

Relationships Among Evidence-Based Practices, Practice Fidelity, and Practitioner Social Validity

Carl J. Dunst, Ph.D.
Orelena Hawks Puckett Institute
Asheville and Morganton, North Carolina, USA
www.puckett.org

Presentation made at a public lecture sponsored by Early Childhood Intervention Australia,
Victorian Chapter, Melbourne, March 25, 2014

Introduction

- No early childhood intervention practice, no matter its evidence base, is likely to be adopted and used if the methods and procedures used to support and promote practitioners' use of the evidence-based intervention practices are not themselves evidence-based.
- Unless early childhood intervention practitioners judge evidence-based practices as both important and acceptable, they are unlikely to adopt and use the practices.

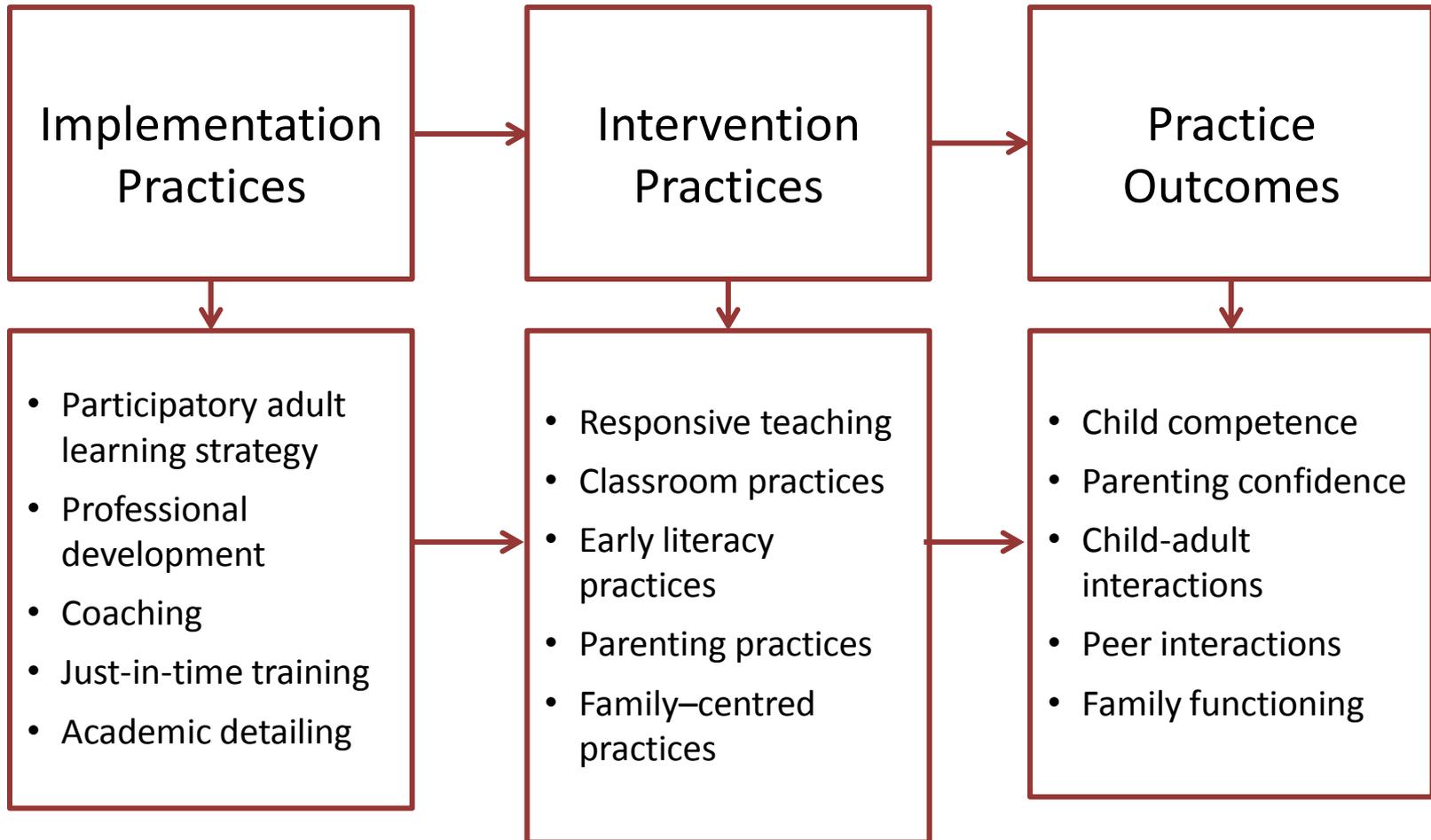
Differences Between Intervention and Implementation Practices

- ***Intervention practices*** include methods and strategies used by intervention agents (teachers, therapists, clinicians, parents, etc.) to effect changes or produce desired outcomes in a target population or group of recipients (e.g., infants and toddlers with disabilities)
- ***Implementation practices*** include methods and procedures used by implementation agents (trainers, coaches, instructors, supervisors, etc.) to promote interventionists' use of evidence-based intervention practices

