

Developing User-Friendly Evidence-Based Practices

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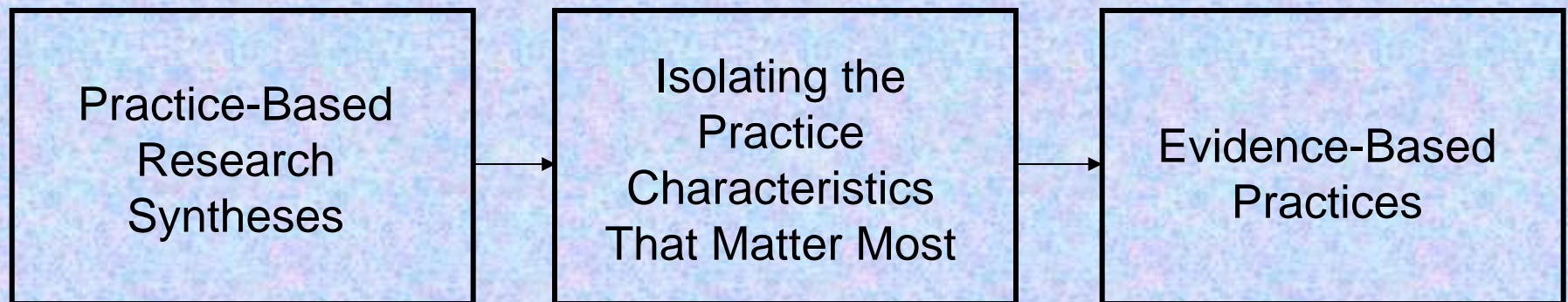
Purposes of the Presentation

- Describe an approach to conducting research syntheses that focus specifically on the implications of research evidence for improving early intervention and special education practices.
- Share lessons learned from conducting practice-based research syntheses and using the results for informing practice.
- Illustrate how research findings are used to develop different kinds of user-friendly evidence-based practices.

Development of the Research-to-Practice Procedures

The procedures for culling research findings were initially developed at the *Research and Training Center on Early Childhood Development* (www.researchtopractice.info) and subsequently at the *Tracking, Referral, and Assessment Center for Excellence* (www.tracecenter.info). The procedures are now being used in the *Center for Early Literacy Learning* (www.earlyliteracylearning.org) for identifying evidence-based early literacy learning practices. All three Centers were/are funded by the U.S. Department of Education, Office of Special Education Programs.

Linking Research to Practice



Disentangling and Unpacking What Matters Most

Any practice, intervention, or experience afforded a child is “made up” of different features or elements that can either have development-enhancing or development-impeding characteristics and consequences. “Sorting out” which development-enhancing elements and features are most important is the main goal of a practice-based research synthesis so that one can make informed decisions about what evidence-based practices should look like.

Process for Bridging the Research-to-Practice Gap

Bridging the research to practice gap is accomplished by identifying what matters most in terms of the characteristics of a practice related to study outcomes, and then using the ***characteristics to develop practice guides and recommendations that mirror the research evidence.***

Key Features of a Practice-Based Research Synthesis

Synthesis Process

- Selection of the intervention or practice to be examined
- Literature search for relevant studies
- Study selection for inclusion in synthesis
- Coding the selected studies
- Analysis and reanalysis (e.g., meta-analysis) of the study findings as appropriate

Procedure for Identifying Relevant Studies

- Review published and unpublished descriptions of the practice to identify key elements and features of the practice
- Search all relevant literature databases and the World Wide Web
- Hand search key journals, books, reference lists, etc.
- Consult experts
- Identify relevant grey (unpublished) literature
- Gather appropriate studies

Analysis Procedures

A variety of analysis procedures are used to synthesize the findings from a set of research studies, including meta-analysis when appropriate. No matter the analysis procedure, the goal is to identify a set of studies that produce the most positive and consistent pattern of results, and identify those features and elements that best explain the relationship(s) between a practice and its consequences.

