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INDIVIDUAL DIFFERENCES IN VOCABULARY ACQUISITION

At A Glance

Some children enter school with limited vocabularies. This Information Capsule reviews the factors that contribute to children's differential rates of vocabulary acquisition, including early childhood experiences with language in the home, socioeconomic status, ethnicity, and gender. Strategies to promote vocabulary development in preschool programs, which researchers believe offer the best opportunity to address children's vocabulary differences, are also summarized.

Vocabulary development is of paramount importance since it plays a significant role in reading comprehension which in turn is the single most important factor in determining academic success at all levels. Reading comprehension requires students to understand word meanings because text cannot be understood without knowing what most of the words mean (Nagy, 1988). The National Reading Panel (2000) stated that "the larger the reader's vocabulary (either oral or print), the easier it is to make sense of the text." Research indicates that kindergarten vocabulary size is a strong predictor of reading comprehension in the later school years (Biemiller, 2003; Scarborough, 1998; Cunningham & Stanovich, 1997; Chall et al., 1990). Studies have also concluded that early vocabulary size predicts children's overall success in school (Fewell & Deutscher, 2002; Farkas & Beron, 2001; Stahl & Fairbanks, 1986).

A number of studies have focused on individual differences in children's rates of vocabulary acquisition. There are often substantial differences in the size of children's vocabularies when they enter school (Biemiller, 2003; Beck & McKeown, 2001). Estimates of children's vocabularies when they begin first grade range from as low as 6,000 words to as high as 14,000 words (Weizman & Snow, 2001; Clark, 1993). Once in school, children appear to acquire new vocabulary at similar rates, but in order to catch up, children with limited vocabularies have to acquire words at above-average rates. Researchers generally agree that vocabulary-disadvantaged children fall further behind each year, resulting in increasingly larger vocabulary gaps (Biemiller, 2003; Dickinson & Tabors, 2001). Lubliner and Smetana (2005) estimated that by the time students graduate from high school, those with limited vocabularies know only one-fourth as many words as their academically successful peers.

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Researchers have not reached consensus on the number of words children are capable of learning each day. Although most researchers have estimated that elementary students can acquire anywhere from five to 10 words per day (Lehr et al., 2004; Elliott et al., 2002; Penno et al., 2002; Baker et al., 1995; Anderson & Nagy, 1992), Biemiller (2003) concluded that children may only be able to learn three words per day at most.

Reasons for Differences in Vocabulary Acquisition

Multiple factors may contribute to differential rates of vocabulary acquisition. Individual characteris-tics that may partially account for differential rates of vocabulary growth include general language deficits, memory problems, and differences in strategies for learning word meanings (Baker et al., 1995). Evidence of a significant contribution of heredity to vocabulary acquisition is lacking. Family studies conducted by Huttenlocher, Haight, Bryk, Seltzer, and Lyons (1991) failed to show a strong relationship between parent and child scores on standardized vocabulary tests. Parent vocabulary scores accounted for only about 10 to 12 percent of the variance in their children's vocabulary scores. Scarr & Weisberg (1978) found that, in contrast to other subtest scores on the Wechsler Adult Intelligence Scale, there was a significant correlation between the vocabulary scores of adoptive mothers and their children and this correlation was as high as the correlation between the scores of biological mothers and their children. Based on these findings, most researchers have concluded that vocabulary acquisition is strongly influenced by environmental factors (Biemiller, 2003; Weizman & Snow, 2001; Mosher, 1999; Baker et al., 1995).

The reader should be aware that most studies conducted on differential rates of vocabulary acquisition have used correlational analyses. It is important to remember that a significant correlation between two factors (for example, larger vocabulary size and higher socioeconomic status) demonstrates only that a relationship exists between the two variables, not that one variable actually caused the other.

Impact of Parents' Use of Language on Vocabulary Acquisition

Research indicates that environmental factors may contribute significantly to vocabulary acquisition, most notably levels of parental language skills, support, and encouragement (Biemiller, 2003; Mosher, 1999; Baker et al., 1995). Although learning or environmental factors appear most influential in children's acquisition of language, linguist Noam Chomsky (1959) has theorized there must be some inherited or pre-wired mechanism allowing children to acquire language as rapidly as they do. He called this inborn universal grammar mechanism the Language Acquisition Device, or LAD. The concept of the LAD has become well accepted in the field of psycholinguistics to explain individuals' ability to learn language at such an extraordinary rate. Miller and Gildea (1987) stated that the rate at which individuals acquire new words would not be possible if language acquisition was a matter of experiential learning alone. For example, at the time of graduation, the average high school student knows approximately 80,000 words. This rate of acquisition would require learning an average of 5,000 words per year from age two to age 17, or about 13 to 14 words per day. It is unlikely that experience alone could explain this volume and rate of acquiring new words.