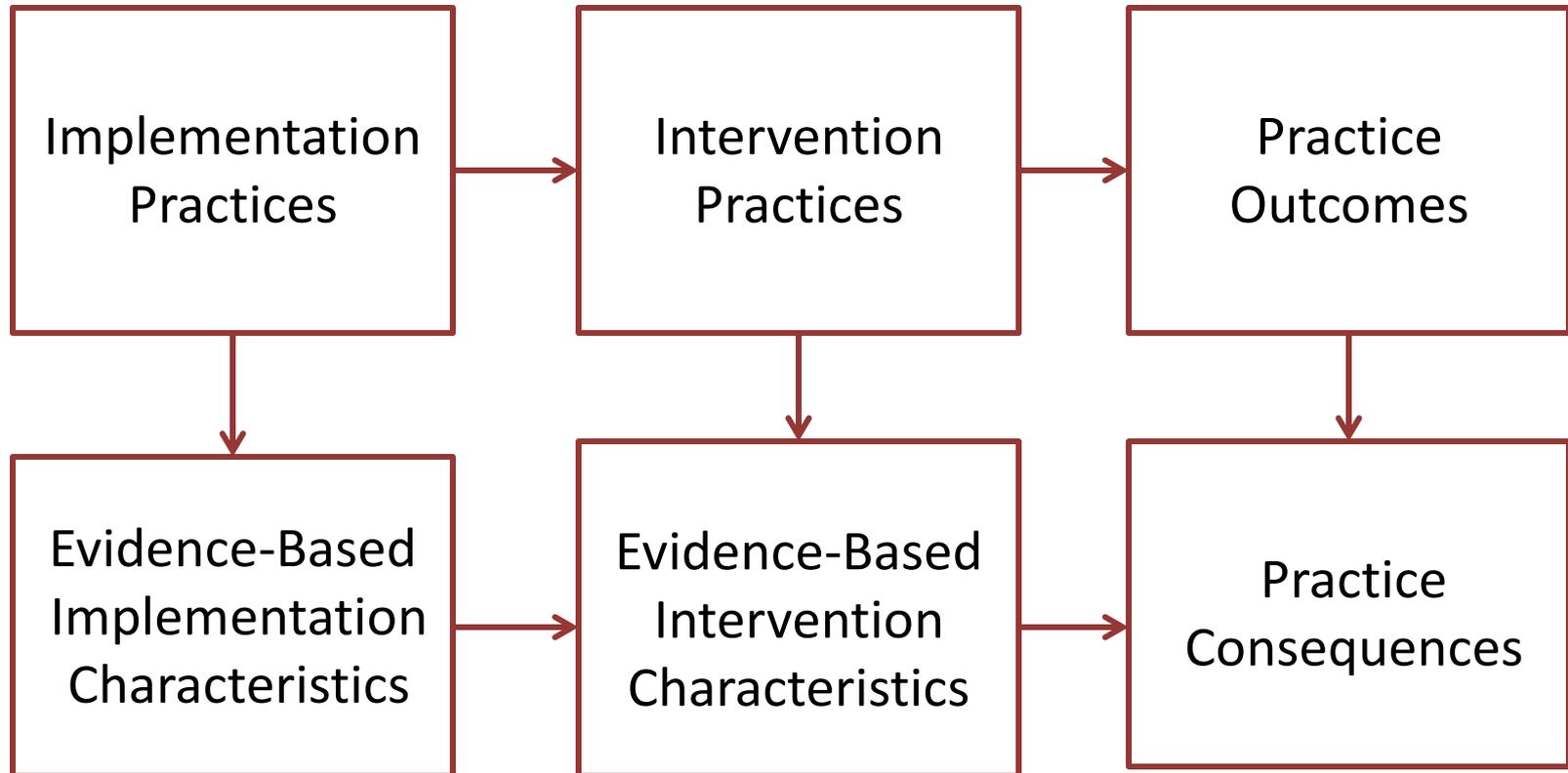
Relationship Between Implementation and Intervention Practices



Examples of the Two Types of Practices and Outcomes



Toward a Better Understanding of Evidence-Based Implementation and Intervention Practice Characteristics^a



^aActive ingredients, key features, behavioural kernels, etc.

A Typical Framework for Categorizing Research Studies^a

- Efficacy Studies
- Effectiveness Studies
- Efficiency Studies

^a Marley, J. (2000). Editorial. Efficacy, effectiveness, efficiency. *Australian Prescriber*, 23, 114-115.

Definition of Terms

Efficacy is the extent to which an (intervention) has the ability to bring about its intended effect under ideal conditions such as a randomized clinical trial (Marley, 2000, p. 114).

Effectiveness is the extent to which a treatment is effective if it works in real-life, non-ideal circumstances (Marley, 2000, p. 114).

Efficiency is the extent to which an intervention is worth its cost to individuals or society (Marley, 2000, p. 115).

A Practice-Based Approach to Conducting Research Syntheses

Practice-based syntheses focus on *unpacking*, *disentangling*, and *unbundling* an intervention to isolate the practice characteristics that “matter most” in terms of explaining the results found in different studies of the same or similar interventions.

Definition of Evidence-Based Practices

Evidence-based practices are defined as practices informed by research findings demonstrating a (statistical or functional) relationship between the characteristics and consequences of a planned or naturally occurring experience or opportunity where the nature of the relationship directly informs what a practitioner or parent can do to produce a desired outcome.

Example of an Evidence-Based Implementation Practice

Research Synthesis of Adult Learning Studies^a

- Research synthesis of studies of accelerated learning, coaching, guided design, and just-in-time training
- 58 randomized control design studies
- 2,095 experimental group participants and 2,213 control or comparison group participants
- Combination of studies in university and non-university settings
- Learner outcomes included learner knowledge, practices, skills, attitudes, and self-efficacy beliefs
- The influence of the adult learning methods on the learner outcomes was estimated by weighted Cohen's d effect sizes for the differences on the post test scores for the intervention vs. non-intervention group participants

^a Dunst, C.J., Trivette, C.M., & Hamby, D.W. (2010). Meta-analysis of the effectiveness of four adult learning methods and strategies. *International Journal of Continuing Education and Lifelong Learning*, 3(1), 91-112.