Practice-Based Research Synthesis Reports

Formal research reports are prepared that describe the processes and findings from a research synthesis. These reports include technical descriptions of what was done and what was learned (synthesis findings).

RTC Practice-Based Research Syntheses

Bridges research syntheses involve systematic analysis and integration of small bodies of research that have investigated the same or similar practices leading to or producing the same or similar outcomes.

Social-Emotional Consequences of Response-Contingent Learning Opportunities

Carl J. Dunst

The relationship between children's response-contingent learning opportunities and social-emotional responding was examined in 29 studies of infants without developmental delays and 13 studies of infants and older children with or at risk for developmental delays or identified disabilities. The studies of the typically developing children included 862 infants, and the studies of children with or at risk for developmental delays included 155 participants. Findings indicate that response-contingent learning opportunities, where the relationship between a child's behavior and the consequences of this behavior is clearly detectable, produce the greatest amount of positive social responding and attenuate negative social responding. A return-to-baseline condition or a violation of a response-contingent expectancy was almost always associated with heightened negative social responding. Implications for practice are described in terms of the environmental arrangements most likely to optimize the positive social-emotional consequences of response-contingent learning opportunities.

Purpose

The purpose of this practice-based research synthesis is twofold: (1) to ascertain claims about the social-emotional concomitants of response-contingent learning among young children and (2) to determine if different kinds of response-contingent learning opportunities produce like or unlike effects in terms of the social-emotional consequences of learning in contingency between a behavior and its environmental effects. Concomitant behavior refers to behavior manifested concurrently with the occurrence of operant responding and is not the target of conditioning.

The conduct of the synthesis is guided by a framework that focuses on the degree to which variations in response-contingent learning are associated with variations in the social-emotional responding of infants and young children (Dunst, Trivette, & Cutspec, 2002). A practice-based research synthesis differs from more traditional meta-analyses by systematically examining and unpacking the characteristics of practices that are related to differences in their outcomes or consequences. This type of analysis focuses more on an understanding of the conditions under which a practice exerts an observable effect and not solely on a statistical relationship among variables. The reader is referred to Tarabulsy, Tessier, and Kappas (1996) for a theory-based review of contingency detection studies and the influence of contingency awareness on social-emotional development in infancy.

Background

The terms infant operant learning, response-contingent learning, contingency learning, instrumental learning, and operant conditioning among others have been used to describe arrangements where a child's production of a behavior that initiates or elicits a reinforcing or interesting environmental consequence increases the child's rate, frequency, or strength of responding. Watson (1972; Watson & Ramey, 1972) noted that response-contingent learning opportunities provide infants a context for learning that the production of an interesting stimulus (i.e., reinforcement) is contingent upon a response emitted by a child. Young children's emerging understanding of the relationship between their behavior and its consequences is called "contingency awareness" (Watson, 1966) or "contingency detection" (Rochat, 2001). The kinds of behaviors young children have been conditioned or "taught" to use to produce reinforcing effects include leg kicks, smiles,

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Isolating What Matters Most for
Explaining the Relationship Between a
Practice and Its Consequences

Process of Isolating What Matters Most

The process of isolating what matters most in terms of the relationship between a practice and its outcomes is a bit like detective work. You have to identify from all possible options the factors that best explain the relationship between a practice and its consequences. This is accomplished in multiple ways using different approaches to data coding and analysis.

Lessons Learned from Conducting Practice-Based Research Syntheses

- There generally is no direct correspondence between the findings from a research study and the implications for practice.
- Experimental conditions rarely exist in the day-to-day contexts of early intervention and special education.
- Mirroring research evidence is how research is used to inform practice.
- No matter how evidence-based a practice is, it will not likely be used if it lacks social validity.

Some Common Findings Across Many Research Syntheses

Effective Practices Across the Life Span Have Several Common Features

Practices are most effective when:

- Learners are active participants in the learning process.
- The experiences afforded by the practice have interest-based features and elements.
- The interventions are implemented in real-life contexts, and behavior targets are functional (situated learning).
- Both competence and confidence (e.g., self-efficacy beliefs) are strengthened as a result of a practice.

