parental Warmth/Responsivity. The degree to which parents display open affection to their children, offer physical or verbal reinforcement and show sensitivity to their feelings and wishes is predictive of preschoolers' literacy and language skills as well as their later school achievement (Berlin & Brooks-Gunn, 1995). Mothers' sensitivity to children's developmental progress during the first two years of life has been shown to predict cognitive and language skills later in preschool (NICHD-ECCRN, 1998; Tamis-LeMonda, Bornstein, & Baumwell, 2001), kindergarten and first grade (Coates & Lewis, 1984; Kelly, Morisset, Barnard, Hammond, & Booth, 1996). More responsive mothers are more likely to reduce the length of their utterances to their infants so that the child can better comprehend them (Murray, Johnson, & Peters, 1990). Other research has shown that at-risk groups of children can make substantial progress when



mothers interact with them in a highly responsive manner. A classic situation combining elements of the learning environment along with warmth/ responsiveness is shared book-reading, especially during bed-time. In addition to the benefits to cognitive and language skills shared book reading promotes emotional closeness. Affection, and provides the child with the undivided attention of a loving parent. Such interchanges may nurture self-regulation and emotional well-being.

Parental Control/ Discipline. Though less well researched, the degree to which parents establish rules, standards and limits on a child's behavior creates a structured and supportive context for literacy development (Chase-Lansdale & Pittman, 2002; Hartup, 1989). In book reading, for example, this interaction affords parents the opportunity to resist children's fidgeting and squirming, and to sustain their attention until the story is finished. In one study, Cooney( 1998) (Cooney, 1998) found that parents' use of disciplinary practices did not directly predict literacy outcomes, but did reliably predict self-regulation measures (e.g., cooperation, independence and responsibility), which in turn contributed positively to literacy skill levels at kindergarten entry.

In summary, the weight of evidence at this point supports a strong role for parenting in shaping children's literacy development, albeit in complex ways. Future research will evaluate whether and to what extent more intensive and comprehensive interventions (encompassing more dimensions of parenting) will yield measurable improvements in the literacy attainment of at-risk children.

### *Child Factors*

Full assessment of the factors contributing to school transition would be incomplete without consideration of what the child brings to the process of development. Whether through inherited genetic differences or acquired differences, child characteristics by themselves and in

interaction with environmental factors shape the course of children's early development. In reality, these child qualities are what we mean when we typically refer to "school readiness". While most scientists now view readiness as a two-way street (with schools needing to be ready for children as well as vice versa), there is still intense interest in the factors within the child that are most crucial for school readiness and successful school transition. In this final section we will highlight recent discoveries about three domains of early functioning- language/literacy skills, self-regulation and motivation( For a more complete overview, see Morrison et al, in press).

### Language/ literacy skills

One of the most important discoveries of the past two decades has been the critical role that language plays in early reading and literacy development. Several language skills independently contribute to reading acquisition (Morrison et al., in press). More important recent research points to possible interactions among these components over the course of learning to read.

Perhaps the biggest discovery of the past two decades has been the role of phonological skills (particularly phonemic awareness) in learning to read (L. Bradley & Bryant, 1983; Catts, Fey, Zhang, & Tomblin, 1999; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). Increasing skill at consciously manipulating the component sounds in the speech stream facilitates the child's task of "cracking the code" i.e., learning the symbol-sound correspondence rules and utilizing them in increasingly sophisticated ways to derive accurate word pronunciations. Locating the smallest units, phonemes, in a word seems to be the most critical level of segmentation for early word decoding. Children who have difficulty at this level, for whatever reason, experience significant problems progressing in word decoding (Rayner et al, 2001).

Vocabulary, both receptive and expressive, have been shown to predict early reading skill (NICHD ECRN, in review; (S. A. Storch & G. Whitehurst, 2002)Storch & Whitehurst, 2003).

The number of different words a child understands, as well as the number s/he speaks, helps with word decoding efforts and may facilitate growth of phonological awareness ( Dickinson et al, 2003).

Finally, children's knowledge of the alphabet when they enter kindergarten is one of the best predictors of learning to read (Snow, Burns, & Griffin, 1998). Letter knowledge predicts more advanced phonological awareness (Wagner et al., 1997) and better word decoding skills throughout elementary school (C. Lonigan, Burgess, & Anthony, 2000).