Characteristics Used to Code and Evaluate the Implementation Studies^a

Planning

Introduce Engage the learner in a preview of the material, knowledge, or practice that is the focus of instruction or training

Illustrate Demonstrate or illustrate the use or applicability of the material, knowledge, or practice for the learner

Application

Practice Engage the learner in the use of the material, knowledge, or practice

Evaluate Engage the learner in a process of evaluating the consequence or outcome of the application of the material, knowledge, or practice

Deep Understanding

Reflection Engage the learner in self-assessment of his or her acquisition of knowledge and skills as a basis for identifying “next steps” in the learning process

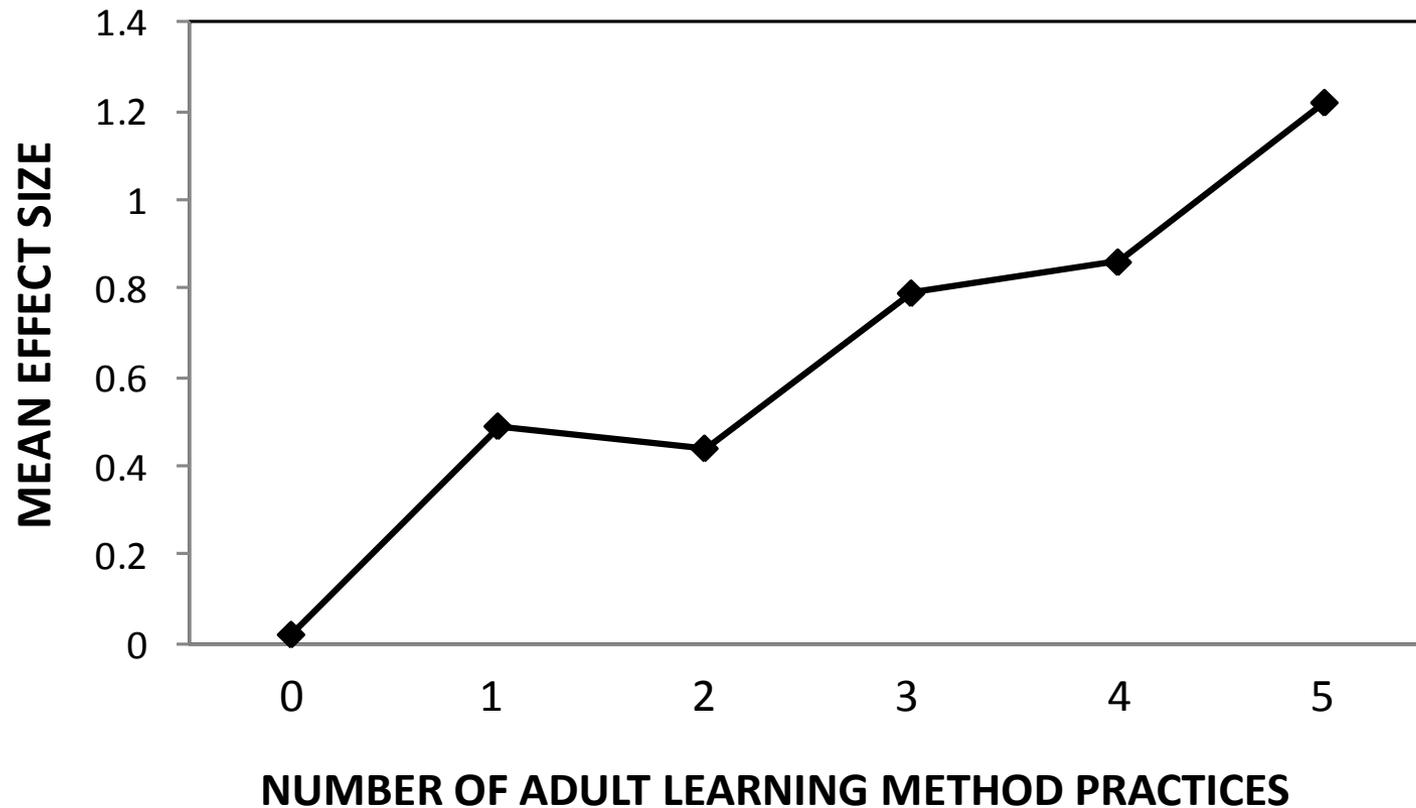
Mastery Engage the learner in a process of assessing his or her experience in the context of some conceptual or practical model or framework, or some external set of performance standards or criteria

^a Donovan, M. et al. (Eds.) (1999). *How people learn*. Washington, DC: National Academy Press.

