

SESSION THREE:

USING DATA FOR SYSTEM CHANGE

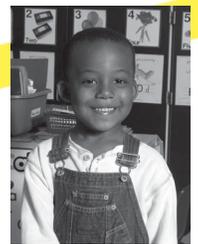
Center on the Social and Emotional Foundations for Early Learning



Project funded by the Child Care and Head Start
Bureaus in the U.S. Department of Health and
Human Services

Using Choice and Preference to Promote Improved Behavior

G. Dunlap • D. Liso



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SERIES

WHAT WORKS BRIEFS

Using Choice and Preference to Promote Improved Behavior

This *What Works Brief* is part of a continuing series of short, easy-to-read, “how to” information packets on a variety of evidence-based practices, strategies, and intervention procedures. The Briefs are designed to help teachers and other caregivers support young children’s social and emotional development. In-service

providers and others who conduct staff development activities should find them especially useful in sharing information with professionals and parents. The Briefs include examples and vignettes that illustrate how practical strategies might be used in a variety of early childhood settings and home environments.

Alex’s Story

Alex is a 4-year-old boy in Mr. Anderson’s preschool class who is happiest when he is out on the playground in the sandbox. Although Mr. Anderson has tried to get Alex to follow directions and use toys and materials appropriately during small group activities such as art, Alex does not comply with the classroom rules. He never seems to want to sit down with the rest of the class and participate. He seems uninterested in every art project, and Mr. Anderson has a difficult time keeping Alex’s attention. Instead, Alex prefers to wander around the room. If Mr. Anderson does get him to sit still long enough to give him the art materials, Alex usually throws or pushes them off the table. Mr. Anderson has tried allowing Alex to play while the other children complete art projects, but he really wants Alex to participate. Mr. Anderson has also tried sitting behind Alex and helping him use the materials by giving him hand-over-hand guidance. Alex usually fights the whole time and sometimes hits and kicks Mr. Anderson. Time-out has not worked either; because Alex doesn’t want to be at the art table, he is happy to go sit by himself. Mr. Anderson is ready to give up. Conversations with Alex’s parents reveal that similar behaviors occur at home.

What Is the Choice-Making Strategy?

Offering choices to children involves allowing them to indicate their preference at specific points in time and throughout their day and then giving them access to the items or activities they choose. Choices can be offered in countless settings, including meals, chores, centers, routines, and play. Types of choices may include choosing materials during an activity, choosing what activity will come next, and choosing a friend to sit with at lunch. The intervention consists of offering choices among two or more types of materials or activities. Depending upon the child’s ability level, choices can be offered verbally (“Do you want juice or milk?”), using actual objects (showing the child a juice box or milk carton and asking the question), or using picture representations, such as a menu board of pictures (actual photos or drawings of the milk and juice cartons) from which the child can make a choice. In the above example, Mr. Anderson might offer Alex a choice of colored construction paper and various glitter glue sticks to use on his art project.

Why Is It Important to Offer Choices to Children?

Children tend to be more cooperative, more engaged, and better behaved when they are involved with activities, materials, and individuals that they enjoy. Therefore, teachers, parents, and other caregivers can promote improved behavior by providing children access to preferred toys, materials, activities, and even social partners. If it is difficult to determine a child’s preferences, one can ask parents and others who are very familiar with the child, or one can observe the child’s reactions and engagement when he or she is using various items or activities and when he or she is playing with different children. It is also helpful to consider the items that the child is naturally drawn to or seeks out when given the opportunity.

This intervention seems to be effective for situations when choices are offered both within activities (such as choosing a color of crayon to use during art or choosing

a peer to sit next to during group) and between activities (such as choosing between two centers). Although several explanations for the effectiveness of this strategy have been suggested, evidence suggests that choice making is effective because it allows the child to feel that he or she has some control or power over the environment. This control, in turn, motivates the child to participate and remain engaged longer.

Children who have few interests may also benefit from the opportunity to make choices.

What Resources Are Needed?

Few or no additional resources are needed to use this choice-making intervention. In some cases, it may be necessary to invest in toys or other materials that are especially attractive to a particular child. It also may be necessary to create a “choice board” using pictures, symbols, or icons. It may be useful to laminate the board or increase the board’s flexibility with fasteners that can be attached or removed. Photos or other images used should depict only the item of interest, with as little background distraction as possible. Actual cutouts from boxes (such as the cardboard cereal or toy box) are generally reliable visual sources for children. The number of pictures presented on the choice board should be determined based on the child’s skill level; fewer choice options are preferred for young children or children whose cognitive skills are less advanced. The number of choices can be increased over time as the child becomes familiar with the strategy.

Who Are the Children Who Benefit from This Intervention?

Children who benefit most directly from this intervention are those who display problem behaviors to escape participation in activities or avoid using materials that they find relatively unappealing, undesirable, or difficult. Much of the research has been conducted with children who have disabilities, but some studies demonstrate the effectiveness of choice making with children without disabilities as well. Generally, any child with or without disabilities who has low levels of engagement or motivation is a good candidate for the choice-making strategy. Children who have few interests may also benefit from the opportunity to make choices. Most of the relevant research has been done with 4- and 5-year-olds in classrooms (elementary and preschool), but some of the research was conducted in

homes and clinics. The importance of adapting this strategy to meet the unique needs of the children and families in a teacher’s care cannot be overstated.

What Behavioral Changes Can Be Expected?

Decreases in the amount of acting-out behavior and increases in engagement can be expected, and often these changes happen relatively quickly after the intervention has been implemented. Research has also shown that other challenging behaviors, including aggression and disruption, have been positively affected by the choice-making strategy. Other benefits include positive effects on:

- compliance
- independence
- initiations in work and social situations
- social interactions
- communication
- motivation

As with most strategies, the overall effectiveness of this strategy will be different for each child. For some children, the effects may be great, and for others, it may be somewhat less substantial.

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Alex’s Story Revisited

A later look in Mr. Anderson’s classroom shows that Alex has made good progress. Now that Mr. Anderson gives him choices within activities, such as what color clay to use or which scissors to cut with, Alex is more interested in working. Alex feels that he has a bit more control over his environment, so he is more motivated to stay on task. Making choices also helps Alex better understand what is expected of him during activities. As a result, he is wandering less and is rarely disruptive. Mr. Anderson plans to continue offering choices to all of his students in a variety of classroom situations.



We welcome your feedback on this What Works Brief. Please go to the CSEFEL Web site (<http://csefel.uiuc.edu>) or call us at (217) 333-4123 to offer suggestions.



Where Do I Find More Information on Implementing This Practice?

See the CSEFEL Web site (<http://csefel.uiuc.edu>) for additional resources.

There are several resources available for learning how to implement choice in classroom settings. Note that some strategies are effective regardless of the age of the child, but others should be implemented on an age-appropriate basis only.

Jolivet, K., Stichter, J. P., & McCormick, K. M. (2002). Making choices, improving behavior, engaging in learning. *Teaching Exceptional Children*, 34(3), 24-29.

Kelman, A. (1990). Choices for children. *Young Children*, 45(3), 42-45.

McCormick, K. M., Jolivet, K., & Ridgley, R. (2003). Choice making as an intervention strategy for young children. *Young Exceptional Children*, 6(2), 3-10.

McNairy, M. R. (1985). Decision-making for young children: A study of a teacher's use of choice in the context of the classroom. *Early Child Development and Care*, 21(1-3), 61-81.

Pavia, L. S., & DaRos, D. (1997). Choice: A powerful tool in caring for toddlers. *Early Childhood Education Journal*, 25(1), 67-69.



What is the Scientific Basis for the Practice?

For those wishing to learn more about the topic, the following resources provide more information:

Cole, C. L., & Levinson, T. R. (2002). Effects of within-activity choices on the challenging behavior of children with severe developmental disabilities. *Journal of Positive Behavior Interventions*, 4(1), 29-37.

Dunlap, G., DePerczel, M., Clarke, S., Wilson, D., Wright, S., White, R., & Gomez, A. (1994). Choice making to promote adaptive behavior for students with emotional and behavioral challenges. *Journal of Applied Behavior Analysis*, 27(3), 505-518.

Kern, L., Vorndran, C. M., Hilt, A., Ringdahl, J. E., Adelman, B. E., & Dunlap, G. (1998). Choice as an intervention to improve behavior: A review of the literature. *Journal of Behavioral Education*, 8(2), 151-170.

Koegel, R. L., Dyer, K., & Bell, L. K. (1987). The influence of child-preferred activities on autistic children's social behavior. *Journal of Applied Behavior Analysis*, 20(3), 243-252.

Waldron-Soler, K. M., Martella, R. C., Marchand-Martella, N. E., & Ebey, T. L. (2000). Effects of choice of stimuli as reinforcement for task responding in preschoolers with and without developmental disabilities. *Journal of Applied Behavior Analysis*, 33(1), 93-96.

This What Works Brief was developed by the Center on the Social and Emotional Foundations for Early Learning by G. Dunlap and D. Liso.

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Using Choice and Preference to Promote Improved Behavior

WHAT WORKS BRIEFS



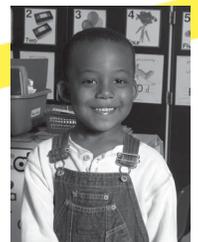
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Helping Children Express Their Wants and Needs

M. M. Ostrosky • M. L. Hemmeter • J. Murry • G. Cheatham



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Briefs include examples and vignettes that illustrate how practical strategies might be used in a variety of early childhood settings and home environments. The strategies described in the Briefs are most successful when used in the context of ongoing positive relationships and supportive environments. The strategies are most successful for an individual child when developed based on observation and assessment of the child including information from the family, teacher and other caregivers.

Understanding the Relationship between Communication and Behavior

Communication is the process of exchanging meaning between individuals—by talking or using body language, gestures (pointing, reaching, or giving), facial expressions, joint attention (sharing attention, directing the attention of another person, or following the attention of another person), and vocalizations (grunts and cries). Children need to communicate to get materials, activities, attention, or assistance from others.