There is some uncertainty at present about how and when each of these component skills exerts its influence. Some studies (Schatschneider, Fletcher, Francis, Carlson, & Foorman, 2004) Storch & Whitehurst, 2003)(S. A. Storch & G. Whitehurst, 2002)have demonstrated that vocabulary uniquely predicts early reading skills only through kindergarten, after which it contributes indirectly via its association with phonological processes, which continue to predict reading well into early elementary school. Other recent studies appear to find an independent contribution for vocabulary and other oral language skills through first grade ( NICHD ECRN, in review). There is agreement, though, that development of early oral language facility, including vocabulary, is essential to later comprehension skills ( Storch & Whitehurst, 2003).

### Self regulation

Increasing attention in recent years has been paid to a class of skills that has been variously called executive functioning, learning-related social skills, social competence and self-regulation. They refer to the coordination of processes involved in response inhibition, sustaining attention over time and planning and organization in working memory. They contribute, among

other things, to a child's ability to work independently, control impulses, and complete tasks on time. There is a growing sense that problems in self-regulation among American children are contributing in major ways to the literacy problems in the nation (Morrison et al, in press).

Children with poor learning-related social skills at the beginning of kindergarten have been shown to perform more poorly academically at school entry and at the end of second grade. Likewise, a child's skill at sustaining attention and restraining restlessness predicts academic functioning in first grade (K. Alexander, Entwisle, & Dauber, 1993). The close connection between social and academic skills persists throughout school. Adolescents rated more highly by teachers and peers on complying with rules and expectations outperformed their lower scoring peers on measures of academic achievement (Wentzel, 1991a, 1991b). Clearly development of self-regulation is an important task for preschool children over the school transition period and one which has sustained influence throughout a child's life.

### Motivation

Motivational skills refer to students' values and beliefs when approaching school tasks, including their engagement with the material, interest in the topic, beliefs about self-efficacy as well as their attributions of success or failure and their goal-orientations ( for review, see (Eccles, 2002; Linnenbrink, 2002). The study of motivational processes in education has a long history, yet surprisingly little research has been conducted on young children (Morrison et al, in press). This is unfortunate since in practically every other area of academic functioning, it has become clear that the seeds of later success are sown during the preschool years. Hence laying a foundation of academic engagement coupled with a strong sense of mastery and self-efficacy prior to school entry could be expected to reap long-term benefits throughout a child's academic

career. Clearly, more systematic empirical inquiry is needed on the early roots of motivational processes in children and their influence on academic functioning.

In summary, research over the last two decades has clearly revealed that a number of potent forces, independently and in combination, shape the literacy development of preschool children. Factors in the child, family, preschool and broader sociocultural context all contribute to create the significant variability American children present when they walk in the school door. What happens to these children once they start school?

### Once Children Begin School

This significant variability in children's language, literacy, self-regulation, and motivation is important to consider if we are to understand how classroom instruction affects their literacy development. First, children's language and literacy skills appear to be highly stable once they reach kindergarten. Further, the effect of instruction appears to be specific and, thus, how explicitly instruction targets particular domains and multiple dimension of instruction are important to consider. Moreover, there appear to be child-by-instruction interactions. Although effective teachers provide instruction that yields strong student outcomes, there are too few of them in today's classrooms. Finally, examining the system of education, including home and family, schools and teachers, and children themselves, we find there are multiple pathways that children may follow on their road to becoming literate members of society, with multiple opportunities to positively impact children's learning. The next section examines each of these.

### *Stability of language and literacy skills*

Children who begin school with strong language skills tend to be more successful academically throughout their school career than are those with weaker language skills

(Entwisle, Alexander, & Olson, 1997; Hart & Risley, 1995; Loban, 1976). Students who start first grade knowing the letters of the alphabet and with a firm grasp of other emergent literacy skills achieve stronger reading skills by the end of first grade than do students with weaker skills (NICHD-ECCRN, In Press; S. A. Storch & G. J. Whitehurst, 2002). Indeed, Entwisle, Alexander and Olson (1997) have proposed a critical period for reading development encompassing the first three elementary school grades. Their research reveals that students who fail to reach grade expectations by third grade are unlikely to experience success in school later on. The stability of students' language and literacy development may be one reason that the achievement gap between children from low SES and high SES families is both pervasive and persistent (Entwisle et al., 1997; Ferguson, 1990; Jencks & Phillips, 1998a; NAEP, 2003). As we discussed in the beginning of this chapter, children from low SES families begin school with language and early reading skills that fall well behind their more affluent peers (Snow et al., 1998), with multiple sources of influence on this development – home, parenting, preschool, and child characteristics.