Most Effective Adult Learning Method Practices

| Characteristic | Practice | Mean Cohen's <i>d</i> Effect Size |
|---------------------|--|--------------------------------------|
| <i>Introduction</i> | Out-of-class learner activities/self-instruction | 0.64 |
| | Classroom/workshop presentations | 0.63 |
| | Pre-class learner exercises | 0.54 |
| <i>Illustration</i> | Trainer role playing/simulations | 0.55 |
| | Learner informed input | 0.53 |
| <i>Practicing</i> | Real-life learner application | 0.94 |
| | Real-life learner application/role playing | 0.86 |
| <i>Evaluation</i> | Self assessment of strengths/weaknesses | 0.94 |
| <i>Reflection</i> | Identify performance-improvement goals | 1.27 |
| | Journaling/behavior suggestions | 0.82 |
| <i>Mastery</i> | Standards-based assessment | 0.86 |

Cumulative Effects of Different Combinations of the Most Effective Adult Learning Method Practices



Other Important Findings from the Meta-Analysis

- Training provided to a small number of learners (< 10) was much more effective than training provided to a larger number of learners
- Training provided on multiple occasions over a period of time (> 10 weeks) for more than 10 hours was more effective than one-time training
- Training provided in the context of real-life application in learners' work settings was more effective than “outside” (non-contextual) learning opportunities

Dunst, C. J., & Trivette, C. M. (2011). Disaggregating adult learning practices to identify what works best in explaining learner outcomes. In C. Prachalias (Ed.), *Proceedings of the Seventh International Conference on Education (Vol. 1)* (pp. 55-61). Athens, Greece: National and Kapodistrian University of Athens.

Dunst, C. J., & Trivette, C. M. (2012). Moderators of the effectiveness of adult learning method practices. *Journal of Social Sciences*, 8, 143-148. doi:10.3844/jssp.2012.143.148

Example of an Evidence-Based Intervention Practice

Research Synthesis of Caregiver Responsiveness Studies^a

- Research synthesis of mother-child, father-child, and caregiver-child interaction studies investigating different features of caregiver interactional behaviour
- 46 observational studies of more than 5,800 infants, toddlers, and preschoolers with and without disabilities or delays
- Outcomes included child nonverbal communication, expressive language, and receptive language
- Weighted correlations between the caregiver behaviour and child outcomes (converted to Cohen's d 's for illustrative purposes) were used as the size of effect between measures

Raab, M. et al. (2013). Influences of a responsive interactional style on young children's language acquisition. *Everyday Child Language Learning Reports*, Number 4. Available at http://www.cecll.org/download/ECLLReport_4_Responsive.pdf.

Characteristics Used to Code and Evaluate the Intervention Studies

| Type of Parenting Behaviour | Definition |
|------------------------------------|--|
| <i>Caregiver Sensitivity</i> | Caregiver sensitivity refers to how well the caregiver reads the child's cues. A caregiver high in sensitivity can differentiate among the child's cues and decrease the frustration of both the child and the caregiver. |
| <i>Following Child's Lead</i> | Caregiver follows the child's lead when he or she observes where the child's attention is focused, and shifts his or her attention to follow the child's shift in attention. |
| <i>Contingent Responsiveness</i> | Caregiver contingent responsiveness is characterized by the caregiver's response to the infant's ongoing behavior where the response functions as a reinforcement maintaining or sustaining infant behavior directed toward the adult. This includes caregiver utterances and behaviors directed to the child with the goal of having the child repeat the utterance or behavior. |
| <i>Caregiver-Child Mutuality</i> | Mutuality is characterized by caregiver efforts to maintain positive reciprocal interactions between the child and the caregiver. |
| <i>Support/Encouragement</i> | Caregiver support is characterized by caregiver attentiveness and availability, supportiveness of the infant's efforts, providing a secure base for the infant, and being involved with the infant by attending to both the infant and the task at which both parties are engaged. This can include offers of assistance, praise, or appreciation, and it can be verbal, gestural, or behavioral. |
| <i>Behavior Elaboration</i> | Caregiver elaboration is characterized by the caregiver using behaviours that help the child expand (modify/change) his or her ongoing behaviour. This includes such strategies as asking questions, repeating the child's preceding utterances or behaviours with new information added, providing substitutions, corrections, or adding syntactic information to the child's utterances that maintain the central meaning of the child's utterances. |

Effects of the Caregiver Behaviour on the Child Outcomes

| | Mean Cohen's <i>d</i> Effect Size |
|-------------------------------------|--------------------------------------|
| Interactional Behaviour | |
| Caregiver Sensitivity | .66 |
| Following the Child's Lead | .52 |
| Contingent Responsiveness | .56 |
| Caregiver-Child Mutuality | .62 |
| Caregiver Support and Encouragement | .56 |
| Caregiver Behaviour Elaboration | .64 |