Developing User-Friendly Evidence-Based Practices

Using What Matters Most to Develop Evidence-Based Practices

Findings from a research synthesis are used to isolate the practice characteristics that are used to develop different kinds of evidence-based practice guides. Informed decisions are made about what practice characteristics have the highest probability of producing desired effects.

Packaging Synthesis Findings for Nonresearchers

Several formats that are used to help convey findings from the research synthesis include the following:

- Non-technical research summaries
- Brochures
- Bright Idea Pages
- Videos
- DVDs (Tool Kits)

Research Summaries

A Research Summary is a brief (1-2 page), user-friendly nontechnical restatement of the findings from the research synthesis. The intention is to answer the question “What is the bottom line?” of the research evidence for nonresearchers (parents and practitioners).

RTC Synthesis Summaries

- *Bottomlines* are one-to-two-page summaries of *Bridges* research reports written in jargon-free language for parents and practitioners.
- The purpose of these reports is to answer the question, “Is the practice supported by research?” based on the evidence synthesized in a RTC *Bridges* report.



Volume 1, Number 1

June 2003

Topic:

Why young children have positive social and emotional responses when they learn to do something that produces expected results

YES! *I* made it happen!

Picture a rainbow-colored mobile made with several dangling, bell-trimmed toys. Mom puts her baby into an infant seat placed within reach of the eye-catching toys. Baby contemplates the bright display. Before long, perhaps by happenstance, her hand strikes the mobile and she's rewarded with colorful movement and the pleasant, tinkling sound of bells. As baby learns that her action causes these pleasing sights and sounds, she also learns to repeat the action. Every time she touches the mobile, the outcome is the same, and she comes to expect this delightful reward.

An examination of research on learning opportunities that share these characteristics—learning opportunities tied to expected rewards—shows that they produce positive social and emotional responses in young children. That is to say, children react to such “response-contingent” learning opportunities with behaviors like smiling, cooing, attentiveness, and laughter—responses that clearly indicate enjoyment and mastery of this type of learning situation.

The available research also shows that when the expected reward fails to follow the child's action, or when the reward occurs in a haphazard way, the child is more likely to respond negatively, with ▶

Research tells us:

- Young children express happiness when their actions bring about interesting and expected responses.
- When the relationship between something a young child has learned to do and the rewarding response that follows it is very clear and can be counted on, positive social-emotional responses occur with greater frequency.



Babies eagerly move hands amid hanging toys, pat an inflated ball, and touch wind chimes, both expecting and smiling happily at the rewards of movement and/or sound caused by their actions.

Acting on the evidence:

Help young children learn about their capabilities by responding consistently to their efforts to get your attention and by arranging toys and materials so that they produce interesting effects when a child interacts with them.



Bottomlines

Research & Training Center on
Early Childhood Development



Research findings informing early childhood practices

Volume 4, Number 2

January 2006

Topic:

How children's interests
affect learning and behavior

Research tells us:

Available research findings offer a strong foundation for paying close attention to child interests and using them to select the most effective learning opportunities for children. Simply stated, children are likely to learn best and have other positive benefits when they have opportunities to be involved in interest-based learning opportunities.

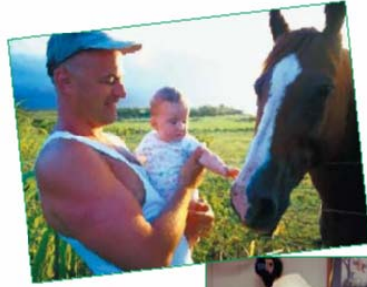
Participation in interest-based learning is filled with “positives” for young children

Parents and early childhood practitioners won't go wrong when they use children's interests as the basis for selecting learning opportunities. An analysis of 25 studies of young children (birth to six years of age) by Melinda Raab, Ph.D., and Carl J. Dunst, Ph.D., at the Research and Training Center on Early Childhood Development (RTC) showed that interest-based learning strengthens a young child's abilities and reduces negative behavior.