### *The Effect of Schooling and the Specificity of Learning*

In the face of this stability, some have questioned whether schooling has any appreciable direct effect on children's cognitive development (Coleman et al., 1966; Rutter & Maughan, 2002). However, there are studies that demonstrate causal effects of schooling on children's literacy skill growth (Morrison & Connor, 2002). Some of these studies utilize a natural experiment employing the rather arbitrary birth date that school districts mandate for school entry. Children who just make or just miss this cut-off birth date are essentially the same age chronologically, but those whose birthdays fall after the cutoff date start first grade while those whose birthdays fall just before go to kindergarten. In this way the schooling and maturational effects on children's development can be examined separately. If both groups demonstrate

similar rates of growth in a particular skill, then that skill is most likely a product of maturation – there is not a *schooling effect*. On the other hand, if children who are the same age but a grade ahead demonstrate rates of skill growth that are greater than their age-peers who are a grade behind them, then there is a *schooling effect*.

First grade schooling effects are evident for alphabet recognition, word decoding, phonemic (individual sounds within words) awareness, general knowledge, addition, short-term memory, sentence memory, and visuo-spatial memory. Yet there are no kindergarten or schooling effects for receptive vocabulary, rhyming, conservation of number and quantity, addition strategies, and narrative coherence (Morrison et al., In press; Morrison, Smith, & Dow-Ehrensberger, 1995). Children demonstrate similar rates of growth in these skills regardless of whether they are in kindergarten or first grade. Consider, for 89 children who attended the same school district, and taking into account cognitive abilities and parents' education, there were kindergarten but not first grade effects for letter naming (Christian, Morrison, Frazier, & Masseti, 2000). There were kindergarten and first grade effects for basic reading skills, including word decoding. There were only first grade effects for general information, mathematics, and phonemic segmentation (identifying the individual sounds in words).

These results are particularly revealing if we consider the three phonological awareness tasks. These tasks differed only in the level of segmentation the child was asked to complete – syllabic, subsyllabic, and phonemic. For the syllabic segmentation task, children were asked to identify the number of syllables in a word. For example, *cucumber* has three syllables, *cu-cum-ber*. In the sub-syllabic task, children were asked to say the first sound in each word. For example, /t/ is the first sound in the word *toy*. For the phonemic task, children were asked to count the number of sounds in a word. For example, *rest* has four sounds, /r-e-s-t/. The study

revealed that there were schooling effects but only for specific skills. For syllabic segmentation, neither first grade nor kindergarten had an effect on growth in these skills. For sub-syllabic segmentation, both first grade and kindergarten affected growth. In contrast, first grade but *not* kindergarten, had an effect on phonemic segmentation. Additionally, recent research (Morrison & Connor, in preparation) reveals that once the amount and type of instruction students receive is taken into account, the schooling effect disappears. Thus, the schooling effect is most likely the result of instructional differences in kindergarten and first grade. In other words, learning is highly specific and related to the explicit focus of the instruction students receive. In first grade, children were provided more time in activities that supported their decoding skill growth, which resulted in first graders' demonstrating stronger decoding skills when compared to their age peers who were in kindergarten.

### *Dimensions of Instruction*

By employing a more complex view of instruction across multiple dimensions of instruction, researchers can take this specificity of learning into account. Recent research points to four salient dimensions of instruction (C. Connor, F. Morrison, & L. Katch, In press). These include the (1) explicit focus of instruction (explicit versus implicit), (2) who is responsible for focusing the students' attention (teacher versus child-managed), (3) code-based or meaning-based (word-level versus higher-order), and (4) change in amount of instruction over the school year.