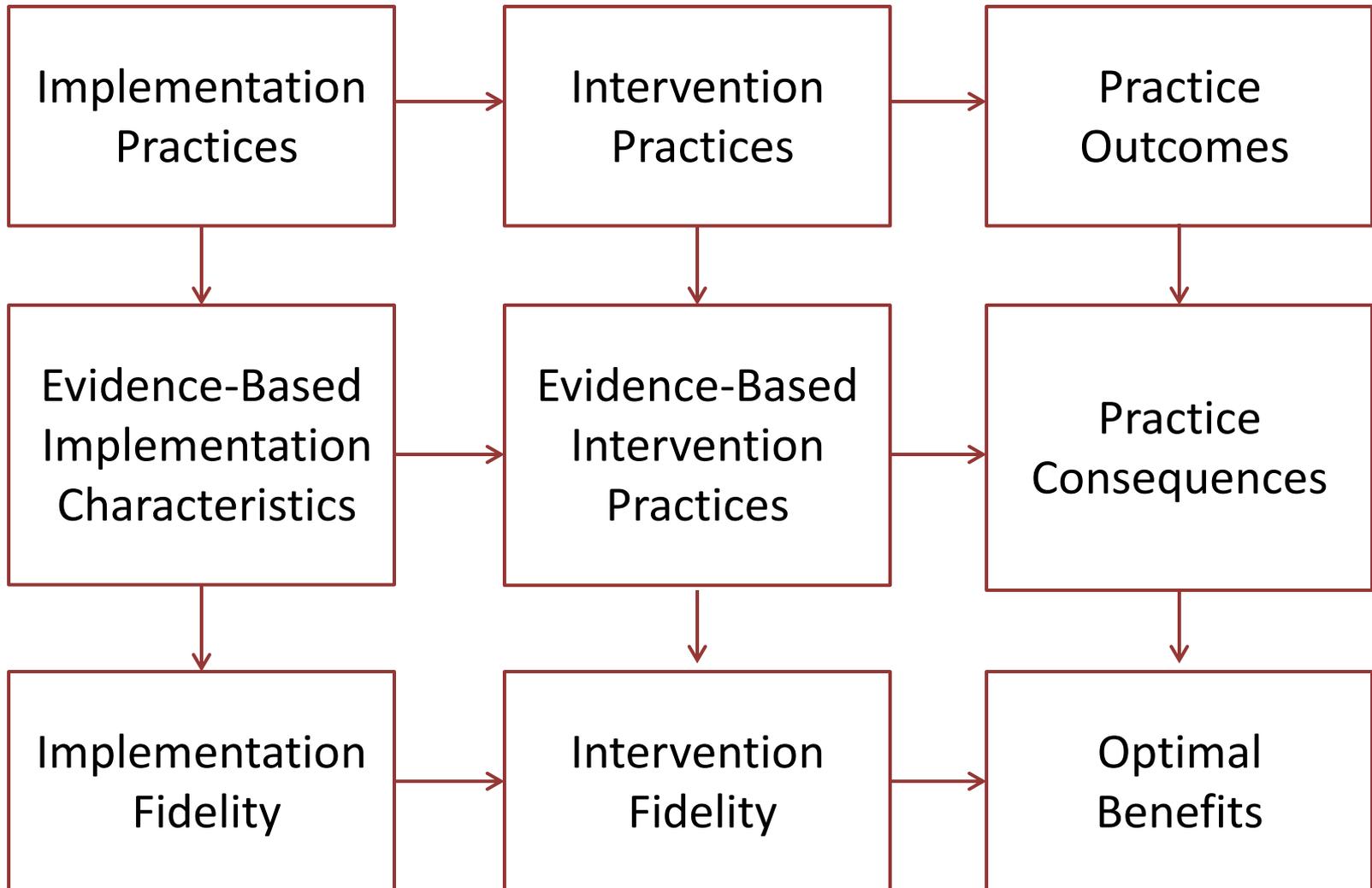
Other Findings from the Meta-Analysis

- The caregiver interactional styles were similarly related to all of the different child outcomes with effect sizes ranging from .50 to .68
- The caregiver interactional behaviours were related to the child outcomes regardless of child condition (typically developing, developmentally at risk, developmentally delayed, or identified disability)

Fidelity of Evidence-Based Implementation and Evidence-Based Intervention Practices

- ***Implementation fidelity*** refers to the degree to which coaching, inservice training, and other kinds of professional development are conducted and implemented in ways that promote adoption and use of evidence-based intervention practices
- ***Intervention fidelity*** refers to the degree to which evidence-based practices are adopted and used in an intended manner by practitioners or parents and have expected or hypothesized effects

Expanded Framework of Implementation and Intervention Practices



Hypothesized Relationships Among the Fidelity Measures

- *Variations in implementation fidelity should be related to variations in intervention fidelity.* Tests of the hypothesis include evaluation of the relative importance of the *quantity* and *quality* of implementation fidelity, and the interactions between the types and elements of fidelity.
- *Variations in intervention fidelity should be related to variations in practice outcomes.* Tests of the hypothesis include evaluation of the relative importance of the *quantity* and *quality* of intervention fidelity, and the interactions between the types and elements of fidelity.
- *Variations in intervention fidelity should mediate the relationship between implementation fidelity and practice outcomes.* Tests of the hypothesis include evaluation (to the extent possible) of the complex relationships between the *quantity* and *quality* of implementation and intervention fidelity and the outcomes of evidence-based practices.