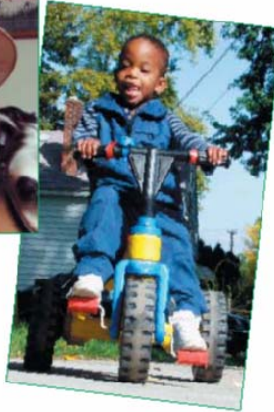
The RTC researchers examined studies that included 580 children with or at risk for disabilities or delays and 543 children without disabilities or delays. In the studies, child interests were used in three different ways: (1) As a means for involving children in preferred or desired activities, (2) as the basis for modifying activities for the purpose of increasing child engagement or production of adult-desired behavior, and (3) relating child interests in specific developmental areas to developmental functioning in those areas.

The synthesis findings indicated that interest-based learning is an important factor influencing child functioning. When child interests were the starting points for participation in learning opportunities, children were more engaged

Continued ►



All sorts of children's interests—like petting farm animals, playing cowboys, riding trikes, and water play—are the starting points for a world of everyday learning activities that are meaningful and fun!



Acting on the evidence:

Identify a child's personal interests (likes, preferences, etc.). Research shows parents can be the best sources for this information.

Give a child plenty of opportunities to do the things that interest him or her most.

Give a child chances to do things that are both personally interesting to him or her and part of a situation he or she finds interesting (attractive, captures the child's attention). This lets him or her express interests, practice doing things he or she can already do, and learn to do new things.

Take into account both the child's own interests and the likelihood that activities will attract and capture his or her attention when selecting learning opportunities.

in learning, showed more developmental progress, experienced improved behavioral capabilities, and achieved a better overall quality of life.

Other synthesis findings pointed to several key features of the practice. Having parents identify child interests was the assessment procedure most associated with child benefits. Both child personal interests and a combination of personal and situational interests were related to positive child outcomes. Effective approaches to interest-based learning included both embedding child interests in adult-selected activities and using child interests as the basis for involving children in everyday learning opportunities.



Interests ranging from books to duck ponds offer wonderful everyday learning opportunities for young children.

Brochure Content

A practice brochure is a colorful, tri-fold document that visually displays the practice and provides the following written information:

- What is the practice?
- How do you do it?
- What does it look like?
- How do you know it is working?

Play's the Thing!

The very best baby games and early learning opportunities include ones in which the child's behavior always results in an interesting social response



What fun! Every time I say "Buh, buh, buh," Daddy blows noisy bubbles!

What is the practice?

- ✚ Arrange baby's play area and play times so that his actions will cause the people he interacts with to do interesting things.
- ✚ For babies and young children with disabilities, be sure to allow plenty of time for them to **realize** that **their actions are causing an interesting response**.

How do we do it?

- Focus on one action that the child begins by himself or herself, or with a little assistance. (Examples might be a leg kick, a hand wave, a particular vocalization, etc.)
- Make sure an interesting social reward occurs immediately after the child's action. (For example, each leg kick might be followed by mommy singing a verse of a children's song.)
- WAIT for or encourage the child to repeat the action and immediately give the same reward each time.
- WAIT, and repeat the "game" as planned, as often as the child repeats the focus action.



Baby pays rapt attention, waiting to see how Mommy will respond to her action.

Take a look!

“Peek-A-Boo” (a well-loved game known by many other names, including “Peep-Eye”) is wonderful for helping baby understand that her actions can bring about rewarding social interactions. Let baby see you hide your face. Help her touch your hands or pull away a covering to reveal your face as you smile and exclaim: “Peek-a-boo!” Then gently move her hands to cover and reveal her own face and continue the game.



Is it working?