The first dimension, explicit versus implicit, is outcome specific. For example, if the student outcome of interest is reading comprehension, then instructional strategies that explicitly target comprehension, such as teaching children to predict, summarize, and infer, vocabulary tasks, and discussion about text, would be considered explicit (NRP). Instructional activities that



explicitly supported children's decoding skill growth, such as phonological decoding or alphabet recognition (Rayner et al., 2001; Torgesen et al., 2001) might be expected to support children's reading comprehension, but in an implicit or indirect way. On the other hand, phonological decoding or phonics would be considered explicit instructional activities if the student outcome was decoding skill.

The second dimension, word-level versus higher-order, underscores a broader curriculum debate regarding code-based versus meaning-based instruction (Dahl & Freppon, 1995; Rayner et al., 2001) and which one is the more effective strategy for young readers. Word-level instruction includes such code-based activities as spelling and teaching phonological decoding. Higher-order activities include instruction that focuses on meaning such as vocabulary and comprehension and includes strategies that would be described as Whole Language. However, as Chall observed in her seminal work, *Beyond the Great Debate* (Chall, 1967) and has been observed more recently (C. Connor et al., In press; Juel & Minden-Cupp, 2000), throughout the school day, teachers provide both word-level and higher-order instructional activities, but in varying amounts.

The third dimension, teacher versus child-managed, considers the degree to which an instructional activity, and the child's attention to it, are primarily under the direction of the teacher (e.g., teachers demonstrating the alphabetic principle) or the child (e.g., sustained independent silent reading). A number of studies have described this dimension. For example, Prescriptive instruction (Rayner et al., 2001) would be considered teacher-managed; Responsive instruction (Pearson & Gallagher, 1983) starts with teacher-managed and moves to child-managed instruction as students gain key skills. This dimension should not be confused with the teacher-directed versus child-centered styles of instruction (Bredekemp & Copple, 1997). Child-

centered activities, such as discussions about books, would be teacher-managed under this framework whereas teacher-directed activities such as children completing worksheets would be considered child-managed.

A key element of this more complex view of instruction is that these dimensions operate simultaneously. Thus, for reading comprehension, a whole-class activity where the teacher is explicitly showing children how to summarize what they have read and to predict what will happen next would be a teacher-managed higher-order explicit reading comprehension activity. In contrast, children reading quietly at their desks would be considered a child-managed higher-order implicit reading comprehension activity – sustained silent reading might be expected to implicitly support reading comprehension while explicitly supporting fluency. Students completing spelling work sheets would be an example of a word-level implicit reading comprehension activity (or a word-level explicit decoding activity).

The fourth dimension, change in amount of instruction over the school year, speaks to the timing of this instruction (C. Connor et al., In press; Juel & Minden-Cupp, 2000). In a recent study (C. Connor et al., In press), we observed that first graders who began the year with low vocabulary skills exhibited greater decoding skill growth in classrooms where teachers began the year providing smaller amounts of child-managed implicit decoding instruction (e.g., sustained silent reading) that sharply increased in amount by the spring. In contrast, students who began the school year with strong vocabulary skills demonstrated stronger decoding skill growth in classroom with steady amounts of child-managed implicit decoding instruction all year long.

### *Child-by-instruction Interactions*

Given the specificity of instruction as well as its complexity, it is important to consider the type and amount of instruction children receive *and* child-by-instruction interactions. The effect of

instruction appears to depend on children's language and literacy skill levels (C. M. Connor, F. J. Morrison, & L. Katch, In press; C. M. Connor, Morrison, & Petrella, In press; Juel & Minden-Cupp, 2000). Child-by-instruction interactions are evident in preschool (C. Connor, 2002), first grade (C. M. Connor, F. J. Morrison, & L. Katch, In press; Foorman, Francis, Fletcher, Schatschneider, & Mehta, 1998; Juel & Minden-Cupp, 2000), second grade (Foorman et al., 1998) and third grade (C. M. Connor, F. J. Morrison, & J. Petrella, In press). In general, children who begin the school year with weaker language and literacy skills demonstrate greater skill growth in classrooms with more time spent in teacher-managed explicit instruction whereas children with stronger language and literacy skills demonstrate substantial skill growth in classroom with more child-managed learning opportunities. As might be expected, children with stronger language and literacy skills appear to demonstrate literacy skill growth almost regardless of the pattern of instruction they receive. It is the students most at risk, with weaker skills overall, that are most affected by the instruction they receive. They have the potential to make substantial gains in early literacy, decoding, and comprehension but only if they receive the patterns of instruction that, research suggests, is most effective for them. They may demonstrate little or no growth at all in the face of less effective instruction (C. M. Connor, F. J. Morrison, & L. Katch, In press; C. M. Connor, F. J. Morrison, & J. Petrella, In press; Torgesen, 2000; Torgesen et al., 1999).