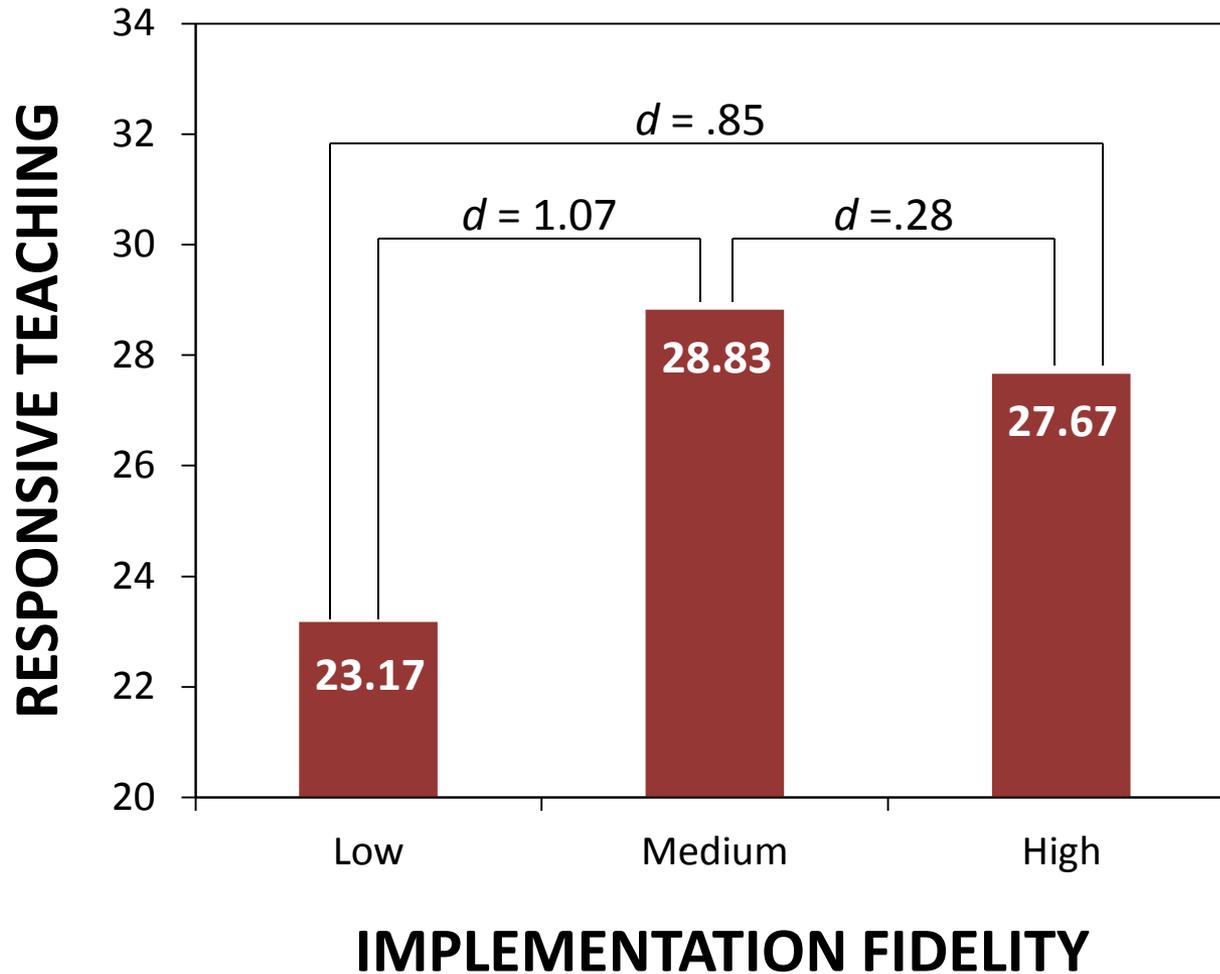
Relationship Between Implementation and Intervention Fidelity

- Study conducted in 10 Head Start classrooms serving 3- to 5-year-old children without (88%) and with (12%) disabilities
- Head Start staff participated in weekly classroom-based training sessions where a coach used a Participatory Adult Learning Strategy (implementation practice) to promote use of a number of different evidence-based classroom practices (including responsive teaching)
- Independent assessments of the fidelity of both PALS and responsive teaching were obtained throughout the course of the training
- Variations in implementation fidelity were related to variations in use of responsive teaching

Fidelity of Use of the Implementation Practices

- Fidelity was defined as the percent of 20 indicators, rated a 4 or 5 on a 5-point scale, that were used by the coach while using PALS
- An *a priori* level of fidelity was reached in 14 (78%) of the classrooms
- The average PALS fidelity percent was 88% (SD = 9.59)
- A tripartite split of the fidelity percents was used to constitute low, medium, and high fidelity groups
- Between group comparisons with the responsive teaching scores as the outcome measures (at the end of the training) were used to determine if even small variations in PALS were related to variations in the Head Start staff use of responsive teaching

Effects of Fidelity of PALS on Responsive Teaching



Practitioner Beliefs as a Factor Influencing Participation in Professional Development and the Use of Evidence-Based Practices

- A super-effective coach using the most effective evidence-based professional development practices is not likely to promote use of evidence-based intervention practices if practitioners don't value and see the benefits of both the professional development and early intervention practices
- A meta-analysis^a of 29 studies including 4,000+ early childhood practitioners found belief appraisals related to the intent to use and adoption of different kinds of early childhood practices
- Practitioner judgments of the importance and acceptability of intervention practices and intervention outcomes are factors that stand out as particularly important predictors of the use of evidence-based intervention practices

^a Trivette, C. M., Dunst, C. J., Hamby, D. W., & Meter, D. (2013). Research synthesis of studies investigating the relationships between practitioner beliefs and adoption of early childhood intervention practices. *Practical Evaluation Reports*, 4(1), 1-19. Available at http://www.practicalevaluation.org/reports/CPE_Report_Vol4No1.pdf.