There are many types of communication disorders—some involve difficulty in the area of receiving and understanding information while some include problems or delays in expressing and articulating information. Children with communication delays often exhibit challenging behaviors when their needs are not met. Because of the children’s limited communication skills, their caregivers misinterpret or fail to notice their communication attempts. However, as children learn to communicate better and caregivers learn to recognize and respond to children’s communication, these challenging behaviors often subside. Behaviors that indicate that a child might have communication problems include using a limited number of words, having difficulty understanding concepts in the environment, having difficulty following directions, and demonstrating frustration when trying to communicate.

Robbie is an inquisitive 3-year-old boy with a wonderful smile. At home and school when he has difficulty communicating with others, he sometimes uses challenging behavior. Robbie’s mother, preschool teacher, and the speech-language pathologist met recently to discuss their concerns about Robbie’s behavior.

At home, Robbie has trouble at dinnertime. He often resists getting ready for mealtime because he does not want to stop what he is doing. On days when he more easily leaves his previous activity to come to dinner, he skips important steps, such as washing his hands. His mother is frustrated with his need for constant redirection and prompting. At school, Ms. Mozie sees that when

Robbie is upset, he exhibits challenging behavior, including hitting other children during transitions and snack. Ms. Mozie sees Robbie’s and the other children’s frustration but is unsure how to help.

During a parent-teacher conference, the three adults determine that communication is at the heart of Robbie’s challenging behaviors. Robbie seems to have difficulty communicating his needs to others and difficulty processing directions and complex language. To help Robbie, they decide to try several strategies at home and in the classroom to teach him new ways to express himself and perhaps reduce difficult behavior.

Facilitating Communication to Prevent Challenging Behavior

Teachers and other caregivers can use several strategies to facilitate a child’s communication skills and help prevent challenging behavior. These strategies include (1) reading the child’s body language, (2) providing the child with choices, (3) providing picture schedules to help the child move easily between activities, (4) segmenting multiple-step directions and providing cues so the child better understands the expectations, and (5) modeling communication skills. When using these strategies, it is suggested that teachers and other caregivers consult with families to determine what is culturally appropriate for the child and the family. It is also essential to identify strategies that parents can naturally use to support the child’s communication skills and decrease challenging behaviors at home and in the community.

- ✓ Reading a child’s body language is essential, especially when the child has limited ways to communicate. Children who have a limited vocabulary might use gestures (e.g., pointing to an object) or eye gaze to let others know what they need or want. When there is a consistent and immediate response to nonverbal behaviors by caregivers or peers, a child is less likely to become frustrated and engage in challenging behavior. For example, Dante has limited verbal skills but often communicates by looking at what he

wants and then looking at an adult. When his parents or teachers are busy and do not respond to his attempts to communicate, Dante begins whining.

- ✓ Providing a child with choices gives the child the opportunity to communicate what he wants rather than using inappropriate behavior to communicate. When teaching children to make choices, the adult provides the child with different objects, activities, or photographs from which the child can choose. The adult should select items that are motivating or reinforcing to the child and that are acceptable to the adult (e.g., if one choice is to go outside and play baseball, the adult has to agree to play should the child select this option). The number of items to offer depends on the individual child. Typically offering only two choices is an ideal starting point. Too many options can increase a child's frustration.
- ✓ Using picture schedules can also benefit many children with challenging behaviors. Children often use challenging behaviors when they do not understand what is going on in the environment. Presenting the child with a picture schedule prior to a change in activity increases the likelihood that the child will understand what to do and will engage in appropriate behaviors during the transition from one activity to the next. This strategy takes time and consistency until the child understands the purpose of the picture schedule (receptive communication). The entire class can be included in this strategy to facilitate transitions. For instance, Jeffrey has a difficult time following the schedule of the classroom. His teacher, Mr. Jung, makes a picture schedule for Jeffrey. Mr. Jung takes pictures of things in the room that represent every activity throughout the day and posts the pictures in a line on the wall. Prior to each transition, an adult takes Jeffrey to the pictures, shows him which activity is finished, prompts him to turn the picture of that activity over, and then points to the next activity. Sometimes Jeffrey will go over and look at the pictures on his own.
- ✓ Segmenting multiple-step directions and providing cues can help children understand the direction and thus increase the likelihood that they will follow the direction. When children do not follow directions, it may be because they do not understand the direction. Segmenting involves breaking a task down into smaller, more easily understood, parts. For example, rather than telling Jacob "Go wash your hands," Jacob's mother could walk him through the steps associated with the more general direction: "Let's get our hands wet. Now let's put soap on our hands" and so on. Cues are behaviors provided by caregivers or peers to help a child understand what is expected in a particular context. Cues can be verbal (e.g., "Turn on the water first"), pictorial (e.g., showing a picture of a child turning on the water), or nonverbal (e.g., demonstrating how to wash hands, pointing to the faucet when telling the child to turn on the water).
- ✓ Providing language models and labeling (e.g., single-word vocabulary and multiple-word combinations) is another strategy to increase children's communication skills and decrease the likelihood of challenging behavior. By modeling simple phrases and supporting children's use of more complex phrases, children can learn new communication skills, which can be applied in different contexts. For example, labeling tasks, activities, and objects, and

incorporating the labels into classroom activities, increase the likelihood that children will understand and be able to talk about things in their environment. Repetition across different contexts can increase the likelihood that children will use vocabulary appropriately (e.g., "Want more juice," "More book," "Need more music").

Ms. Mozie decided to try different ways to facilitate Robbie's expressive and receptive communication skills to help him engage in more appropriate behaviors. When Robbie wanted more cookies during snack time, she noticed that he caught her attention by pointing to the tray of cookies and pretending to eat a cookie. Ms. Mozie responded by giving the cookie to him. Later, Robbie pointed and whined while gazing at several different foods. When Ms. Mozie asked him what he wanted, Robbie did not have the words to say that he wanted the applesauce. However, when she provided Robbie with a choice of applesauce or carrots, he immediately pointed to the applesauce. Without hesitating, Ms. Mozie gave Robbie some applesauce while modeling the word "applesauce." She saw that when given a choice, Robbie was calmer and did not get as frustrated during snack time.

However, Robbie still had difficulty understanding directions and making the transitions between activities at school. Based on the speech-language pathologist's advice, Ms. Mozie decided that a portable picture schedule for Robbie would help him move more easily from activity to activity. She created 4-by-6-inch photographs of each activity and placed them in a pocket photo album. When one activity, such as choice time, was coming to an end, Ms. Mozie showed Robbie a picture of a set of toys and flipped it to the next activity, story time. This helped Robbie know that choice time was ending in 3 minutes and to begin cleaning up and moving to the rug for story time. Ms. Mozie used this strategy for subsequent transitions throughout the day. Over time, as the picture schedule was used more consistently, Robbie's anticipation and acceptance of the end of activities increased, and his challenging behaviors during transitions decreased.

Who Are the Children Who Have Participated in These Interventions?

The children who have participated in these interventions include children who exhibit a range of disabilities from language delays to autism. Many of the participants were of European American descent and from middle-class backgrounds. Some studies included participants from African American, Latino, and Asian backgrounds. Recent studies have included preschoolers who were at-risk and from low-income families. Further research is necessary to determine what other strategies could be useful in helping children communicate their wants and needs, keeping in mind the cultural backgrounds and beliefs of the families.



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Where Do I Find More Information on Implementing This Practice?

for additional resources.

Information on helping children express their wants and needs is available in the following articles:

- Howard, S., Shaughnessy, A., Sanger, D., & Hux, K. (1998). Lets talk! Facilitating language in early elementary classrooms. *Young Children*, 53(3), 34-39.
- Kaiser, A. P., & Delaney, E. M. (2001). Responsive conversations: Creating opportunities for naturalistic language teaching (pp. 13-23). In M. Ostrosky & S. Sandall (Eds.), *Young exceptional children monograph series no. 3: Teaching strategies: What to do to support young children's development*. Longmont, CO: Sopris West.
- McCathren, R. B., & Watson, A. L. (2001). Facilitating the development of intentional communication (pp. 25-35). In M. Ostrosky & S. Sandall (Eds.), *Young exceptional children monograph series no. 3: Teaching strategies: What to do to support young children's development*. Longmont, CO: Sopris West.
- Ostrosky, M. M., & Kaiser, A. P. (1991). Preschool classroom environments that promote communication. *Teaching Exceptional Children*, 23(4), 7-10.
- Utah State University. (1998). *Strategies for preschool intervention in everyday settings (SPIES) curriculum*. Logan, UT: Author.

What is the Scientific Basis for the Practice?

For those wishing to explore this topic further, the following articles have documented the scientific basis on helping children express their wants and needs:

- Del'Homme, M. A., Sinclair, E., & Kasari, C. (1994). Preschool children with behavioral problems: Observation in instructional and free play contexts. *Behavioral Disorders*, 19(3), 221-232.
- Harden, B. J., Winslow, M. B., Kendziora, K. T., Shahinfar, A., Rubin, K. H., Fox, N. A., Crowley, M. J., & Zahn-Waxler, C. (2000). Externalizing problems in Head Start children: An ecological exploration. *Early Education and Development*, 11(3), 357-385.
- Hart, B. (1985). Naturalistic language techniques. In S. F. Warren & A. K. Rogers-Warren (Eds.), *Teaching functional language: Generalization and maintenance of language skills* (pp. 63-88). Baltimore: Brookes.
- Kaiser, A. P., Cai, X., Hancock, T. B., & Foster, E. M. (2002). Teacher-reported behavior problems and language delays in boys and girls enrolled in Head Start. *Behavioral Disorders*, 28(1), 23-39.
- Prizant, B. M., Wetherby, A. M., & Roberts, J. E. (2000). Communication problems. In C. H. Zeanah, Jr. (Ed.), *Handbook of infant mental health* (2nd ed., pp. 3-19). New York: Guilford Press.
- Qi, C. H., & Kaiser, A. P. (2004). Problem behaviors of low-income children with language delays: An observation study. *Journal of Speech, Language, and Hearing Research*, 47(3), 595-609.