The following studies suggest that children from homes in which parents do not interact frequently with their children by using varied and sophisticated language have smaller vocabularies when they enter school than children from homes in which parents interact frequently with their children using stimulating language.

- Huttenlocher, Haight, Bryk, Seltzer, and Lyons (1991) claimed that their study provided the first direct evidence that the amount of language exposure children received was an important factor in their vocabulary development. Twenty-two children and mothers living in an educated, middle-class, urban community were observed during daily activities while children were 14 to 26 months of age. The researchers found that the more parents talked to their children, the greater the number of words children learned. Furthermore, the frequency with which parents used different words was highly related to the order of acquisition of those words.

- Hart and Risley (1995) observed 42 families for one hour each month to learn what typically occurred in homes with one- and two-year-old children learning to talk. Observations began when children were seven to nine months old and continued until they turned three years old. The authors concluded that the size of children's vocabulary was most highly correlated with the number of words parents

spoke to their children. Eighty-six to 98 percent of the words used by children were words in their parents' vocabulary. By the time children were three years old, trends in the amount of speech communication and style of interaction had been firmly established.

- The Home-School Study gathered data on low-income families over a 10-year period, beginning when children were three years old. The researchers analyzed interactions between mothers and their children during book reading, play sessions, story telling, and family meals. They also interviewed children's parents and teachers. Children were evaluated annually on a battery of language and literacy tests, including the Peabody Picture Vocabulary Test. Study findings, based on the 57 children remaining in the sample at the conclusion of the ten year period, indicated that the number of words adults used with children when they were 3 and 4 years old, both in the home and at school, was a strong predictor of children's grade 2 vocabulary. Children who were exposed to more words in their conversations with adults and more unusual words tended to develop larger vocabularies (Dickinson & Tabors, 2001).

- Weizman and Snow (2001) studied early vocabulary development in 53 pairs of low-income mothers and their children. Home visits and vocabulary testing on the Peabody Picture Vocabulary Test were conducted when children were 5 years old. The study controlled for level of maternal education and children's nonverbal IQ scores. The researchers found strong relationships between vocabulary performance and early exposure to sophisticated words and the frequency with which mothers interacted in instructive and helpful ways with their children. These relationships were maintained through the early school years, with each of the predictors accounting for almost one-third of the variation in children's vocabulary test scores in both kindergarten and second grade.

- Luster, Bates, Fitzgerald, Vandenbelt, and Key (2002) tested a sample of children on the Peabody Picture Vocabulary Test when they were 54 months old and compared the 22 children who scored in the top quartile of the test with the 22 children who received the lowest scores on the test. All children in the sample were born to low-income adolescent mothers. The researchers found that children whose mothers were rated higher on measures of caregiving and providing a supportive home environment scored in the top quartile of the vocabulary test. Mothers of the most successful children were found, on average, to have attained higher levels of education, live in higher income neighborhoods, and have fewer children and were more likely to be employed and living with a male partner.

- Apiwattanalunggarn and Luster (2005) conducted an eight-year longitudinal study to investigate factors that contributed to individual differences in school performance. Vocabulary prior to school entry was assessed as one component of the study. Participants were 142 pregnant adolescents, all expecting their first child, who came from low-income families and had not completed high school. Home visits were conducted every six months for three years after the children were born. Children's receptive vocabulary skills were assessed by the Peabody Picture Vocabulary Test when they were 54 months of age. Ratings of the home environment (including variables such as language stimulation, mothers' communication skills, and how often mothers praised their children) were significantly and positively correlated with children's vocabulary scores, indicating that children who were raised in home environments with supportive parenting and positive parent-child interactions had larger vocabularies than children who were raised in less supportive home environments.

- Pancsofar and Vernon-Feagans (2006) studied the father's role in predicting children's expressive vocabulary. Most studies on early vocabulary acquisition have focused on mothers, but with more women in the workforce and the changing role of men in families, the researchers hypothesized that fathers would make important contributions to their children's vocabulary development. The researchers conducted home visits, interviewed parents, and videotaped play sessions with both parents when children were 24 and 36 months old. Children's vocabulary was evaluated when they were 36 months old. Ninety-two families participated at the 24-month stage and 62 families remained at the 36-month stage. The study found that fathers spoke less frequently to their children, used fewer words, and took fewer conversational turns. Mothers and fathers asked the same proportion of questions and question types and used sentences of equal

complexity.