Social Validity^a

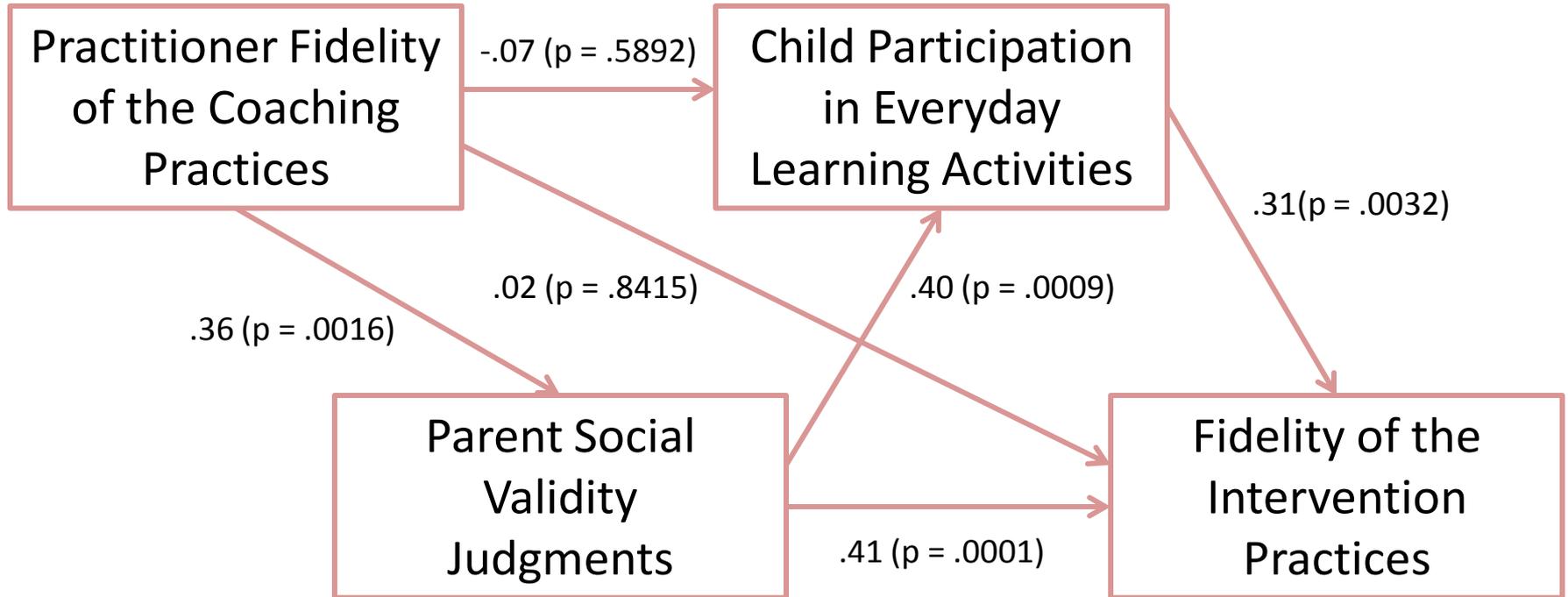
- Practitioner judgments of the **importance** of an intervention practice and the intended outcomes or benefits of the practice (e.g., “This is a practice I should be using with the children with whom I work”)
- Practitioner judgments of the **acceptability** of the intervention practice and the intended outcomes or benefits of the practice (e.g., “This practice would be worth my time and effort”)

^a Adapted from Foster, S. L., & Mash, E. J. (1999). Assessing social validity in clinical treatment research issues and procedures. *Journal of Consulting and Clinical Psychology*. 67, 308-319.

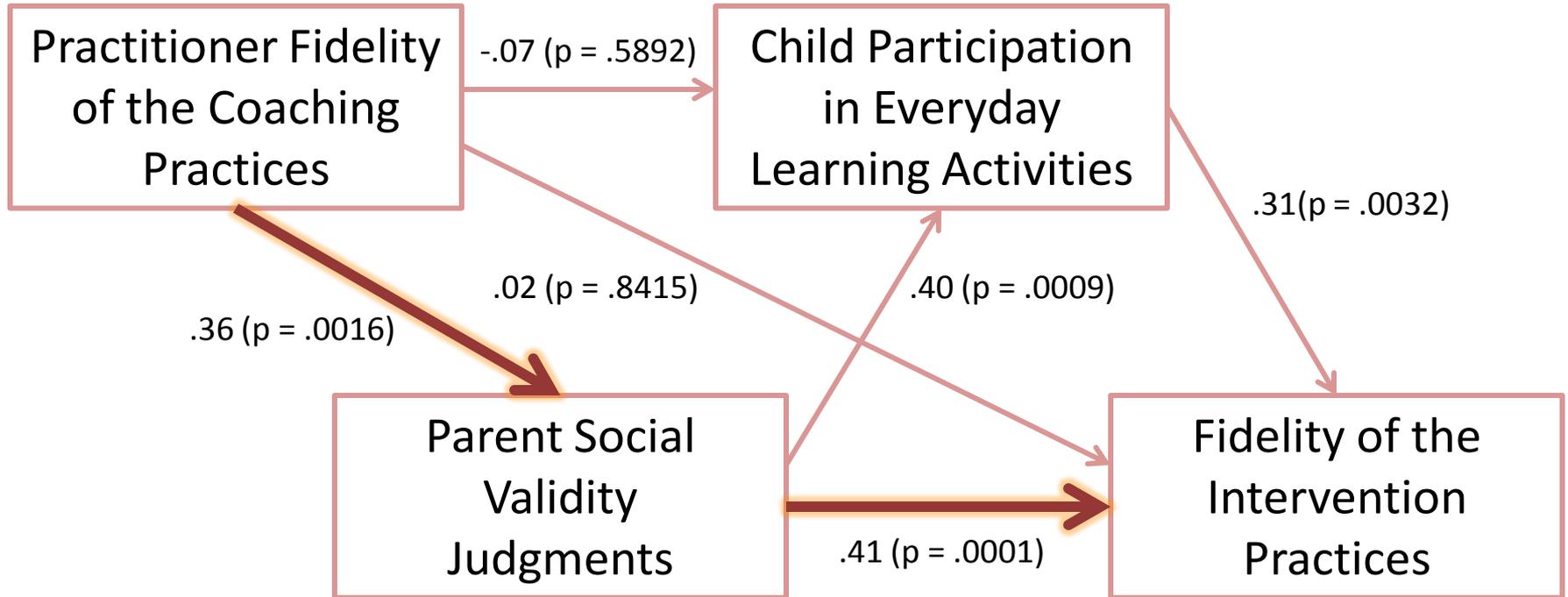
Mediating Influences of Social Validity and the Relationship Between Implementation and Intervention Fidelity