- ❏ Does baby repeat the behavior again and again?
- ❏ Does she recognize that there is a connection between *HER* action and the desirable response that follows?
- ❏ Does she express delight (smiling, cooing, laughing, clapping, etc.) when the response occurs?

Bright Idea Pages

Bright Idea Pages provide user-friendly information about:

- What is the evidence-based practice?
- Steps or procedures for how to implement the practice
- Examples of what the practice looks like in a variety of contexts (e.g., home, classrooms)



If It Fits

An idea-packed resource for evidence-based fun!

Success breeds happiness

When an infant or young child sees the connection between her action and the effect it has, she is more likely to smile, laugh, vocalize, and repeat the behavior.

*What **YOU** can do to help your child see that what she does can make something fun happen!*

It's important for moms, dads, and other caregivers to take a close look at the kinds of everyday learning opportunities available in a child's home and community environments to be sure the child is learning how her actions make things happen. Pay extra attention to activities your child can do to produce an interesting effect, no matter how small. A good technique is to ask yourself the following three questions:

1 Does my child have access to different toys that give immediate feedback?

Prepare a list of your child's toys. Identify those that provide some form of immediate feedback—a sight, sound, or tactile sensation, for example—that she finds pleasing. Make certain these types of toys are readily accessible to your child, and help her interact with each one until she becomes aware of the relationship between her action and the toy's response.

Some familiar playthings that provide immediate responses to a child's actions are mobiles or other hanging toys, various kinds of music-makers, pull toys, roly-polys, squeeze toys, and "busy-boxes" with an array of action-response pairs like small doors that a child slides open to reveal a colorful picture or a dial she can spin to hear an interesting sound.

2 Do the adults in my child's life respond immediately and appropriately to my child's behavior?

Quick and pleasing responses by a parent or other adult to a child's efforts to communicate, or to any other child behavior a parent or teacher might want to encourage, can be extremely rewarding. So, in setting up situations that allow your child's actions to make something pleasant happen, don't neglect the power of interactions with other people—social rewards.

An important consideration in using social rewards is making sure they're delivered quickly following the child's action. Desirable social rewards can include smiles, animated facial expressions, tummy tickles, singing, gentle blowing, brushing the skin with a feather or furry object, funny noises, touches, movements, lifting or rocking the child, hugs, kisses, and much more. Use your imagination!



No one's better than my Mom at giving me instant "feedback." Every time I reach up, she holds my hands and sings our funny song! I love it!



Making music on a washtub "drum" is great fun, and it's even more rewarding when Mom joins in.



Whenever I push the buttons on my new toy telephone, I can hear all sorts of interesting things—bells, whistles, and happy music! What fun!

3 Is it easy for my child to recognize that she is the one making something interesting happen?

Smiling, laughing, vocalizing, and excitement are more likely to happen when the relationship between what a child does and what happens is clear and easy for her to understand. Toys that produce a simple response are better than toys that make lots of different sounds and movements. Social rewards work best when they are soft and simple, and occur after a child produces a behavior directed toward you.



*Check out the Bright Ideas
on Page Two!*

Bright Ideas

Parents and caregivers can help strengthen the infant or young child's understanding of the relationship between his behavior and something fun or interesting that happens next by providing a combination of rewarding responses, some from people (social responses) and some from the toys or objects with which the child is interacting (nonsocial responses).

Lap 'em up!

Children's Lap Games. Whether they're traditional favorites like "Pat-a-cake" or "Peek-a-boo," or imaginative rhyming finger plays invented on the spur of the moment, lap games are delightful, socially rewarding ways for little ones to learn very clearly that their actions can make you do fun and interesting things.

A number of illustrated collections of finger plays and other lap games for young children can be found in your public library or book store. These will remind you of lap games from your own early years ("This Little Piggy," "There Was a Little Turtle," "Where Is Thumbkin?") and introduce you to brand new ones. They all share an emphasis on pleasant adult-child interaction, with predictable, rewarding responses for child participation.