This What Works Brief was developed by the Center on the Social and Emotional Foundations for Early Learning. Contributors to this Brief were M. M. Ostrosky, M. L. Hemmeter, J. Murry, and G. Cheatham.

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Helping Children Express Their Wants and Needs

WHAT WORKS BRIEFS



August 2005

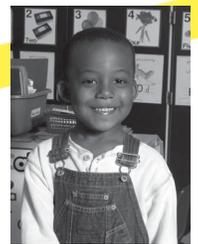
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Expressing Warmth and Affection to Children

S. Twardosz



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While eating breakfast with her 3- and 4-year-olds, Mrs. Foster’s glance falls on Marcus who has been absent for several days. When he briefly looks up from his plate, she smiles and says, “I’m happy to see you this morning, Marcus. We missed you.”

Mr. Cavendish is reading to three toddlers in the book area. Catherine leans against his shoulder and strokes his hair while peering at the book. Julio and Carl are snuggled at his sides. He reads in an animated tone, occasionally asking or answering questions in a gentle, soothing tone of voice.

Amanda needs a diaper change, but she is engrossed with a ball. Mr. Hareem approaches and gently strokes her head while saying, “Hey, Amanda, my girl, I need to change your diaper.” As Amanda looks up at him, Mr. Hareem smiles, takes the ball, gently picks her up, and begins to sing.

Ms. Morton is coping with a rainy day by organizing a strenuous activity for her 4- and 5-year-olds under the covered outdoor area. She and her assistant, Mrs. Kim, cheer, clap, laugh, and shout out encouragement as groups of children move across the area by first walking backwards, then running, hopping, and jumping. Soon, the children who have finished first begin to do the same for their peers.

What Are Warmth and Affection?

Warmth and affection are aspects of positive teacher-child relationships that are critical for children’s well-being in early education settings (see *What Works Brief #12: Building Positive Teacher-Child Relationships*). Expressions of warmth and affection occur as teachers and other caregivers protect, guide, communicate, teach, and play with children. They help set the tone for all of these interactions, can reassure and comfort children, and may help them to relax. Teachers who are warm and affectionate show children that they like them, enjoy being with them, are having fun with them, and are pleased with their efforts and accomplishments. Expressions of warmth and affection are most effective in the context of an ongoing positive relationship between a child and a caregiver; they also contribute to making that relationship positive and authentic.

Sometimes people think about affection primarily in terms of holding, hugging, or stroking. While touch is a very important means of communicating positive feelings to children, warmth and affection also can be conveyed through facial expressions,

laughter, and voice tone; words of endearment (e.g., “little one,” “I missed you”), encouragement, and playful teasing; and a wide range of physical contact such as a brief tickle, leaning against, a quick pat on the head, or a special handshake. Smiling is a particularly effective way of conveying positive emotion from earliest infancy and may help children appreciate other forms of

Teachers’ styles of expressing affection are certainly influenced by their backgrounds, beliefs, and feelings, but classroom organization and the relationships teachers have with one another help determine whether or not they actually will express affection to the children.

teacher affection. When interacting with older preschool children, teachers typically smile and use affectionate words more than touch. The fact that there are so many different ways of expressing affection means that teachers can adjust their styles to the needs, preferences, family and cultural background,

temperament, and disabilities of each child, as well as communicating warmth in ways that are comfortable for them.

Setting the Stage for Expressing Warmth and Affection

Teachers' styles of expressing affection are certainly influenced by their backgrounds, beliefs, and feelings, but classroom organization and the relationships teachers have with one another help determine whether or not they actually will express affection to the children. Warmth and affection do not occur in a vacuum; they occur in the context of daily routines, activities, and interactions. If these are organized to promote children's appropriate engagement with their surroundings, teachers will be more likely to interact warmly; if they are not, teachers may spend much of their time responding to children's inappropriate behavior with directions, reprimands, threats, and yelling. As a result, there will be very few opportunities for the type of relaxed interaction that sets the stage for the expression of affection (see *What Works Brief #3: Helping Children Understand Routines and Classroom Schedules*, and *What Works Brief #4: Helping Children Make Transitions between Activities*).

Accept the fact that you will not feel as affectionate toward some children as you do toward others. You will probably be able to express warmth in some way to each of them because there are so many ways of doing so.

In the examples provided at the beginning of this Brief, teachers' expressions of warmth and affection and children's responses occur within activities, such as a meal, reading, or an outdoor game. These are organized to give teachers a chance to respond to individual children in a personal way. Mrs. Foster, for example, is sitting at the table eating breakfast rather than serving plates and moving around wiping up spills, making it more likely that she will think about warmly welcoming Marcus back to class. Mr. Cavendish is in the book area where he and the toddlers need only reach out for another book to prolong the affectionate warmth of this storybook reading session. If his colleague is taking responsibility for the other children in the classroom, then he will not need to break away from the affectionate physical contact before the children are ready.

Why Are Warmth and Affection Important?

Ample research supports the roles that affection and warmth play in children's social and emotional development. Warmth and affection contribute to secure relationships between children and adults; provide models of positive, gentle behavior; are linked with children's ability to interact positively with peers; and can help integrate withdrawn children and children with disabilities into the peer group. Moreover, children reciprocate teachers' affection with smiles, hugs, and kind words of their own that can make teachers feel appreciated and enjoyed too.

More Tips for Teachers

Expressing warmth and affection to children in group care requires sensitivity and thoughtfulness. Below are some additional points to consider when addressing this issue:

- ✓ Be sensitive to children's reactions to your warmth and affection. Some children may prefer brief rather than lengthy physical contact; may have a disability or history of abuse that influences their reactions to touch, facial expressions, or voice tone; or may come from a cultural background that guides emotional expressiveness in ways that may be unfamiliar to you. When in doubt, communicate with parents about such issues.
- ✓ Accept the fact that you will not feel as affectionate toward some children as you do toward others. You will probably be able to express warmth in some way to each of them because there are so many ways of doing so. It is important to remember that children who are the most challenging are often those who need warmth and affection the most.
- ✓ Think about whether your positive feelings and dedication to teaching are being communicated effectively to children. If you are a reserved person, you may want to experiment with being a little more expressive and watch the effect on the children. For example, you could choose a book that describes people being warm and affectionate and then act out the parts with the children.
- ✓ Avoid being overly warm and affectionate while providing guidance and discipline after a child has been disruptive or aggressive. You do not want to encourage children to misbehave in order to experience individualized, warm attention.
- ✓ Recognize that frequent expressions of negative emotion toward children make it more difficult to feel and express warmth and affection. Avoid criticism, nagging, yelling, and reprimands as much as possible, and try to be tolerant of children's spontaneity. If the overwhelming majority of the comments you make to children are positive, you will be contributing to the emotional warmth of the classroom.

Who Are the Children Who Have Participated in Research on Warmth and Affection?

Typically developing children and children with disabilities have participated in research on the expression of warmth and affection. The research was conducted in both community and university early education settings and in homes, and included children of European American, African American, and Asian American heritage. The importance of individualizing this strategy to meet the unique needs of the children in a teacher's care cannot be overstated.



We welcome your feedback on this What Works Brief. Please go to the CSEFEL Web site (<http://csefel.uiuc.edu>) or call us at (217) 333-4123 to offer suggestions.



Where Do I Find More Information on Implementing This Practice?

See the CSEFEL Web site (<http://csefel.uiuc.edu>) for additional resources.

Carlson, F. M. (2005). Significance of touch in young children's lives. *Young Children*, 60(4), 79-85.

Shreve, C., Twardosz, S., & Weddle, K. (1983). Development and evaluation of procedures to encourage teacher affectionate behavior in day care centers. *Behavior Therapy*, 14(5), 706-713.

Twardosz, S., Botkin, D., Cunningham, J. L., Weddle, K., Sollie, D., & Shreve, C. (1987). Expression of affection in day care. *Child Study Journal*, 17(2), 133-151.



What Is the Scientific Basis for This Practice?

For those wishing to explore this topic further, the following researchers have studied warmth and affection in early childhood classrooms and homes:

Kontos, S., & Wilcox-Herzog, A. (1997). Teachers' interactions with children: Why are they so important? *Young Children*, 52(2), 4-12.

McEvoy, M. A., Nordquist, V. M., Twardosz, S., Heckaman, K. A., Wehby, J. H., & Denny, R. K. (1988). Promoting autistic children's peer interaction in an integrated early childhood setting using affection activities. *Journal of Applied Behavior Analysis*, 21(2), 193-200.

Mill, D., & Romano-White, D. (1999). Correlates of affectionate and angry behavior in child care educators of preschool-aged children. *Early Childhood Research Quarterly*, 14(2), 155-178.

Nordquist, V. M., Twardosz, S., & McEvoy, M. A. (1991). Effects of environmental reorganization in classrooms for children with autism. *Journal of Early Intervention*, 15(2), 135-152.

Tracy, R. L., & Ainsworth, M. D. S. (1981). Maternal affectionate behavior and infant-mother attachment patterns. *Child Development*, 52(4), 1341-1343.

Zanolli, K. M., Saudargas, R. A., & Twardosz, S. (1997). The development of toddlers' responses to affectionate teacher behavior. *Early Childhood Research Quarterly*, 12(1), 99-116.

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Expressing Warmth and Affection to Children

WHAT WORKS BRIEFS

August 2005



WWC EVIDENCE REVIEW PROTOCOL FOR EARLY CHILDHOOD EDUCATION INTERVENTIONS

Topic Area Focus

The What Works Clearinghouse (WWC) review in this topic area focuses on early childhood education (ECE) interventions (curricula and practices, as defined below) designed for use in center-based settings with three- to five-year-old children who are not yet in kindergarten or children who are in preschool, with a primary focus on cognitive and language competencies associated with school readiness (language, literacy, math, and cognition). Interventions and studies with a primary focus on socio-emotional development and approaches to learning may be addressed in a subsequent phase of the review.