Results of the study indicated that children whose fathers used more varied vocabulary at 24 months had higher expressive vocabulary test scores at 36 months. Surprisingly, mothers' language input was not found to have a significant impact on their children's expressive vocabulary. The authors speculated that because mothers consistently talked more and communicated at higher levels, it may have been difficult to identify their differential impact, whereas fathers differed greatly in how much they talked to their children, so their interactions were "of an added value."

Impact of Socioeconomic Status on Vocabulary Acquisition

Researchers have concluded that children who live in poverty may not have experience with or exposure to the vocabulary they will be expected to know when they enter school (Champion et al., 2003). A strong relationship has been found between rates of vocabulary acquisition and children's socioeconomic status. Some of the following studies suggest that this relationship may exist because parents of lower-socioeconomic status have often been observed to provide fewer language-enriching experiences for their children.

- Hart and Risley (1995) observed 42 families for one hour each month to learn what typically occurred in homes with one- and two-year-old children learning to talk. Observations began when children were seven to nine months old and continued until they turned three years old. The researchers compared welfare families, working class families, and professional families and found that three-year-old children from welfare families not only had smaller vocabularies than children of the same age in working class and professional families, but were also adding words more slowly.

  The average child on welfare heard half as many words per hour (616 words per hour) as the average child in a working class family (1,251 words per hour) and less than one-third the number of words as the average child in a professional family (2,153 words per hour). These differences were observed over all two and one-half years of observations. Linear extrapolation indicated that, by the age of 4, the average child in a professional family would hear almost 45 million words, while the average child in a welfare family would hear only 13 million words.

  Children's language experiences did not differ only in the number of words heard. The average child in a professional family heard 32 encouragements and 5 discouragements per hour; the average child in a working class family heard 12 encouragements and 7 discouragements per hour; and the average child in a welfare family heard 5 encouragements and 11 discouragements per hour. Linear extrapolation indicated that, by age 4, the average child in a professional family would hear 560,000 more instances of encouraging feedback than discouraging feedback, while the average child in a welfare family would hear 125,000 more instances of discouraging feedback than encouraging feedback.

  Based on the results of their study, the authors concluded that socioeconomic-based vocabulary differences among children at school entry were larger and more problematic than previously assumed.

- White, Graves, and Slater (1990) examined the reading vocabularies of students attending three elementary schools of varying socioeconomic status (SES). Forty-seven to 91 students at each grade level (grades 1 through 4) were administered a multiple-choice vocabulary test (based on a random sample of frequently used words from the American Heritage Word Frequency Book) and a subsample of students participated in individually administered interviews. Even in grade 1, the researchers found differences in the size of the reading vocabularies of students attending the middle-SES school (approximately 4,800 words), compared to students attending the two lower-SES schools (approximately 2,500 and 3,500 words). Analyses also indicated that the reading vocabularies of students in all three schools grew rapidly; however, the vocabulary of students in the middle-SES school increased by approximately 5,200 words each year, while the vocabulary of students in the lower-SES schools increased by only 3,300 and 3,500 words each year. By the end of grade 3, students attending the middle-SES school knew approximately 50 percent more words (an additional 5,000 to 6,000 words) than students attending either of the low-SES schools.

- Chall, Jacobs, and Baldwin (1990) followed the performance of 30 low-income children on tests of word meaning over a two-year period. The sample consisted of students in grades 2, 4, and 6, followed through grades 3, 5, and 7. The researchers found that low-income children performed well on measures of basic language abilities through the third grade, when words tested were familiar and used frequently. After the third grade, however, low-income students' scores on the word meaning subtest of the Diagnostic Assessments of Reading began to decrease. The low-income children in grades four through seven had the greatest difficulty defining more abstract, academic, literary, and less common words, compared with the normative population. In grade 4, low-income children were approximately one year behind grade norms. By grade 7, they were more than two years behind grade norms. Although low-income children's vocabulary was sufficient prior to grade 3, Chall, Jacobs, and Baldwin (1990) concluded that they were not prepared for words that were more complex than those used in everyday, oral conversations.

- Evans, Maxwell, and Hart's (1999) study suggested that household crowding, as opposed to socioeconomic status, may contribute to lower levels of vocabulary acquisition. The researchers conducted a secondary analysis, using data from Hart and Risley's (1995) study. They concluded that parents in more crowded homes were less verbally responsive to their children and used less diverse language than parents in less crowded homes. This relationship existed regardless of socioeconomic status, parents' educational level, and the ratio of the number of children to parents in the home. The authors suggested that parents reacted to high residential density by socially withdrawing from other members of the household.