Other playful, socially stimulating actions that help a child see the relationship between something he does and the welcome effect it has can include things like tummy tickles or blowing raspberries on the child's cheek.

Stop 'n' Go Vocal Play. For some spontaneous fun, begin singing a favorite song to your child. Pause suddenly, then guide your child's hand to pat your arm, touch your nose, or make some other gesture as a sign for you to begin singing again. Repeat until he realizes that his action is what makes you continue singing time after time.



Lap games charm young children with light-hearted, immediate rewards.

Early childhood practices recommended in this issue of *If It Fits* are based on research described in a practice-based synthesis by C. J. Dunst (2003). Social-emotional consequences of response-contingent learning opportunities. *Bridges*, 1(4). Read or download the complete synthesis and/or a user-friendly, illustrated, two-page research summary, *Bottomlines*, 1(4), by visiting our web site, www.researchtopractice.info.

Mobile Magic!

Even if you're "all thumbs" with crafts, making toys that please little ones with consistent, interesting, rewarding results is within your grasp—and it's fun! Mobiles can be wonderfully motivating playthings. They reward eager small hands with eye-catching movement and pleasing sounds. Even the slightest touch sets them swaying and noisemaking time after time—just the kinds of dependable responses that encourage and delight young children. Try these easy ideas:

Favorite Toys. Gather three or four of baby's favorite small toys—colorful rattles, teething toys, squeaky animals—and attach them with short lengths of narrow elastic tape tied or stitched to a wooden dowel or to the bottom of a sturdy coat hanger.

Kitchen Klackers. Your kitchen probably holds a treasure trove of mobile materials. Sort through your odds-and-ends drawers for sets of aluminum or plastic measuring spoons, abandoned key rings, and any other child-safe items that can be suspended from a long-handled wooden spoon or stout chopstick. Another nice and click-clacking noisy kitchen-theme mobile can be made entirely of old metal teaspoons dangling in a row.

Try hanging these mobiles over your child's crib, reclining seat, or high chair, within easy touching distance. Another good spot is from an overhead kitchen light fixture, where you can stop and let your child touch it as you carry him to and fro during the day.

Tempting Toys!

Certain kinds of toys and play materials make the cause-and-effect connection between a young child's interaction with them and what happens next especially clear to the child. The way the toy responds helps the child realize that he is the one who is making something interesting happen.

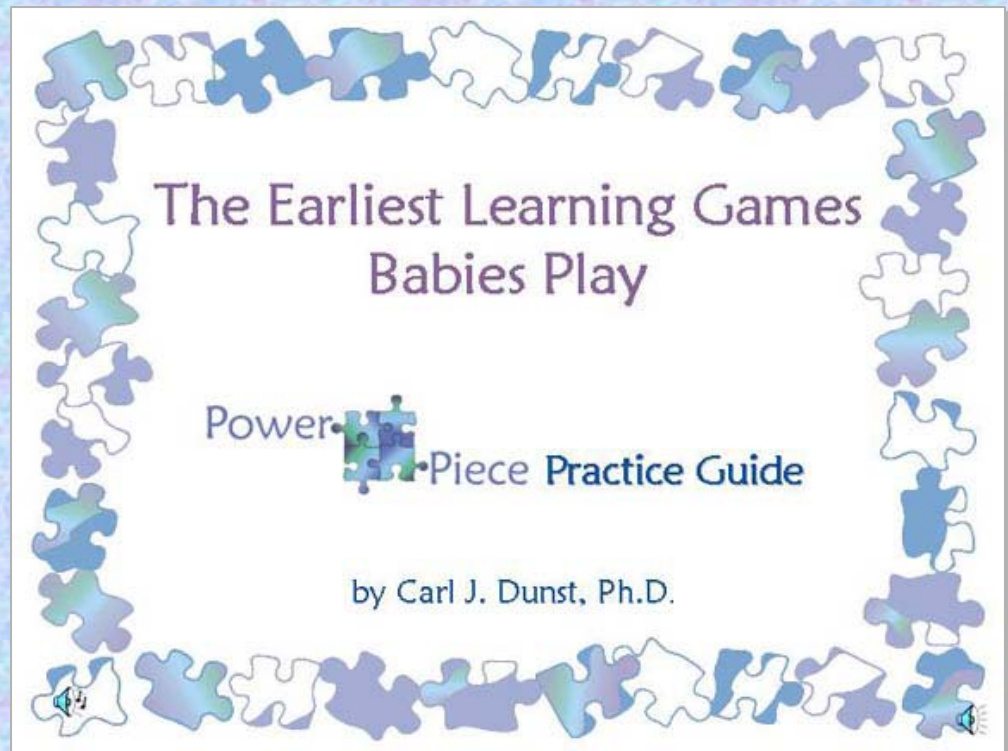
Such toys include squeeze toys, push toys, busy boxes, and many others that produce immediate, interesting responses when a child explores and plays with them.