The review includes a focus on center-based early childhood education interventions designed to improve the school readiness skills of preschool children with developmental delays or diagnosed disabilities. These may be inclusive interventions used with all children or targeted interventions designed specifically for children with developmental delays or diagnosed disabilities.

A systematic review of evidence in this topic area addresses the following questions:

- Which early childhood education interventions improve preschool children’s cognitive and language competences associated with school readiness (cognition, language, literacy, and math skills)?
- Which early childhood education interventions improve cognitive and language competencies associated with school readiness among children with developmental delays or diagnosed disabilities?
- Does the effectiveness of early childhood education interventions differ by type of outcome?
- What types of early childhood education interventions are particularly effective for which children?

Key Definitions

Early Childhood Education Intervention. The WWC ECE review examines evidence of the effectiveness of center-based early childhood education interventions (curricula and practices) designed to improve children’s school readiness, focusing on those interventions that have as their primary goal improving preschool children’s cognitive and language competencies.

- **Curriculum:** A curriculum is a set of activities, materials, and/or guidance for working with children in classrooms that has a clearly identified name, includes a thorough write-up/description, and can be replicated by others based on written guidance, staff training,

or technical assistance. Some ECE curricula are comprehensive, and some ECE curricula are supplemental.

- **Practice:** A practice is a named approach to promoting children's development that staff implements in interacting with children and materials in their classroom. The named approach must be clearly described and commonly understood in the field and literature.

Programs defined by funding streams or service delivery models are not considered interventions for this review. For example, Head Start programs and state-supported pre-kindergarten programs are not considered interventions, although specific curricula or practices used by these programs may be eligible for the review.

ECE policies that influence the conditions under which curricula and practices are implemented are not considered interventions for the review at this time. For instance, mandates concerning teacher qualifications or student:teacher ratios are not considered interventions; however, to the extent possible, the impact of these policies on the impact of an intervention are reviewed.

Short-term learning trials, which are relatively brief studies of systematic variations in parameters of how children are exposed to materials or assessed, are not considered interventions for the review at this time. Short-term learning trials often involve systematic manipulation of stimulus presentation, feedback type, or material content. Outcomes are generally measured immediately following the manipulation, which may last one or only a few sessions, often in a within-subjects experimental design.

Variations in implementation characteristics of early childhood education programs. The different forms of early childhood interventions are distinguished along with any associated differences in their outcomes. Within the category of curricula, the review distinguishes those that are comprehensive and those that are supplemental.

- **Comprehensive curriculum:** A comprehensive curriculum is a curriculum that is intended to be the primary instructional tool used to guide high quality instruction in pre-kindergarten classrooms and designed to meet children's learning needs in multiple areas. It provides activities, materials, and guidance for an entire preschool day (at least 3-1/2 hours). A comprehensive curriculum generally includes a scope and sequence.
- **Supplemental curriculum:** A supplemental curriculum is a curriculum that is intended for flexible use as part of differentiated instruction or as an intervention that meets children's learning needs in specific areas (phonological awareness, oral language, literacy, math, etc.). Supplemental curricula are not intended to provide activities, materials, and guidance for an entire preschool day (supplemental curricula are used for about 20 - 60 minutes).

Within the category of practices, the review distinguishes general and targeted practices.

- **General Practice:** A general practice is a named approach to promoting children's development that the program staff implements in interacting with children and materials in their classroom. The named approach must be clearly described and commonly understood in the field and literature.

- **Targeted Practice:** A targeted practice is a named approach to promoting the development of children with specific developmental delays or diagnosed disabilities that the program staff implements in interacting with these children and materials in their classroom. The named approach must be clearly described and commonly understood in the field and literature.

School Readiness. Within the field of early childhood education, children's school readiness is typically understood to encompass:

- Cognitive and language competencies associated with school readiness (language, literacy, math, cognition)
- Socio-emotional development and approaches to learning (social relationships, self-concept, self-control, cooperation, reasoning and problem solving, engagement and persistence, initiative and curiosity)
- Physical well-being and motor development (e.g., physical health, gross and fine motor skills)

Preschool curricula and practices may have a focus on cognitive and language competencies, socio-emotional development, or both. Preschool curricula also may address explicitly the issues of physical health and motor development. The initial focus of this review is on curricula and practices that have cognitive and language competencies as their primary focus. A subsequent focus of the review may be on curricula and practices that have socio-emotional development as their primary focus. Curricula and practices with a dual focus (i.e., both cognitive and language competencies and socio-emotional development as determined by a scope and sequence or other explicit statement of focus) are reviewed with other interventions that have a focus on cognitive and language development if the primary content of the materials focuses on cognitive and language outcomes. Similarly, dual-focus curricula and practices are reviewed with other interventions that have a primary focus on socio-emotional development if the primary content of the materials focuses on socio-emotional outcomes. Curricula or practices that have a primary focus on physical health and motor development, although important, are not included in this review.

Preschoolers. Preschoolers are three- to five-year-old children who have not yet entered kindergarten or children who are in preschool.

Preschoolers with Disabilities. Preschoolers with disabilities are three- to five-year-old children who have not yet entered kindergarten or children who are in preschool who are eligible for special education and related services under Part B of the Individuals with Disabilities Education Act (IDEA). Eligible children are those with diagnosed disabilities and developmental delays who need special education and related services.

GENERAL INCLUSION CRITERIA

Populations to be Included

The early childhood education review includes interventions for three- to five-year-old children who are not yet in kindergarten and who are attending center-based preschool programs. The children must attend a center-based preschool or child-care program in the U.S. or its territories or tribal entities, or in a country that is sufficiently similar to the U.S. that the study could be replicated in the U.S. (e.g., English is the societal language). To be included, the children must speak English or be non-native speakers of English who are English Language Learners.

Subpopulations of interest include children in different age groups (3- to 4-years and 4- to 5-years), English Language Learners, children from different racial/ethnic groups, children from lower socioeconomic status (SES) families, and children with developmental delays or diagnosed disabilities.

Types of Interventions to be Included

The interventions to be included are determined after an exhaustive search of the published and unpublished literature by the ECE Evidence Report Team as well as a review of the nominations submitted to the WWC. The intervention should have enhancing cognitive and language competencies associated with school readiness as a primary goal, but it may have other goals. It does not necessarily have to be referred to as a school readiness program. All reviewed curricula and practices must be able to be disseminated (i.e., can be implemented by those other than the developers of the approach). To allow attribution of effects to practices, which may vary to some extent from implementation to implementation, the ECE team prioritizes practices for which there are at least two studies that meet WWC evidence standards, either with or without reservations.

Two broad types of interventions to be included are:

1. **Curricula.** Examples of early childhood education curricula include:

- A comprehensive curriculum that fosters cognitive, language, social, physical, and emotional development of three- and four-year-old children through a daily structure of thematic activities
- A supplemental curriculum that features systematic, focused instruction in oral language, phonological and alphabetical awareness, and early reading concepts for three- and four-year-old children and includes a teacher's guide and materials needed for the instruction
- A comprehensive curriculum that consists of a set of guiding principles and practices that adults follow as they work with and care for three- and four-year-old children. These principles are intended as an "open framework" that teams of adults are free to adapt to the special needs and conditions of their group, their setting, and their community.

2. **Practices.** Examples of early childhood education practices include:

- Dialogic reading, a general practice that increases stimulation of children’s language skills through interactive picture-book reading
- Time delay, a technique to increase language and facilitate generalization in children with mental retardation

Types of Research Studies to be Included

This review includes empirical studies published in English dated 1985 or later that focus on the effect of center-based early childhood education interventions on children’s school readiness outcomes.¹ The studies include children attending preschools and child-care centers in the U.S. or its territories or tribal entities, or in a similar country. The focus of the outcome measures needs to be the children, not the teachers, and at least one of the outcome measures needs to focus on a cognitive or language competency associated with school readiness and demonstrate sufficient reliability or face validity.

The review focuses on well-conducted randomized controlled trials (RCTs) and well-controlled quasi-experimental designs (QEDs), including matched groups and regression discontinuity design (RDD) evaluations. This focus is reflected in the collection, review, and reporting of the research. At this time, the WWC has not developed standards for reviewing or reporting on single-case design studies. Consequently, studies with a single-case design are not currently included in this review.

The WWC ECE review includes some studies that compare an intervention to a no-treatment or business as usual comparison group (e.g., typical preschool curriculum) and some studies that compare two variations of the same intervention (e.g., shared reading with a picture/vocabulary focus versus shared reading with a print/alphabet knowledge focus). In the latter case, the study does not allow the isolation of the effect of the particular intervention (e.g., the impact of shared reading). However, in all cases where a contrast of this type provides useful information it will be included in the intervention report because we believe that practitioners may find information about variations of an intervention useful to their classroom practices. In these cases, the study will be excluded from the overall rating of effectiveness and improvement indices, but the study findings will be described in the body of the report and the findings will be included in the technical appendices.

In most cases where there is a no-treatment comparison group included in the study, it is not an entirely accurate label because in early childhood center-based settings, all children participate in other activities. The impact of any particular intervention is dependent on the comparison condition. In ECE, there are a number of different and appropriate comparisons that could be made to isolate the effects of any particular intervention. The ECE review includes in its overall

¹ A main task for the WWC is to answer the question of intervention effectiveness. To this end, the WWC may use the data provided in studies differently than intended by the study author.

rating of effectiveness for any intervention the comparison that enables the best isolation of the effects of the intervention. In some cases, this means that the additive effects of a particular component of an intervention (e.g., adult interaction with shared book reading) will be examined in relation to the intervention in absence of that additive component (e.g., shared book reading).

SPECIFIC TOPIC PARAMETERS

The following parameters specify which studies are considered for analyses and which aspects of those studies are coded for the review.