  The reader should interpret these results with caution. The original intent of the data collection was unrelated to household crowding so the range of household density sampled was relatively small (from 0.30 to 1.25 people per room). Evans, Maxwell, and Hart (1999) recognized the need to examine parental language and verbal responsiveness across a wider range of household densities. Furthermore, it is possible that other unidentified factors related to self-selection into housing might explain the results of this study.

Impact of Ethnicity on Vocabulary Acquisition

Researchers have found that when Black and Hispanic children enter school, their academic skills often lag behind those of White students (Qi et al., 2006; The Future of Children, 2005). The following studies focused primarily on the impact of ethnicity on children's rates of vocabulary acquisition, but suggest that children's ethnicity may play less of a role in vocabulary acquisition than their socioeconomic status.

- Farkas and Beron (2001) used data from a panel study of a national sample of mothers and children. Home interview data, measures of mother's English language skills, and children's scores on the Peabody Picture Vocabulary Test were disaggregated by families' socioeconomic status (SES). Analyses were conducted separately for Black and White children (Hispanic children were excluded from the analyses due to their small sample size and significant ethnic diversity within the group).

  Results of the study indicated that, beginning with the earliest observations at 36 months of age, White children averaged significantly higher vocabulary test scores than Black children. During the first three years of life, the oral vocabularies of Black children grew at only half the rate of White children, leading to a White-Black vocabulary gap that was not reduced in later years. The researchers stated that "the implication is clear: most of the Black-White gap in vocabulary growth occurs while the child is at home, prior to the time when he or she begins regular schooling."

  Farkas and Beron (2001) next analyzed the differential effects of SES on children's vocabulary scores. They found that, for both Blacks and Whites, the vocabularies of higher-SES children grew faster than those of lower-SES children, but only at very young ages. For White children, the difference was strongest prior to three years of age; for Black children, it was strongest at ages three to four. It should be noted that approximately half of the SES differences in vocabulary acquisition were found to be attributable to the effects of the mother's linguistic skills and social interactions with their children. By age 5, the researchers found that for both Black and White students, higher- and lower-SES students acquired vocabulary at similar rates.

- Brooks-Gunn and Markman (2005) reported that in large national or multi-site studies, Black mothers were approximately two-thirds as likely as White mothers to read to their child every day and Hispanic mothers were approximately half as likely to do so. Black and Hispanic children were also reported to come from homes with fewer reading materials and fewer educationally relevant materials than White children. Brooks-Gunn and Markman (2005) also stated that videotaped mother-child interactions documented ethnic differences in negative regard, intrusiveness, and detachment, with Black mothers scoring higher than White mothers on these variables. However, when studies control for SES and other family background measures, such as mother's level of education or number of educationally relevant materials in the home, ethnic gaps are usually significantly reduced (Duncan & Magnuson, 2005).

- Berger, Brooks-Gunn, Paxson, and Waldfogel (2007) examined the relationship between first-year maternal employment and children's receptive vocabulary. The sample was drawn from a birth cohort study of children born to predominantly low-income, ethnically diverse, single mothers in 20 cities throughout the United States. Analyses were based on 1,483 children. The study design controlled for variables such as gender, poverty level, mother's level of education, and mother's age at the time of the child's birth. The Peabody Picture Vocabulary Test was administered to mothers (as a proxy for cognitive ability) and to children when they were approximately 36 months old. The study found a significant negative association between first-year maternal employment and children's vocabulary test scores for White, but not Black or Hispanic, children. Therefore, for White mothers, as the incidence of maternal employment increased, children's vocabulary test scores decreased. The researchers also included a set of controls to account for mothers' work history, type of child care provided, maternal depression and stress, and measures of parenting (such as discipline, nurturance, and the provision of cognitively stimulating materials in the home) and found that these variables did not explain the association between mother's employment and children's vocabulary scores.

  Speculation as to why maternal employment effected children's vocabulary differentially by ethnicity led the authors to hypothesize that, since the average White mother had a higher vocabulary score, she may have been more engaged or more productive in promoting her child's vocabulary acquisition than the average Black or Hispanic mother, causing her absence from the home to have a stronger negative effect on her child's vocabulary development.