- 21 early intervention practitioners from four early intervention programs in three states
- 80 parents of infants and toddlers with identified disabilities
- Practitioners used PALS (coaching) to promote parents' use of interest-based everyday child language learning activities
- An investigator-developed fidelity scale was used to assess practitioners' use of PALS
- Parents completed a social validity scale and maintained records of how many everyday activities were used as learning opportunities and the extent to which child participation was characterized by *a priori* identified evidence-based characteristics

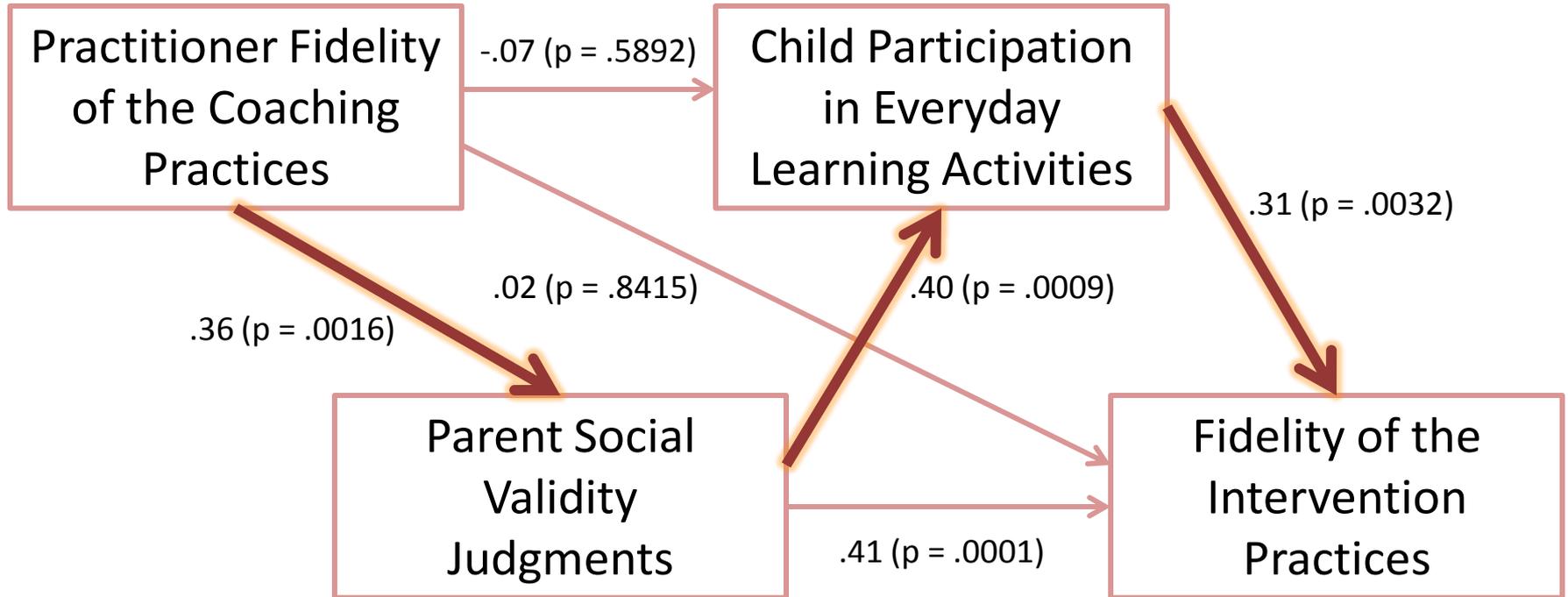
Patterns of Results Between the Study Measures



Patterns of Results Between the Study Measures



Patterns of Results Between the Study Measures



Effects Decomposition

| Measures | | Effects Decomposition | | |
|-------------------------------------|-------------------|-----------------------|----------|---------|
| Predictor | Criterion | Direct | Indirect | Total |
| Practitioner coaching | Social validity | .36*** | — | .36*** |
| | Child learning | -.07 | .15* | .08 |
| | Practice fidelity | .02 | .17* | .19* |
| Social validity | Child learning | .40*** | — | .40*** |
| | Practice fidelity | .41**** | .13* | .54**** |
| Child learning opportunities | Practice fidelity | .31** | — | .31** |

* $p < .02$. ** $p < .002$. *** $p < .001$. **** $p < .0001$.

Conclusions

- Equal attention to evidence-based implementation practices and evidence-based intervention practices ought to increase the likelihood of the adoption and use of early childhood interventions that have optimal child, parent, and practitioner benefits
- Parents' and practitioners' beliefs about the importance and acceptance of both implementation and intervention practices need to be considered as part of attempts to promote use of evidence-based practices
- The fidelity of both implementation and intervention practices needs to be evaluated as part of efforts to promote use of evidence-based practices to be sure the practices are used as intended

**This PowerPoint presentation is available at
www.puckett.org/presentations**