1. The characteristics necessary to define interventions that reflect commonly shared and/or theoretically derived characteristics.

Theoretical and Philosophical Basis

- Primary goal is to enhance cognitive and language competencies associated with the school readiness of preschool children.

Implementation

- Implemented in a center-based setting (child-care center, school-based preschool, Head Start, or other center-based preschool setting). The program may include other components (e.g., parent training, education) but only those interventions that are implemented primarily in the center-based setting and evaluated as a distinct program component are included in the review.
- The intervention must be implemented in 1985 or after.² This time frame was established because we needed to set parameters defining a realistic scope of work for the ECE review. Identification of rigorous evaluations of interventions implemented in the last 20 years is the highest priority because they test versions of interventions that are most likely to be available to practitioners today and were tested under conditions more likely to be similar to those existing today.

² If sufficient time and resources remain after we have completed our review of research on interventions implemented post 1985, the ECE team will consider reviewing older research on curricula that are still in widespread use. Widespread use will be established using evidence from surveys such as the Head Start Family and Child Experiences Survey (see for example, http://www.acf.hhs.gov/programs/opre/hs/faces/reports/faces00_4thprogress/faces00_title.html) and other available information on current curriculum sales and use.

2. Interventions must be able to be disseminated. For an intervention to meet this criterion, it must be branded, or the following characteristics of an intervention must be documented in the study so that the intervention can be reproduced with fidelity with different participants, in other settings, at other times:

- The target population
- Characteristics of the center-based settings in which the intervention is implemented, including the qualifications and training of the center staff implementing the intervention
- Characteristics of the intervention, including activities to change or maintain the center environment that are part of the intervention, the appropriate use of support materials and prescribed classroom structures, and specific pedagogical strategies or activities
- Duration and intensity of the intervention

Branded interventions are particularly conducive to being reproduced with fidelity. A branded intervention is characterized by any of the following criteria:

- Has an external developer that provides technical assistance or sells/distributes the intervention
- Is packaged or otherwise available for distribution/use beyond a single site with sufficient documentation to allow the program or practice to be implemented by individuals other than the developers (e.g., has a manual, curriculum guide, or other sufficiently detailed instructions for implementation)
- Is trademarked or copyrighted

3. Primary classes of outcomes include cognitive development, language competencies, literacy, and math competencies, and secondary classes of outcomes include socio-emotional development and approaches to learning.

To be included in the review, a study must include at least one cognitive, language, literacy, or math outcome that is intentionally targeted by the intervention and measured via direct assessment. A study may also include other outcomes related to school readiness, such as socio-emotional outcomes or approaches to learning.

4. Evidence sufficient for an outcome measure to demonstrate each type of reliability. (Screener Characteristic: to pass the screening for full coding, a study must include at least one relevant measure that demonstrates marginally acceptable or acceptable reliability according to the criteria below OR that shows evidence of face validity.)

As part of the coding process, the reliability of each outcome measure will be determined to be acceptable, marginally acceptable, or unacceptable according to the reliability measures and thresholds described below:

Type of Reliability	Minimum to be considered acceptable	Minimum to be considered marginally acceptable
Internal consistency	.70	.60
Temporal stability/test-retest reliability*	.60	.40
Inter-rater reliability		
% agreement	.80	.50
Correlation	.70	.50
Kappa	.70	.50

*Standards for temporal stability are difficult to set without knowing the construct (and its theoretical stability) and the test interval. Coders will be asked to record the test interval along with the test-retest reliability and the PIs will review the appropriateness of the above criteria in instances where test-retest reliability falls below these thresholds.

If a study includes only measures that are marginally acceptable (no measures that are acceptable according to the above thresholds), then that will be indicated in the intervention report's discussion of the evidence base.

5. The interval of time in which studies should have been conducted to be appropriate for the Evidence Report.

Studies need to have been conducted within the past 20 years (i.e., with a publication date of 1985 or later). This is the default time interval for all WWC reviews. This timeframe adequately represents the current status of the field as well as allows for a manageable project scope.

6. The necessary characteristics that define the target population.

- Children must be between the ages of three and five years and not yet enrolled in kindergarten or the children must be in preschool.
- In cases where the authors provide aggregated data for both preschool and kindergarten children and disaggregated data are unavailable, the ECE team will review the study as long as the majority of the children are in preschool (i.e., 60% or more)³
- Children reside and attend a preschool or child-care center within the United States (including U.S. Territories and Tribal Entities) or in a sufficiently similar country that the study can reasonably be considered replicable in the U.S. (e.g., English is the societal language).

³ There are at least two reasons for this parameter: (a) there is little evidence that there is a clear demarcation of predictive relations or impact in the transition from preschool to kindergarten; and, (b) it is unlikely that the ECE team would include an intervention on which another WWC team is reporting.

7. The important characteristics of participants that might be related to the intervention's effect that must be equated if a study does not employ random assignment or RDD.

In QED comparison studies, groups of children being compared must be drawn from the same population of children. Consequently, groups must be roughly equivalent with regard to the pretest of the outcome measure or its proxy (e.g., groups differ on the pretest by less than 1/2 a standard deviation or the difference is not significant in an adequately powered test). The ECE Evidence Report Team will also assess whether the groups are equivalent along the following dimensions:

- Age
- Gender
- Race/ethnicity
- Setting
- Prevalence of developmental delays and disabilities
- Family and community demographics (e.g., socioeconomic status, education, etc.)

Evidence that the groups in a QED comparison group study differ substantially on these dimensions can result in the failure of a study because substantial differences suggest that the groups represent distinct populations. Evidence of a 25% or greater difference between groups in gender, race/ethnicity, prevalence of developmental delay/disability, or SES as a status variable (i.e., children defined as from low versus middle SES families), or evidence that the groups come from distinctly different settings (e.g., Head Start versus fee-for-service preschool), or reported mean age differences between groups of more than 1/2 the sample standard deviation suggests that the groups represent different populations. Not all studies will report on all of these factors, however. A study that does not report all of these factors will not be failed. However, the onus for demonstrating initial equivalence of groups rests with the investigator. Sufficient reporting of these factors should be included (or obtained) to establish the initial equivalence of the groups.

8. The characteristics of participants that are important to document and to examine intervention effects for include:

- Age (3 to 4 and 4 to 5)
- Gender
- Socioeconomic status
- Race/ethnicity
- English language learner

- Presence of a delay or disability

9. The characteristics of settings that are important to document and to examine intervention effects for include:

- Location (urban, suburban, or rural)
- Center type (child care center, school-based prekindergarten, Head Start, other)
- Staff education, qualifications (e.g., certification, years of experience), and training

10. The appropriate interval for measuring the intervention's (i.e., curriculum's) effect relative to the end of the intervention.

The benefits of an early childhood education intervention are intended to be retained well past the end of the intervention. Thus, measures at the end of an intervention, as well as any time thereafter, are admissible. Measures occurring several months or years after the intervention may provide strong evidence for an intervention's effectiveness. The ECE team, however, prioritizes immediate posttest findings for developing intervention ratings and improvement indices because these findings are most prevalent in ECE studies, but the ECE team includes follow-up findings, when available and appropriate, in appendices to the report.

11. The WWC has established that severe overall attrition be defined as follows:

In individual RCTs and well-controlled QEDs, severe overall attrition is defined as greater than 20% loss. If overall attrition is less than or equal to 20%, we assume that the bias associated with it is minimal. If it is greater than 20%, the burden of proof shifts, and the study authors need to show that overall attrition did not bias the effect size estimate. A post-attrition demonstration of group equivalence on the pretest is required. "Post-attrition demonstration of group equivalence" is defined as either a well-powered (.80) test of equivalence that is nonsignificant or a standardized mean difference between groups of less than $d = .10$. In some early childhood populations, high levels of attrition are normative. Consequently, attrition higher than 20% will not invalidate a study. However, demonstration of post-attrition equivalence of groups on pretests will be assessed.

In cluster RCTs, attrition needs to be considered at two levels: the cluster and the individual child. Because attrition at the individual level may not change the cluster-level characteristics (except aggregated individual characteristics), the bar for severe overall attrition at the child level can be less stringent than it is for studies in which individual children are randomly assigned and where attrition introduces selection bias into the design. The ECE review team considers a combination of percent sampled and percent responding to determine if there is severe within-cluster overall attrition. If the remaining sample represents at least 60% of the initial cluster membership, attrition is not assumed to be severe (e.g., if a researcher samples 100% of the initial cluster, up to 40% attrition is acceptable at the within-cluster level).

12. The WWC has established that differential attrition from the intervention and control groups be defined as follows:

In individual RCTs, cluster RCTs, and well-controlled QEDs, differential attrition from the intervention and control groups is defined as being greater than 7% differential loss. If differential attrition is less than or equal to 7%, we assume that the bias associated with it is minimal. If it is greater than 7%, the burden of proof shifts, and the study authors need to show that differential attrition did not bias the effect size estimate. A post-attrition demonstration of group equivalence on the pretest is required. “Post-attrition demonstration of group equivalence” is defined as either a well-powered (.80) test of equivalence that is nonsignificant or a standardized mean difference between groups of less than $d = .10$.

13. The statistical properties of the data that are important to obtain an accurate estimate of an effect size.

- For most statistics (including d-indexes), normal distribution and homogeneous variances are important properties.
- For odds-ratios there are no required desirable properties except the minimum of 5 observations per cell.
- In the case where a misaligned analysis is reported (i.e., unit of analysis is not the same as the unit of assignment) and the author is not able to provide a corrected analysis, the effect sizes computed by the WWC will incorporate a statistical adjustment for clustering. The default intraclass correlation used for early childhood education achievement outcomes is 0.20. For an explanation about the clustering correction, see the [WWC Tutorial on Mismatch](#).