Impact of Gender on Vocabulary Acquisition

Studies have not produced conclusive evidence regarding gender differences in vocabulary acquisition. Hyde and Linn (1988) conducted a meta-analysis of 40 vocabulary studies and found, overall, no evidence of substantial gender differences in vocabulary performance. When studies were grouped according to subjects' average age, males were found to significantly outperform females at ages 6 to 10. At all other ages, no significant differences between the two genders were noted. Contrary to these findings, Bornstein, Gini, Hahn, Haynes, Hendricks, and Leach et al.'s (2005) summary of research reported that girls consistently outperformed boys on vocabulary tests between the ages of 2 to 5, but not before or after.

Other authors attribute the superiority of verbal abilities among young girls, compared to their male counterparts, to the types and forms of play activities in which each gender engages (Maccoby, 1980). When studied under experimental conditions, boys' play was found to be more physical in nature whereas girls' play emphasized more verbal communication among playmates. Therefore, the increased verbal communication experienced by girls during play may explain, in part, the differential verbal skills among the genders at the earlier ages.

Huttenlocher, Haight, Bryk, Seltzer, and Lyons (1991) first sought to confirm the existence of gender differences in vocabulary acquisition and, secondly, to determine whether these differences, if found, reflected differential exposure to vocabulary or early capacity differences between the two genders. Twenty-two children (ages 14 to 26 months) and their mothers from an educated, middle-class, urban community were observed during children's typical daily activities. Results indicated that children's gender was significantly related to acceleration in vocabulary growth. On average, girls tended to acquire vocabulary more

quickly than boys. These findings were not found to be attributable to differences in the frequency of verbal communications between the two genders. Results also did not support the conclusion that mothers talked significantly more to girls than to boys. The authors concluded that "gender differences in early vocabulary growth seem to reflect early capacity differences, not differential responses of mothers to their sons and daughters." However, after children reached the age of two, gender differences in vocabulary performance were not observed.

Studies have been unable to provide a definitive answer to the question of gender differences in vocabulary acquisition. Not only has research offered conflicting evidence as to the existence of gender differences, but it has also produced contradictory results, depending upon the age of the individuals being studied. Clearly, more research is needed to determine if differences in rates of vocabulary acquisition exist between boys and girls and, if so, at which ages.

Impact of Early Intervention on Vocabulary Acquisition

Some children come to school with significantly less vocabulary than others and schools cannot change what happened before children entered school (Biemiller, 2003). The large vocabulary differences found by Hart and Risley (1995) between children at age four led them to conclude that the best early intervention programs can only hope to keep children in lower socioeconomic families from falling even further behind children in working-class and professional families.

According to Biemiller (2007), research shows school instruction in kindergarten and grade 1 appears to have no impact on vocabulary development. Researchers generally agree that educators' chances of addressing vocabulary differences are greatest in the preschool years (Mendel, 2004; Biemiller, 2003; Dickinson & Tabors, 2001; Farkas & Beron, 2001). The results of Farkas and Beron's (2001) study — despite early differences between lower- and higher-SES children's rates of vocabulary acquisition, vocabulary growth rates were similar for all children by age 5 — prompted the authors to suggest that attending school had an "equalizing effect as children from lower social strata are exposed to teacher and peer interaction and school instruction."

Studies suggest that well-designed early intervention programs can close the gap between children with larger vocabularies and those whose home experiences have not provided them with sufficient vocabularies (Lubliner & Smetana, 2005; Snow et al.,1992). Research indicates that early intervention programs can implement the following strategies to increase children's rates of vocabulary acquisition:

- The earlier a child learns words, the more time he or she has to build upon that knowledge. Barnett and Lamy's (2006) research underscored the need to start vocabulary instruction early. They studied whether the number of years children attended preschool had an effect on their receptive vocabulary skills. Their sample included 1,372 kindergarten students from 21 high-poverty school districts. School districts were randomly selected to proportionately represent small, medium, and large districts from both urban and rural settings. Students' receptive vocabulary skills were measured using the Peabody Picture Vocabulary Test. The study design controlled for children's age, ethnicity, gender, and primary language, as well as district size and district poverty level.

  Barnett and Lamy (2006) found that children who had attended preschool for one year had an average vocabulary score increase of almost one score point compared to children who had not attended preschool. This finding was not statistically significant. Children who had attended preschool for two years (at both 3 and 4 years old), however, had an average vocabulary score increase of 2.5 score points compared to children who had not attended preschool (a statistically significant difference). The researchers concluded that preschool education programs that started earlier and provided students with two full years of instruction had a significant impact on the vocabulary development of children from disadvantaged backgrounds. They cautioned, however, that children whose families enrolled them in preschool at age three may have differed in some unmeasured ways from children whose families enrolled them later or who did not enroll them at all, and these differences may have been partially responsible for their findings.