For example, in a recent study, we examined the effect of first grade language arts instruction on children's decoding skill growth (C. M. Connor, F. J. Morrison, & L. Katch, In press). We observed over one hundred students in forty-three first grade classrooms in the fall, winter and spring. Using the dimensions of instruction yielded four decoding instruction variables – teacher-managed explicit, child-managed explicit, teacher-managed implicit, and

child-managed implicit decoding. Using multi-level modeling we controlled for the effect of children's fall letter/word recognition (decoding) and vocabulary skills as well as their home literacy environment and parent's educational level. Results revealed that children's fall decoding and vocabulary skills did positively predict their spring decoding scores (which would be expected based on the research demonstrating the stability of these skills). The pattern of instruction, amount and type, also predicted decoding skill growth but the effect of this instruction depended on students' fall decoding and vocabulary scores. Children who demonstrated weaker decoding skills in the fall demonstrated greater decoding growth in classrooms where teachers provided more time in teacher-managed explicit decoding instructional activities (e.g., instruction in the alphabetic principle, phonological awareness, etc.). They demonstrated less growth when teachers provided less time in such activities. In contrast, there was very little effect of teacher-managed explicit decoding instruction for children who began the year with strong decoding skills.

Additionally, there was an interaction between children's fall vocabulary scores and the amount and slope (i.e., change over the school year) of child-managed implicit decoding instruction provided. Children who began the year with weaker vocabulary skills exhibited greater decoding growth in classroom with less time in child-managed implicit decoding activities (e.g., sustained silent reading) in the fall, with sharply increasing amounts over the school year (i.e., steep slope) than they did in classrooms with substantial amounts of child-managed implicit decoding instruction all year long (i.e., no slope). In contrast, children with strong fall vocabulary skills demonstrated greater decoding growth in classrooms that provided substantial amounts of child-managed implicit decoding activities all year long (no change in amount) than they did in classrooms with the opposite pattern of instruction.

Following the students into second grade revealed an interaction between their fall decoding score and the amount of teacher-managed explicit decoding instruction provided (Morrison et al., In press). Considering third grade reading comprehension skills revealed interactions between students fall reading comprehension scores and amount of teacher-managed explicit reading comprehension instruction (positive) and child-managed explicit reading comprehension instruction (negative) (C. M. Connor, F. J. Morrison, & J. Petrella, In press). Children who began the school year with low to average (up to the 75<sup>th</sup> percentile) reading comprehension skills demonstrated greater growth in reading comprehension in classrooms with greater amounts of teacher-managed explicit reading comprehension instruction, and less child-managed explicit instruction, than they did in classrooms that provided the opposite pattern of instruction. Modeled results suggest that these differences were substantial and represented more than a two grade level difference for children with weaker language and literacy skills.

### *Implementing Effective Instruction*

The implication of these results is that effective instruction in the early grades, designed and implemented based on children's skill strengths and weakness and mapped to the dimension of instruction, can have an important effect on children's learning. The hurdle is that designing instruction for each child individually (i.e., individualizing instruction) and then implementing it for every child in a classroom will be difficult, especially if students vary widely in their abilities. Nevertheless, studies of effective teachers and schools suggest a number of strategies that might facilitate individualized instruction (Morrison et al., In press; Taylor & Pearson, 2002; Westat, 2001; Wharton-McDonald, Pressley, & Hampston, 1998). These include early and ongoing assessment of children's skills and using these results to design instruction and monitor students' progress; making sure that children receive enough time overall in instructional

activities that, research indicates, will be effective for them (i.e., time on task and individualized instruction); use of flexible small groups based on learning goals; and putting effective teachers into the classroom.