Cupboard rhythm band. If you don't have access to commercial versions of such toys, or if your little one loses interest in them, use pie pans to bang together, upturned soup-kettle drums, and other household "rhythm instruments" to serve as handy playthings that allow a child to see how what he does can make something pleasing and fun (and noisy!) happen.

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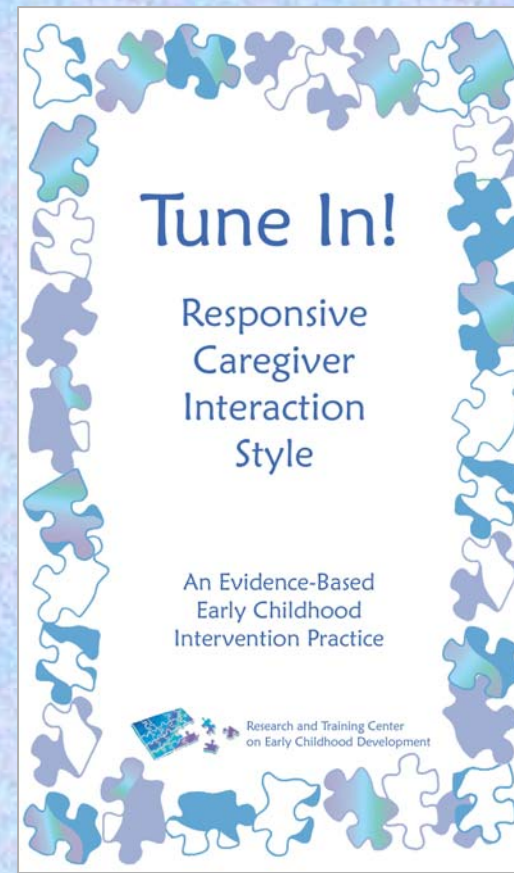
PowerPoint Practice Guides

PowerPoint practice guides are narrated presentations that illustrate and describe (in a slide-show format) how to implement an evidence-based practice.