- Teachers should create a language-rich classroom environment for their students (Dickinson and Tabors, 2001). Dickinson, St. Pierre, and Pettengill (2004) emphasized the importance of teacher-child interactions and the need for teachers to use a variety of vocabulary and engage children in sustained and

intellectually stimulating conversations. Dickinson and Tabors (2002) reported that teacher-child relationships and the types of conversations they engaged in were better predictors of later language and literacy skills than other measures of the preschool environment, including classroom curriculum or organization of activities.

Dickinson and Tabors (2001) concluded that teachers can emulate the types of home-based language experiences that most benefit children. They found that the amount of conversation between teachers and preschool children during mealtimes predicted children's vocabulary skills in the second grade, even when the home environment was taken into account. The researchers suggested that teachers who talked to students during mealtimes may have been more likely to talk to them during other activities throughout the day and may also have engaged their students in more interesting or extensive conversations.

- Early intervention programs should provide children with frequent and varied opportunities to hear and discuss books. Adult-child reading experiences should include large-group, small-group, and one-to-one readings, as well as reenactments of stories by children. Effective programs also support reading at home through parent education and by encouraging use of community libraries (Dickinson et al., 2002). Dickinson and Tabors (2001) recommended that teachers also expose children to a wide variety of experiences, both in and out of the classroom, to provide them with different opportunities to learn new vocabulary.

- Some researchers have suggested that intervention programs consider using parent-child pairings during instructional time. They have concluded that this approach may be useful when observations and assessments suggest that the parent's style could be modified in ways that will increase their child's vocabulary development. Additionally, educators can emphasize the importance of using a responsive style throughout the day as parents interact with their children (Mendel, 2004; Fewell & Deutscher, 2002; Woods-Cripe & Venn, 1997).

Summary

Multiple factors contribute to individual differences in children's rates of vocabulary acquisition. Most researchers have concluded that vocabulary acquisition is more strongly influenced by environmental, rather than hereditary, factors. Research indicates that parents' language skills, support, and encouragement play an important role in vocabulary acquisition rates. A strong relationship has also been found between vocabulary development and children's socioeconomic status. Some studies have suggested that this relationship may exist because lower-SES parents often provide fewer language-enriching experiences for their young children. The vocabularies of Black and Hispanic children are often lower than those of White children when they enter school and deficits increase as children progress through school, particularly if intervention is not forthcoming. Studies have not provided a definitive answer to the question of gender differences in vocabulary acquisition. More research is needed to determine if differences in rates of vocabulary acquisition exist between boys and girls and, if so, at which ages.

Researchers agree that educators' opportunities to address vocabulary differences are greatest during the preschool years. Early intervention strategies for increasing vocabulary include beginning vocabulary instruction at a young age, creating a language-rich classroom environment with sustained and intellectually stimulating teacher-child interactions, and providing children with frequent and varied opportunities to hear and discuss books.

For a review of research on effective vocabulary instruction, please refer to another Information Capsule prepared by Research Services, entitled "Vocabulary Instruction."

References

Anderson, R.C., & Nagy, W.E. (1992). The Vocabulary Conundrum. *American Educator, 16*(4), 14-18, 44-47.

Apiwattanalunggarn, K.L., & Luster, T. (2005). Individual Differences in the School Performance of 2nd-Grade Children Born to Low-Income Adolescent Mothers: Findings from an 8-Year Longitudinal Study. *Journal of Research in Childhood Education, 19*(4), 314-332.

Baker, S.K., Simmons, D.C., & Kame'enui, E.J. (1995). *Vocabulary Acquisition: Synthesis of the Research*. Technical Report No. 13 for the National Center to Improve the Tools of Educators, University of Oregon, Eugene, OR. Retrieved from http://idea.uoregon.edu/~ncite/documents/techrep/tech13.html.

Barnett, W.S., & Lamy, C.E. (2006). *Estimated Impacts of Number of Years of Preschool Attendance on Vocabulary, Literacy and Math Skills at Kindergarten Entry*. National Institute for Early Education Research. Retrieved from http://nieer.org/resources/research/EstimatedImpacts.pdf.

Beck, I.L., & McKeown, M.G. (2001). Text Talk: Capturing the Benefits of Read-Aloud Experiences for Young Children. *The Reading Teacher, 55*(1), September 2001. Retrieved from http://teacher.scholastic.com/products/texttalk/pdfs/Capturing_the_Benefits.pdf.