### Teacher Qualifications

Teachers who consistently obtain strong student outcomes have been described as masterful classroom managers (Brophy & Good, 1986; Wharton-McDonald et al., 1998). They managed student behavior, time, instructional activities, student interactions, and outside resources. They followed a predictable classroom routine but at the same time were flexible and would take advantage of opportunities to provide “mini-lessons” (Taylor & Pearson, 2002). They provided extra help to the students that needed it. The most effective teachers “engage[d] virtually all of their students in the work of the classroom” (Taylor et al., 2000, p. 158). However, there was clear variability in the effectiveness of teachers. In the studies reviewed, only about half to a third of teachers were effective in promoting student reading skill growth. The rest were judged to be ineffective. They “struggled to complete morning routines and begin instruction” (Wharton-McDonald et al., 1998, p. 120) and their students failed to demonstrate substantial growth on important early literacy skills.

How do we train, find, and keep effective teachers in the classroom? There is evidence that, currently, the teaching profession may not attract the most qualified students. Education majors are more likely to be in the bottom quartile of their class than any other major (Henke, Knepper, Geis, & Giambattista, 1996). Additionally, young adults who do pursue education credentials often receive training that inadequately prepares them for teaching, which is a complex and demanding career. Nor are they adequately supported once they reach the classroom (Kauffman, Johnson, Kardos, Liu, & Peske, 2002)}. For example, 54% of teachers

have students with limited English proficiency or who belong to a cultural minority and 71% of teachers have students with disabilities. Yet only 20% of these teachers feel well prepared to meet the need of these children. Only 28% feel well prepared to use student assessment to guide instruction (Lewis et al., 1999). However, almost all teachers have a bachelors degree; half have a master level degree; over 90% hold regular or advanced teaching credentials (DOE, 2002).

Current policy calls for qualified teachers in every classroom. There is some evidence that students of more highly qualified teachers (i.e., credential, education, and experience) tend to make greater gains in achievement. However, this body of research has failed to examine teacher qualifications within a system of instruction (Cohen, Raudenbush, & Ball, 2003) nor have they taken into account the effect of sociocultural factors, parents and home, preschool and child care, child characteristics, and instruction (Morrison et al., In press). Using a systemic approach (C. M. Connor, Son, Morrison, & Hindman, In review), including the influence of socioeconomic status and home learning environment, reveals that teachers' years of education positively influences classroom practices, which, in turn, affect student achievement. In contrast, years of experience and class size did not relate to either classroom practices or student outcomes.

Thus, improving educational opportunities before and after teachers reach the classroom may support more effective teaching. This might include encouraging teachers to use research, rather than just personal childhood and classroom experience to guide their practice (Boerst, 2003; Kaestle, 1993; Littlewood, 2001). This also means that the crucial reciprocal interactions between teachers and researchers must be strengthened (Martella, Nelson, & Marchand-Martella, 1999; Morrison et al., In press). Research in education is accumulating critical amounts of information about children's learning (Shavelson & Towne, 2002). Recent policy has called for

scientifically rigorous research and may put in place adequate funding for this endeavor. Without true dialogue, teachers will not learn and use the most effective practices as they are discovered and critical research issues may be overlooked.

### Developing a Cohesive Model of Children's Early Literacy Development

Returning to the model we presented at the beginning of the chapter (Figure 1), we reviewed research which examines the effect of multiple factors both before and after children begin school. As we discuss in this chapter, there is substantial research evidence for each pathway although there are arguably fewer studies that examine these effects simultaneously. The model includes distal variables, such as socioeconomic status and teachers' qualifications, as well as more proximal sources of influence such as parenting, classroom instruction, and child characteristics. Moreover, the model indicates child-by-instruction interactions; the effect of instruction depends on the language and literacy skills children bring to the classroom. Note also that the distal variables, such as teacher qualification, act through more proximal variables, such as instruction. Additionally, distal variables may operate through a number of other more proximal variables. For example, family SES affects the home literacy environment (in general, higher SES families provide stronger home literacy environments) but it also affects teacher qualifications (children from higher SES families tend to have more qualified teachers). Further, the model displays that parenting has an immediate effect on children's language and literacy skills prior to school entry *and* has an ongoing effect on children's achievement once they begin school. The model presents multiple pathways to children's academic success and suggests points of influence – in the home, in the classroom, and in the community – that can contribute to students' success.