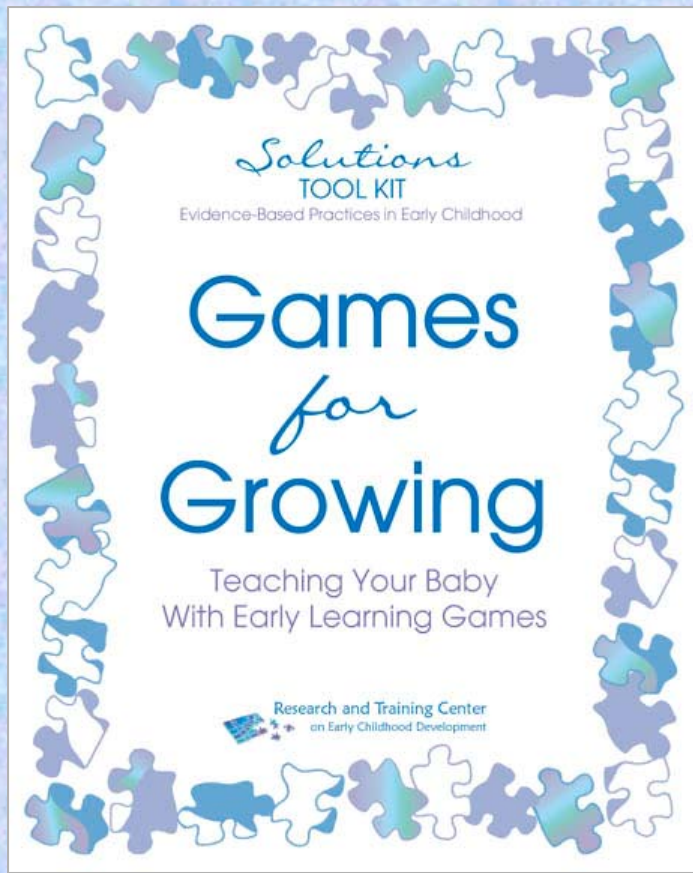


Video Practice Guides

Video Practice Guides both describe the characteristics of an evidence-based practice and illustrate what the practice looks like when implemented by parents or practitioners. Practices are described and illustrated in ways that make clear the characteristics of the practices that are most likely to produce desired effects.



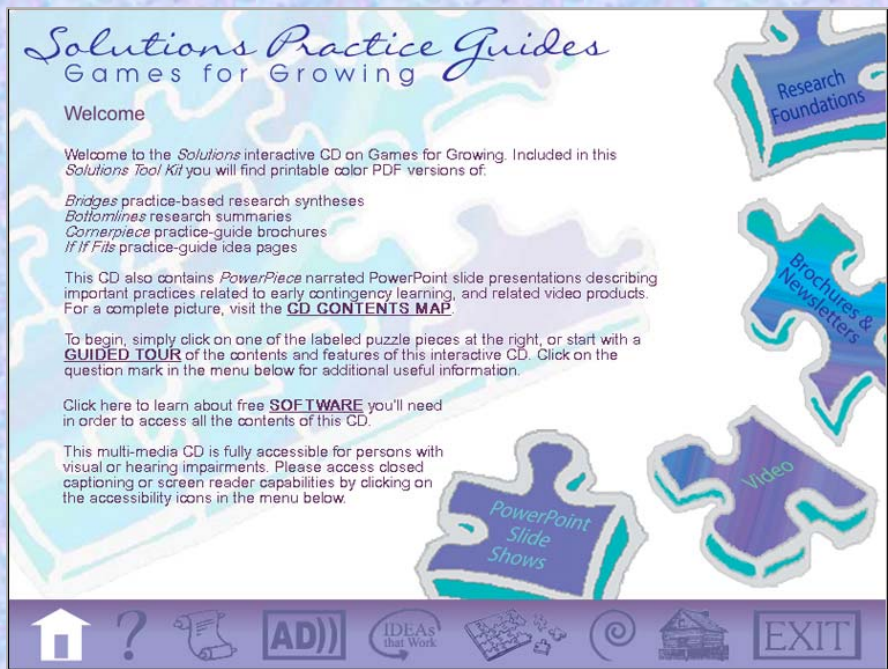
Evidence-Based Tool Kits



Tools Kits include collections of practice guides for implementing evidence-based practices.

- Brochures
- If It Fits Idea Pages
- PowerPoint Presentations
- Video Practice Guides
- Research Syntheses
- Research Summaries

Evidence-Based Interactive CD ROMs



Interactive CD ROMs include all of the print and multimedia material included in a Tool Kit. These interactive CD ROMs also contain the *Bridges* and *Bottomlines* research reports that were used to develop the tool kit practice guides. The content includes Closed Captioning and Screen Reader accessibility features.

For More Information

To learn more about the research and practice being conducted at the Orelena Hawks Puckett Institute, please visit www.puckett.org.