Biemiller, A. (2003). Teaching Vocabulary in the Primary Grades: Vocabulary Instruction Needed. In J. Baumann & E. Kame'enui (Eds.), *Reading Vocabulary: Research to Practice.* New York, NY: Guilford Press.

Biemiller, A. (2007). *The Influence of Vocabulary on Reading Acquisition*. Canadian Language and Literacy Research Network. Retrieved from http://www.literacyencyclopedia.ca/index.php?fa=items.show&topicId=19.

Berger, L., Brooks-Gunn, J., Paxson, C., & Waldfogel, J. (2007). First-Year Maternal Employment and Child Outcomes: Differences Across Racial and Ethnic Groups. Retrieved from http://www.econ.upf.edu/docs/seminars/waldfogel.pdf.

Bornstein, M.H., Gini, M., Hahn, C.S., Haynes, M., Hendricks, C., Leach, D., et al. (2005). *Child and Family Development in the First Two Decades of Life.* 2005 Annual Report of the Division of Intramural Research, National Institute of Child Health and Human Development. Retrieved from http://eclipse.nichd.nih.gov/nichd/annualreport/2005/lce/cfr.htm.

Brooks-Gunn, J., & Markman, L.B. (2005). The Contribution of Parenting to Ethnic and Racial Gaps in School Readiness. *The Future of Children, 15*(1), 139-168.

Chall, J.S., Jacobs, V.A., & Baldwin, L.E. (1990). *Reading Crisis: Why Poor Children Fall Behind*. Cambridge, MA: Harvard University Press.

Champion, T.B., Hyter, Y.D., McCabe, A., & Bland-Stewart, L.M. (2003). A Matter of Vocabulary: Performance of Low-Income African American Head Start Children on the Peabody Picture Vocabulary Test-III. *Communication Disorders Quarterly, 24*(3), 121-127.

Chomsky, N. (1959). Review of B.F. Skinner's Verbal Behavior. *Language, 35,* 26-58.

Clark, E. (1993). *The Lexicon in Acquisition.* Cambridge, UK: Cambridge University Press.

Cunningham, A., & Stanovich, K. (2003). Reading Can Make You Smarter. *Principal, 83*(2), 34-39.

Dickinson, D.K., & Tabors, P.O. (2001). *Beginning Literacy With Language: Young Children Learning at Home and School.* Baltimore, MD: Paul H. Brookes Publishing Company.

Dickinson, D.K., & Tabors, P.O. (2002). Fostering Language and Literacy in Classrooms and Homes. *Young Children, 57*(2), 10-18.

Dickinson, D.K., McCabe, A., & Anastasopoulos, L. (2002). *A Framework for Examining Book Reading in Early Childhood Classrooms*. Center for the Improvement of Early Reading Achievement, University of Michigan, Ann Arbor, MI. Retrieved from http://www.ciera.org/library/reports/inquiry-1/1-014/1-014h.html.

Dickinson, D.K., St. Pierre, R.G., & Pettengill, J. (2004). High-Quality Classrooms: A Key Ingredient to Family Literacy Programs' Support for Children's Literacy. In B. Wasik (Ed.), *Handbook of Family Literacy.* Mahwah, NJ: Lawrence Erlbaum Associates.

Duncan, G.J., & Magnuson, K.A. (2005). Can Family Socioeconomic Resources Account for Racial and Ethnic Test Score Gaps? *Future Child, 15*(1), 35-54.

Elliott, D.A., Formhals, M.A., & Wheat, J.G. (2002). *Word Detectives: Solving the Mystery of Vocabulary.* Action research project submitted in partial fulfillment of the requirements for the Master of Arts Degree, Saint Xavier University & IRI/Skylight, Chicago, IL.

Evans, G.W., Maxwell, L.E., & Hart, B. (1999). Parental Language and Verbal Responsiveness to Children in Crowded Homes. *Developmental Psychology, 35*(4), 1020-1023.

Farkas, G., & Beron, K. (2001). *Family Linguistic Culture and Social Reproduction: Verbal Skill from Parent to Child in the Preschool and School Years.* Paper presented at the Annual Meetings of the Population Association of America, Washington, D.C.

Fewell, R.R., & Deutscher, B. (2002). Contributions of Receptive Vocabulary and Maternal Style: Variables to Later Verbal Ability and Reading in Low-Birthweight Children. *Topics in Early Childhood Special Education, 22*(4), 181-190.