In the case where multiple comparisons are made (i.e., multiple outcome measures are assessed within an outcome domain in one study), the WWC accounts for this multiplicity by adjusting the author reported statistical significance of the effect using the Benjamini-Hochberg correction. See [Technical Details of WWC-Conducted Computations](#) for the formulas the WWC used to calculate statistical significance.

METHODOLOGY

Literature Search Strategies

The WWC Evidence Report Team employs comprehensive and systematic literature search strategies to identify the population of published and unpublished relevant studies. This section contains topic specific elements of the literature search (e.g., search terms, additional journals, and associations).

Key Word List

The key word list for ECE must be sufficiently comprehensive to capture the breadth of the topic. Unlike other WWC topics, ECE has a breadth of outcomes (i.e., language, literacy, cognition, and math) and interventions, many of which have synonyms that must be used in the searches to adequately capture all potentially relevant literature. The best way to capture the breadth of the topic is to include a comprehensive set of search terms.

- 1. Language.** The purpose of this set of key words is to identify ALL articles dealing with language, language abilities, language development, and language learning. These are all synonyms and related terms. They should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Child language	Language skills	Phonology
Dialect	Language typology	Pragmatics
Distinctive features (Language)	Lexical development	Psycholinguistics
Expressive language	Lexicology	Receptive language
Grammar	Listening comprehension	Semantics
Intonation	Metalinguistics	Semiotics
Language	Morphology	Speech
Language acquisition	Oral Language	Speech communication
Language development	Phonemic	Speech skills
Language fluency	Phonemic awareness	Syntax
Language impairments	Phonetic	Verbal communication
Language learning	Phonological awareness	Verbal development
Language processing	Phonological processing	Vocabulary
	Phonological sensitivity	

- 2. Cognition.** The purpose of this set is to identify ALL articles dealing with cognitive abilities (excluding language issues) including learning, perception, memory, and intellect. These are all synonyms and related terms. They should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Aptitude	Cognitive models
Attention	Cognitive processes
Attention control	Cognitive psychology
Attention span	Cognitive research
Auditory perception	Cognitive skills
Automatic processing	Cognitive strategies
Automaticity	Cognitive structures
Cognition	Cognitive style
Cognitive ability	Concept development
Cognitive behavior	Concept formation
Cognitive development	Conceptual change
Cognitive flexibility	Conceptual tempo
Cognitive functioning	Encoding
Cognitive load	Information processing

Intelligence	Recall
IQ	Recognition
Learning processes	Retention
Long-term memory	Schema
Memorization	Schema theory
Memory	Schemata
Metacognition	Short-term memory
Perception	Social cognition
Rapid naming	Visual perception

3. **Preschool.** The purpose of this is to identify any influences upon early literacy by any kind of schooling or care arrangement or instructional approach or program. These are all synonyms and related terms. They should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Childcare	Language experience approach
Child care	Prekindergarten
Child caregivers	Prekindergarten classes
Day care centers	Prekindergarten teachers
Day care effects	Preschool
Early childhood education	Preschool clinics
Early experience	Preschool curriculum
Early identification	Preschool experience
Early intervention	Preschool programs
Even Start	Preschool teachers
Head Start	Reciprocal teaching
Individualized reading	Special education
Initial teaching alphabet	Sustained silent reading

- 4. Word learning.** The purpose of this set is to identify all information about the learning of words and word parts in reading and writing. Anything dealing with decoding the printed word or encoding (spelling) is included here. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Alphabet	Phoneme grapheme correspondence
Alphabets	Phonemes
Basic vocabulary	Phonemic awareness
Consonants	Phonics
Context clues	Phonology
Decoding	Rhyming
Grapheme	Sight method
Invented spelling	Sight vocabulary
Letters (alphabet)	Spelling
Letter identification	Structural analysis
Letter knowledge	Syllables
Morphemes	Vowels
Morphophonemic	Word lists
Orthographic symbols	Word recognition
Pattern recognition	Word study skills

- 5. Fluency.** The purpose of this set of key words is to identify all information about the learning of fluency (speed, accuracy, expression) in reading. Anything dealing with fluency in oral and silent reading is included here. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Context clues	Oral reading
Eye voice span	Prosody
Fluency	Reading aloud to others
Intonation	Reading rate
Miscue analysis	Silent reading
Oral interpretation	

- 6. Reading Comprehension.** The purpose of this set of key words is to identify all information about the learning of fluency (speed, accuracy, expression) in reading. Anything dealing with fluency in oral and silent reading is included here. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Comprehension	Reader text relation
Content area reading	Schema theory
Critical reading	Story grammar
Reader response	Text structure

7. **Literacy.** This set of key words is designed to identify any articles that deal with reading and writing. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Language arts	Reading processes
Literacy	Reading programs
Beginning reading	Reading readiness
Content area reading	Reading research
Corrective reading	Reading skills
Critical reading	Reading strategies
Early reading	Reading writing relationship
Functional reading	Writing (composition)
Independent reading	Writing ability
Oral reading	Writing achievement
Recreational reading	Writing attitudes
Remedial reading	Writing contexts
Silent reading	Writing development
Story reading	Writing difficulties
Reading ability	Writing evaluation
Reading achievement	Writing improvement
Reading comprehension	Writing instruction
Decoding	Writing motivation
Reading diagnosis	Writing processes
Reading difficulties	Writing readiness
Reading failure	Writing research
Reading improvement	Writing skills
Reading instruction	Writing strategies
Reading motivation	

8. **Miscellaneous Literacy.** The purpose of this set of key words is to identify all information about reading and writing that is not included in the other sets (including writing and concepts of print). The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Concept of word	Print awareness	Writing development
Concepts about print	Reading habits	Writing difficulties
Concepts of print	Reading process	Writing evaluation
Conventions of print	Reading readiness	Writing improvement
Developmental delays	Reading strategies	Writing instruction
Directionality	School readiness	Writing motivation
Early literacy	Special needs students	Writing processes
Early writing	Story reading	Writing readiness
Emergent literacy	Writing (composition)	Writing research
Emergent writing skills	Writing ability	Writing skills
Environmental print	Writing achievement	Writing strategies
Name writing	Writing attitudes	
Prevention	Writing contexts	

- 9. Math.** This set of key words is designed to identify any articles that deal with math. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Algebra	Numbers
Arithmetic	Numeracy
Connections	Numerals
Correspondence	Operations
Counting	Patterning
Fractions	Patterns
Geometry	Problem solving
Grouping	Proof
Mathematical aptitude	Properties
Mathematical skills	Properties mathematics
Mathematical concepts	Reasoning
Mathematics	Remedial math
Mathematics achievement	Representation
Mathematics instruction	Seriation
Mathematics outcome	Shape
Mathematic* ability	Sorting
Measurement	Spatial ability
Number	Supplemental math

- 10. Age group.** This set of key words is designed to identify children by age. We want to find anything written on children from ages 3 to 5, excluding kindergarten. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Early childhood
Early experience
Pre-kindergarten children
Preschool children
Young children

11. Intervention/evaluation. This set of key words is designed to identify any articles that deal with evaluation studies, including randomized and quasi-experimental designs. The key words should be linked together with OR in a search—meaning that we will identify a set of all articles that focuses on any one of the following topics.

Between group designs	Impact evaluation
Control group	Instruction
Comparison group	Intervention
Curriculum	Matched groups
Early intervention	Posttesting
Education experiments	Posttests
Educational improvement	Pretesting
Educational program evaluation	Pretests
Evaluation	Program effectiveness
Experimental design	Program evaluation
Experimental groups	Program impacts
Experimental replication	Quasi-experimental design
Experimental subjects	Repeated measures
Experimentation	Regression discontinuity design
Group design	Treatment effectiveness evaluation
Impact analysis	Treatment group

A combination of Boolean terms such as AND and OR will be used with this keyword list. The content lists (1 through 11) will be linked with OR, and that will be linked with the target population and intervention lists with AND. The librarian at AIR will be consulted and the searches will be tailored according to each specific electronic database.

Proper Nouns (Specific programs)

Comprehensive Curricula

A Beka	Language for Learning
Bank Street Developmental Interaction Approach	Let's Begin with the Letter People Pre-K Core Program
Beyond Centers and Circle Time	Literacy Express
Bright Beginnings	Marazon system
Core Knowledge Preschool Sequence	Montessori Method
Core Knowledge Foundation	Opening the World of Learning
Creative Curriculum	Pebble Soup
Curiosity Corner (CC)	Primrose Schools
DLM Early Childhood Express	Read, Play, and Learn!
Doors to Discovery	Ready, Set, Leap!
FunShine Express: Fireflies/Sprouts	Reggio Emilia
Funsteps, Inc.	Saxon Early Learning
Growing Readers Early Literacy Curriculum (High Scope)	Scholastic Early Childhood Program curriculum
High Reach	School Readiness Express
High/Scope Curriculum	S.P.A.R.K.
Innovations Comprehensive Preschool Curriculum (Gryphon House Pub.)	We Can! Curriculum
	Wee Learn

Supplemental Curricula

Active Early Learning Kit for Pre-K by Steck-Vaughn	Journeys into Early Literacy (precursor to Destination Reading)
Active Learning	Kaplan Planning Guide to the Preschool Curriculum
Big Math for Little Kids	Ladders to Literacy: A Preschool Activity Book
Breakthrough to Literacy	LeapDesk Workstation
Building Early Literacy and Language Skills (BELLS)	Learningames – Abecedarian
Building Language for Literacy (BLL-Scholastic)	Links to Literacy Curriculum Kit
Compass Learning Odyssey Pre-K/K	Open Court Reading (OCR) Pre-K
Creative Curriculum (Literacy: The Creative Curriculum Approach)	Phonemic Awareness in Young Children: A Classroom Curriculum
Early Learning and Literacy Model (ELLM)	ReadingLine Kits
Fast ForWord Preschool	Rightstart/Numberworlds
Headsprout Reading Basics	ScienceStart!
High/Scope Preschool Key Experiences Series, Booklets and Videos (Set of 6)	Sounds Abound
Houghton Mifflin PreK	Stepping Stones to Literacy
	Waterford Early Reading Program Pre-K (WERP)