# Before Children Get to School      Once Children Start School

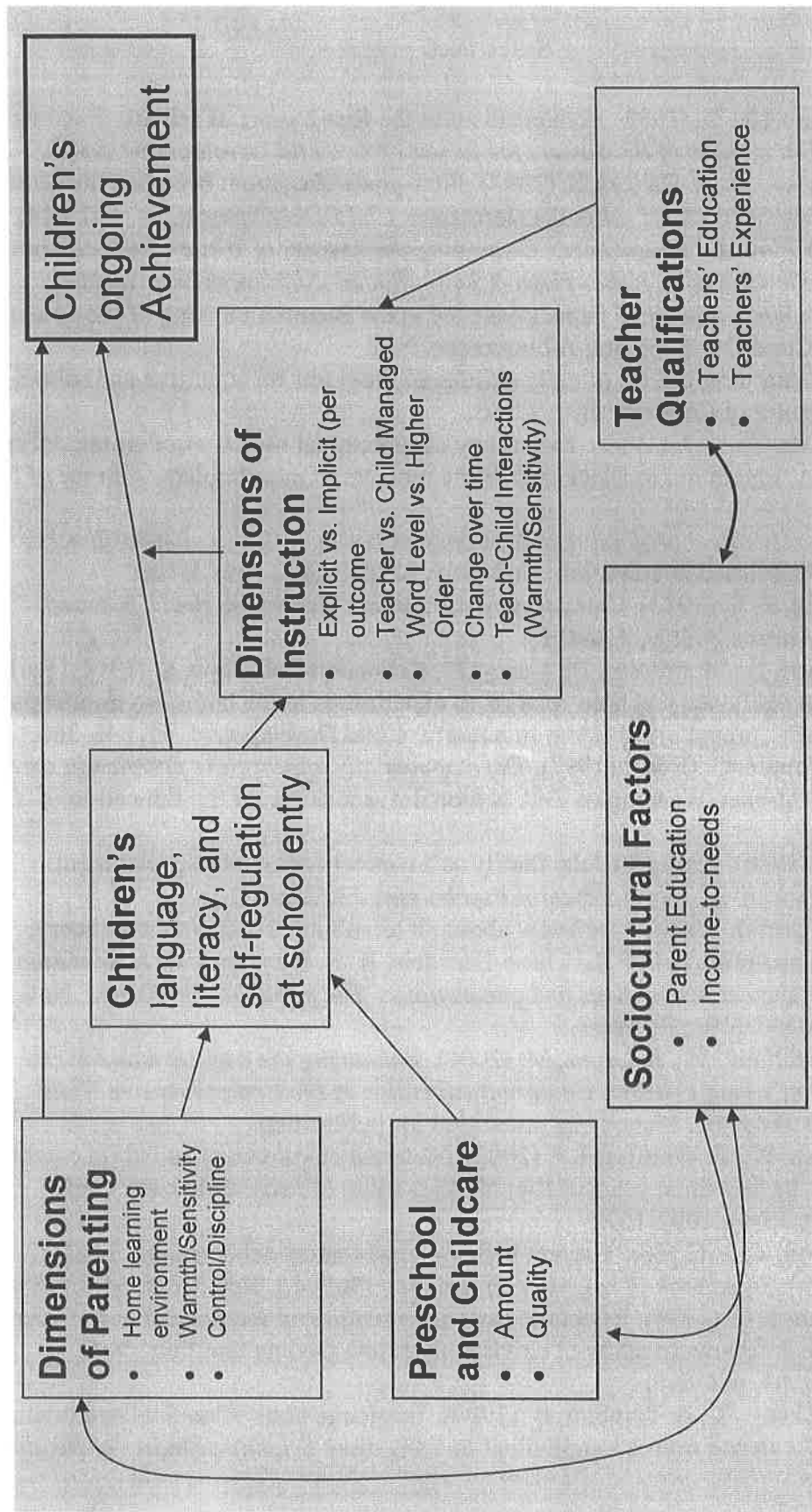


Figure 1

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