The Future of Children. (2005). *School Readiness: Closing Racial and Ethnic Gaps.* Retrieved from http://www.futureofchildren.org/usr_doc/Volume_15_No_1.pdf.

Hart, B., & Risley, T.R. (1995). *Meaningful Differences in the Everyday Experiences of Young American Children.* Baltimore, MD: Paul H. Brookes Publishing Company.

Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early Vocabulary Growth: Relation to Language Input and Gender. *Developmental Psychology, 27*(2), 236-248.

Hyde, J.S., & Linn, M.C. (1988). Gender Differences in Verbal Ability: A Meta-Analysis. *Psychological Bulletin, 104*(1), 53-69.

Lehr, F., Osborn, J., & Hiebert, E.H. (2004). *A Focus on Vocabulary*. Honolulu, HI: Pacific Resources for Education and Learning. Retrieved from http://www.prel.org/products/re_/ES0419.htm.

Lubliner, S., & Smetana, L. (2005). The Effects of Comprehensive Vocabulary Instruction on Title I Students' Metacognitive Word-Learning Skills and Reading Comprehension. *Journal of Literacy Research, 37*(2), 163-200.

Luster, T., Bates, L., Fitzgerald, H., Vandenbelt, M., & Key, J.P. (2002). Factors Related to Successful Outcomes Among Preschool Children Born to Low-Income Adolescent Mothers. *Journal of Marriage and Family, 62*(1), 133-146.

Maccoby, E. (1980). *Social Development.* New York, NY: Harcourt Brace Jovanovich.

Mendel, D. Leave No Parent Behind. *The American Prospect, 15*(11). Retrieved from http://www.prospect.org/cs/articles?article=leave_no_parent_behind.

Miller, G.A., & Gildea, P.M. (1987). How Children Learn Words. *Scientific American*, September, 94-99.

Mosher, D.J. (1999). *Improving Vocabulary Knowledge and Reading Attitudes in 4th Grade Students Through Direct Vocabulary Instruction.* Action research project submitted in partial fulfillment of the requirements for the Master of Arts Degree, Saint Xavier University & IRI/Skylight, Chicago, IL.

Nagy, W.E. (1988). *Teaching Vocabulary to Improve Reading Comprehension.* Newark, DE: International Reading Association.

National Reading Panel. (2000). *Teaching Children to Read: An Evidence Based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction.* Washington, D.C.: National Institute of Child Health and Human Development.

Pancsofar, N., & Vernon-Feagans, L. (2006). Mother and Father Language Input to Young Children: Contributions to Later Language Development? *Journal of Applied Developmental Psychology, 27*(6), 571-587.

Penno, J.F., Wilkinson, I.A.G., & Moore, D.W. (2002). Vocabulary Acquisition From Teacher Explanation and Repeated Listening to Stories: Do They Overcome the Matthew Effect? *Journal of Educational Psychology, 94*(1), 23-33.

Qi, C.H., Milan, S., & Hancock, T. (2006). Language Performance of Low-Income African American and European American Preschool Children on the PPVT-III. *Language, Speech, and Hearing Services in Schools, 37*(1), 5-16.

Scarborough, H.S. (1998). Early Identification of Children At Risk for Reading Disabilities: Phonological Awareness and Some Other Promising Predictors. In B.K. Shapiro, P.J. Accardo, & A.J. Capute (Eds.), *Specific Reading Disability: A View of the Spectrum*. Timonium, MD: York Press.

Scarr, S., & Weisberg, R.A. (1978). The Influence of Family Background on Intellectual Attainment. *American Sociological Review, 43,* 674-692.

Snow, C.E., Barnes, W., Chandler, J., Goodman, I., & Hemphill, L. (1992). *Unfulfilled Expectations: Home and School Influences on Literacy*. Cambridge, MA: Harvard University Press.

Stahl, S.A., & Fairbanks, M.M. The Effects of Vocabulary Instruction: A Model-Based Meta-Analysis. *Review of Educational Research, 56*(1), 72-110.

Weizman, Z.O., & Snow, C.E. (2001). Lexical Input as Related to Children's Vocabulary Acquisition: Effects of Sophisticated Exposure and Support for Meaning. *Developmental Psychology, 37*(2), 265-279.

White, T.G., Graves, M.F., & Slater, W.H. (1990). Growth of Reading Vocabulary in Diverse Elementary Schools: Decoding and Word Meanings. *Journal of Educational Psychology, 82*(2), 281-290.

Woods-Cripe, J., & Venn, M.L. (1997). Family-Guided Routines for Early Intervention Services. *Young Exceptional Children, 1*(1), 18-26.