General Practices

Dialogic Reading/Interactive Shared Picture-Book Reading
Letter Knowledge Training
Phonological Awareness Training

Targeted (OSEP) Practices

Classwide peer tutoring	Self-initiated augmentative communication treatment
Conversation-based language intervention	Stimulus control procedure
Conversational-recasting	Syntax program
Explicit attention to articulation	Teaching phonological awareness
Functional communication training	Teaching rhyming
Graphics-based software tools	Teaching-script
Imitation-based language intervention	Teaching story grammar knowledge
Peer-mediated intervention	Text-based software tools
Peer training	Time delay
Pragmatic teaching	Verbal labeling responses
Redirects	Video discourse intervention
	Written text cueing

List of Journals to be Handsearched

1. Child Development
2. Developmental Psychology
3. Early Childhood Research Quarterly
4. Early Education and Development
5. Journal of Early Intervention
6. Journal of Educational Psychology
7. Journal of Experimental Child Psychology
8. Reading Research Quarterly
9. Topics in Early Childhood Special Education

Supplementary List of Organizations

1. National Association for the Education of Young Children (www.naeyc.org)
2. National Child Care Information Center (www.nccic.org)
3. National Early Childhood Technical Assistance Center (NECTAC) (www.nectac.org)
4. National Institute for Early Education Research (www.nieer.org)
5. Promising Practices Network operated by the Rand Corporation (www.promisingpractices.net)
6. Society for Research in Child Development (www.srcd.org)

Personal Contacts

The WWC ECE Evidence Report Team solicits studies directly from experts who work on early childhood education interventions. The Principal Investigators (PIs) identify these experts. We also contact experts using listservs dedicated to this topic and whose members are scholars working in this area.

Developers of programs identified as relevant to the topic are another source of contacts. The WWC Early Childhood Education Evidence Report Team solicits studies and any additional information about the program from the developers.

After the identification of studies to be reviewed, we contact the authors of these studies to request similar materials and to ask them to “snowball” the process to colleagues whom they recommend for their work in this area.

Child TRENDS RESEARCH BRIEF

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School Readiness: Helping Communities Get Children Ready for School and Schools Ready for Children

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Many communities across the country have set for themselves the ambitious goal of enhancing school readiness. But what does school readiness mean, and how do communities know whether they have achieved it? Child Trends developed this Research Brief and other tools to help communities invest wisely in school readiness initiatives. The brief begins by summarizing recommendations from the National Education Goals Panel for defining and assessing school readiness and then presents a framework for community investments based on an "ecological" view of child development. In other words, this framework not only considers factors related to the child, but also to the child's family, early childhood care and education, schools, neighborhood, and the larger society. This Research Brief updates one that Child Trends published in August 2000. It includes some new research findings, as well as new sections on two additional factors that affect school readiness: emergent literacy and the media.

What is School Readiness?

The bipartisan National Education Goals Panel (NEGP) was established in July 1990 to assess and report on state and national progress in meeting the eight National Education Goals set for the nation. The first of these goals stated "by the year 2000, all children in America will start school ready to learn."¹ In addressing this important goal, the NEGP identified three components of school readiness: (1) readiness in the child; (2) schools' readiness for children; and (3) family and community supports and services that contribute to children's readiness.

Readiness in children. The NEGP went beyond the conventional wisdom that limited school readiness in children to "narrowly constructed, academically-driven definitions of readiness."² Instead, based on the research on child development and early education, the Panel argued for a broader definition that included physical, social, and emotional well-being, as well as cognitive readiness.² Ongoing research continues to confirm the need to think about children's readiness for school as

multi-faceted.^{3, 4} The NEGP and subsequent research highlighted five dimensions of children's school readiness in its report *Reconsidering Children's Early Development and Learning: Toward Common Views and Vocabulary*:

- **Physical well-being and motor development.** This dimension covers such factors as health status, growth, and disabilities; physical abilities, such as gross and fine motor skills; and conditions before, at, and after birth, such as exposure to toxic substances.
- **Social and emotional development.** *Social development* refers to children's ability to interact with others. A positive adaptation to school requires such social skills as the ability to take turns and to cooperate. *Emotional development* includes such factors as children's perceptions of themselves and their abilities to both understand the feelings of other people and to interpret and express their own feelings.
- **Approaches to learning.** This dimension refers to the inclination to use skills,

knowledge, and capacities. Key components include enthusiasm, curiosity, and persistence on tasks, as well as temperament and cultural patterns and values.

- **Language development.** This dimension includes verbal language and emergent literacy. Verbal language includes listening, speaking, and vocabulary. Emergent literacy includes print awareness (e.g., assigning sounds to letter combinations), story sense (e.g., understanding that stories have a beginning, middle, and end) and the writing process (e.g., representing ideas through drawing, letter-like shapes, or letters).
- **Cognition and general knowledge.** This aspect includes knowledge about properties of particular objects and knowledge derived from looking across objects, events, or people for similarities, differences, and associations. It also includes knowledge about societal conventions, such as the assignment of particular letters to sounds, and knowledge about shapes, spatial relations, and number concepts.

Readiness of schools. The NEGP urged a close examination of “the readiness and capacity of the nation’s schools to receive young children.”² To aid this examination, the Panel proposed ten characteristics of “ready schools” – schools that are prepared to support the learning and development of young children. As stated in the Panel’s report, *Ready Schools*, such schools:

- **smooth the transition between home and school.** For example, they show sensitivity to cultural differences and reach out to parents and children to prepare children for entering school.
- **strive for continuity between early care and education programs and elementary schools.**
- **help children learn and make sense of their complex and exciting world.** For example, they utilize high-quality instruction and appropriate pacing, and demonstrate an understanding that learning occurs in the context of relationships.

- **are committed to the success of every child.** They are sensitive to the needs of individual children, including the effects of poverty, race, and disability.
- **are committed to the success of every teacher and every adult who interacts with children during the school day.** They help teachers develop their skills.
- **introduce or expand approaches that have been shown to raise achievement.** For example, they provide appropriate interventions to children who are falling behind, encourage parent involvement, and monitor different teaching approaches.
- **are learning organizations that alter practices and programs if they do not benefit children.**
- **serve children in communities.** They assure access to services and supports in the community.
- **take responsibility for results.** They use assessments to help teachers and parents plan for individual students, and to measure accountability to the community.
- **have strong leadership.** They are led by individuals who have a clear agenda, the authority to make decisions, and the resources to follow through on goals, visibility, and accessibility.

Family and community supports for children’s readiness. The NEGP identified three high-priority objectives that reflect important early supports for school readiness.⁵ As stated in the Panel’s *Special Early Childhood Report*:

- All children should have access to high-quality and developmentally appropriate preschool programs that help prepare them for school.
- Every parent in the United States will be a child’s first teacher and devote time each day to helping his or her preschool child learn. To accomplish this, parents should have access to the training and support they need.
- Children should receive the nutrition, physical activity, and health care they need to

arrive at school with healthy minds and bodies and to maintain mental alertness. To this end, the number of low-birthweight babies should be significantly reduced through enhanced prenatal care.

How Should School Readiness Be Measured?

Testing is a commonplace feature of American education. Used properly, tests and other assessment tools can help educators design and deliver the appropriate services for individual children and can facilitate communitywide or statewide tracking of children's status at kindergarten entry and later on. But tests and other assessment tools can also be misused.⁶ For example, they may result in labeling young children prematurely or inaccurately. They may also lead communities to focus just on the child's skills and overlook factors such as the readiness of schools and the availability of community supports.

Purposes of Assessment. Recognizing that tests and other assessment tools have both strengths and limitations, the NEGP identified four specific purposes for assessing the readiness of young children. As stated in the Panel's report, *Principles and Recommendations for Early Childhood Assessments*,⁷ the four purposes are:

- to identify what individual children already know and what they need more help with;
- to identify children who may need health or other special services (to determine whether follow-up testing is needed, *not* for diagnosis);
- to monitor trends and evaluate programs and services in order to inform aggregate decisions; and
- to assess academic achievement to hold individual students, teachers, and schools accountable for desired learning outcomes.

The Appropriate Uses of Assessment Tools. The Panel noted in particular that assessments should be used only for their intended purposes. Assessments designed to track achievement at the school district or community level need to differ from the tests used

to identify learning problems in a particular child. Assessments should also be age- and linguistically-appropriate, and ideally should be based on multiple sources of information (for example, obtaining parent and teacher informants as well as direct assessments of the child, where possible). Educators should also recognize that assessment results for individual children might not be reliable until children are in third grade or older.

A Framework for Community Investments in School Readiness

An extensive body of research on child development helps identify the factors that influence children's readiness for school, beginning with those closest to the child and moving outward to encompass the family, early care and education, schools, the neighborhood, and beyond that, the media. This *ecological view* of child development provides a useful framework for understanding where and how communities can intervene to support and promote healthy child development in general and school readiness in particular.

There are many programs across the country that may well be effective in promoting school readiness. In this brief, we limit our examples to several programs that have been evaluated rigorously or for which longitudinal data (with adequate consideration of background characteristics) are available.

Child Health. Children's early physical and mental health are important determinants of their later readiness for school and school success. Below we review findings on several important aspects of children's health.

- **Health in the early years** affects multiple dimensions of children's readiness for school. For example, low-birthweight, preterm infants are especially at risk for poor health and developmental outcomes. One effective intervention with infants in improving outcomes for these children is the Infant Health and Development Program (IHDP). It includes pediatric monitoring, referral and follow-ups, home visits, participation in high-quality early education, and support group meetings for par-

ents. Children participating in IHDP had gains in receptive language, cognitive development, visual-motor skills, and spatial skills at 36 months.⁸

- **Immunizations.** Immunizations protect children from vaccine-preventable diseases that can cause school absences and limit children's ability to achieve in school. Health providers, communities, and government agencies have tried to boost immunization rates by monitoring coverage rates and by providing child-specific prompts through reminder/recall systems or registry programs. Governmental purchase programs, such as Vaccines for Children, have also improved access to free or reduced-cost vaccines for some disadvantaged populations. Efforts are now under way to include recommended vaccines in all basic health care plans and to require private insurers to assess the immunization status of their enrollees.^{9, 10}
- **Nutrition.** Poor nutrition affects children's physical and intellectual development and may therefore hinder early school success.¹¹ Programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) and Food Stamps have been effective in increasing the nutritional intake of children.¹²
- **Unintentional Injury.** Unintentional injuries (such as car crashes, bicycle accidents, or fires) can result in long-term deficits in cognitive, behavioral, and motor functioning. Parent education, accompanied by additional supports such as child safety features in automobiles, is an effective way to reduce injuries.¹³ Community-wide or school-based education campaigns, reinforced by local legislation, may also be effective in preventing unintentional injury.
- **Childhood Emotional and Behavioral Problems.** Children whose mothers are depressed or have other mental health problems are themselves at greater risk of behavioral and emotional problems.¹⁴ Addressing parents' psychological problems may have benefits for children.

Family Factors. Research consistently shows the importance of the family environment in shaping children's early development. Strengthening families is another approach communities can take to enhance children's readiness for school.

- **Family Economic Risk.** Poverty is related to child outcomes in many ways. Compared to more affluent children, poor children have worse nutrition and more physical health problems on average, as well as lower average scores on measures of cognitive development (such as verbal ability, reading readiness, and problem solving).^{15, 16} Poverty is also associated with an increase in emotional and behavioral problems.¹⁷ Government and private organizations have experimented with a broad range of approaches to lift families out of poverty or to address its negative consequences. One set of approaches seeks to raise family incomes through employment, income supplements, or a combination of the two. Another set of approaches seeks to address problems associated with poverty through quality early child care, improved health care and nutrition, and parenting education and family support. Some experimental interventions for low-income families (including the New Hope Project and the Minnesota Family Investment Program) have provided wage supplements or earnings disregards to increase family income and have seen some positive effects on children's cognitive and school outcomes.^{18, 19}
- **Family Structure.** Research suggests that wanted children who are raised by both of their biological parents in a low-conflict family have more optimal outcomes in the early years of school.^{20, 21} Children who live with only one parent may benefit from the active involvement of their other parent, as long as that contact is positive, although the research in this area is limited and mixed. Financial support from non-resident parents has been found to promote children's school success.^{22, 23} Since non-resident fathers' involvement tends to decrease over time, it

may be worth exploring ways to keep men involved when children are young (in terms of spending time, having a positive relationship with their children, and providing financial support) at this critical point in their children's development.

- **The Home Environment.** Several different components of the home environment can affect child outcomes. For example, the way parents and children interact and the physical environment have been found to be related to children's cognitive, social, and emotional development.^{26, 27} Results across multiple studies seem to suggest that programs that focus on parenting practices and parent-child interactions can be effective, although the particular program model and its implementation are important.^{25, 28}

Early Childhood Care and Education.

Quality early childhood care and education programs can enhance cognitive, emotional, and social development, especially among low-income preschoolers.²⁹ Participation in such programs can lead to gains in cognitive test scores, better kindergarten achievement, lower rates of grade retention and special education placement, and higher rates of high school graduation.³⁰ Several studies have demonstrated the effectiveness of quality early childhood education programs, particularly for children in poverty. These include the High/Scope Perry Preschool Project³¹ and the Carolina Abecedarian Project.³² When community-based child care is of higher quality, this also has implications for children's academic achievement in the early years of elementary school.³³

Children benefit from environments that not only provide basic care, but that also promote the development of cognitive, language, social, and emotional skills, as well as health. Higher quality care settings, in addition to having better health and safety practices, are also more likely to have caregivers who offer care that is more stimulating and supportive. Structural features of care that facilitate such interactions include better staff-child ratios,

group size, the education and training of caregivers, and the compensation of caregivers.³⁴

School Transitional Practices. A smooth transition into kindergarten and formal schooling can help set young children on a course for academic achievement and success. For many five-year-olds, the transition from preschool or home to kindergarten can be stressful. Children face new expectations for independence and responsibility, as well as goals that are more formal than those in preschool or home settings. They also must learn to interact with teachers in ways that center on academic progress and must negotiate more formalized routines. They often face larger class sizes (or a group learning setting for the first time) as well.³⁵

Despite the fact that kindergarten entry is a critical period in children's lives, many schools lack specific guidelines to facilitate this transition; nor is there extensive research on best practices in this area. The broader literature on child development and early childhood education offers some general guidance for transition practices that may be promising:

- contact between kindergartens and preschools so that kindergarten teachers can plan for individual students and so that children know what to expect during the transition;³⁶
- contact between schools and homes, before and after entry into school, so that parents can be actively involved in their children's education;^{37, 38} and
- connections between schools and community resources so that children can receive services they need as soon as possible.

Emergent Literacy. Emergent literacy refers to the earliest signs of interest in and ability to read and write. Emergent literacy skills at kindergarten entry are a good predictor of children's reading abilities throughout their educational careers. Exposure to literacy activities early in life, both at home and in early childhood care and education programs, is essential to the development of these skills.³⁹

■ **Family Settings.** Children who live in homes where reading and writing are common and valued tend to experience more success with reading as they begin school.⁴⁰ Children also benefit when they have access to books and when their parents read to them.⁴¹ Low-income households often face challenges, financial and otherwise, in exposing their children to books and reading. A number of approaches have been taken to address this situation. One promising family-based intervention is to provide free children's books to low-income families through such programs as Reach Out and Read.⁴² Several other interventions have been tried, with varying degrees of success, including home visitation programs, such as the Home Instruction Program for Preschool Youngsters,⁴³ and family literacy programs, such as Even Start.⁴⁴ Research suggests that the effectiveness of such programs depends on such factors as the extent of families' participation.

■ **Early Childhood Care and Education Settings.** Access to books and printed material and being read to one-on-one or in small groups in early childhood care programs also help prepare preschoolers to become readers.⁴⁵ Research on interventions in early childhood care and education settings suggests that a combined approach of book reading in which children are highly engaged, along with some phonological training (for example, teaching children to detect rhymes and categorize sounds), is effective in improving emergent literacy skills.⁴⁶ Teaching children to recognize the sounds of letters has also been shown to help children learn to read.⁴⁵

Community/Neighborhood Factors. Neighborhood poverty is associated with less favorable child and youth outcomes, including school readiness and long-term academic attainment.⁴⁷ In contrast, residing in a neighborhood with less than 10 percent poverty appears to predict more favorable scores on tests of cognitive abilities, beyond the influence of family characteristics.⁴⁸ Having relatively more affluent neighbors appears to become more important as children

enter school. Young children's behavioral and physical outcomes also appear to be influenced by the level of unemployment in neighborhoods, beyond family characteristics.⁴⁹

These findings suggest that interventions focused on aiding low-income families to relocate to more affluent neighborhoods might improve children's chances of school success. In the Moving to Opportunity demonstration project sponsored by the U.S. Department of Housing and Urban Development, findings from the Baltimore site indicate that families given housing vouchers restricted to low poverty areas tend to move to suburbs or low poverty urban areas, and in doing so, increase their children's educational opportunities.⁵⁰ The alternative strategy of investing in new businesses and industry in areas with high unemployment, or providing job-training and/or job-placement assistance for unemployed individuals, should also be evaluated for its implications for children.

Beyond the Community: Media Effects. Most studies of the effects of media on children have focused on television, due in part to the relative newness of other types of media (e.g., video games and the Internet). Research indicates that educational programs such as *Sesame Street* can contribute to young children's letter and number recognition, vocabulary, and positive attitudes towards school, whereas cartoons and adult programs do not.⁵¹ Programs designed to improve the way children treat and regard others and to instill moral values, such as *Mr. Rogers' Neighborhood*, when combined with related, reinforcing activities, have the potential to increase preschoolers' positive social behavior.⁵² Research also finds that watching violent programs can contribute to children's aggressiveness. It is also associated with a decrease in fantasy play among preschoolers.⁵³

Parental behavior can be an important determining factor in how much and what young children watch on television. Parents and other adults can monitor the type and amount of television that young children watch and, by doing so, help shape children's viewing habits and preferences.⁵⁴ Adults also can mediate the effects of television

on children's social, creative, and aggressive behaviors by discussing and interpreting the behavior of characters on the shows children watch.⁵⁵

Implications for Community Action

As communities begin to initiate new or augment existing school readiness efforts, decision makers, funders, and other community leaders can combine knowledge of their particular community's needs, resources, and priorities with information available from research. One important resource is the work carried out by the National Education Goals Panel, building on child development and early education research. The NEGP's work on defining the components of school readiness and the uses and misuses of readiness assessments (and more recent research building on this work) is essential background information for any local initiative. The research base also provides a structure for thinking about where to target community initiatives to strengthen children's school readiness (the child, family, school, and/or neighborhood). Finally, research provides examples of effective initiatives that helped shape positive early school outcomes, as well as promising directions for further initiatives. Building on a research base of what works, communities will be able to put their resources to use more effectively in developing ready schools and ready students.

This *Research Brief* is based on the executive summary of a longer Child Trends' report, *Background for Community-Level Work on School Readiness: A Review of Definitions, Assessments, and Investment Strategies* (Halle, T., Zaslow, M., Zaff, J., Calkins, J., & Margie, N., 2000) prepared for the John S. and James L. Knight Foundation. The full report can be ordered through our Web site, www.childtrends.org, or by calling our Publications Office at (202) 362-5580. In addition, a supplementary "What Works" table summarizing findings from the research literature and their implications for targeted activities to improve school readiness is available for free on the Child Trends Web site.

For more information on the National Education Goals Panel, visit its Web site: www.negp.gov.

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