Evidence-Informed Professional Development for Improving Early Childhood Intervention Practices

Carl J. Dunst

Orelena Hawks Puckett Institute

Asheville and Morganton, NC

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Purpose of Breakout Session

- Summarize the results from research syntheses of adult learning and in-service professional development studies for improving learner outcomes

- Describe the implications of the results for promoting the use of evidence-informed professional development for improving early childhood intervention practices

Major Sources of Research Evidence

- Meta-analysis of four types of adult learning studies to identify which practice characteristics were associated with the largest effect sizes with the study outcomes

- Meta-analysis of studies investigating the effects of inservice professional development on parents' and practitioners' use of assistive technology with young children with disabilities

- Meta-synthesis of 15 research reviews of the influence of inservice professional development on educator and student outcomes

Adult Learning Meta-Analysis

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.

Dunst, C. J., Trivette, C. M., & Hamby, D. W. (2010). *Meta-analysis of the effectiveness of four adult learning methods and strategies: Supplemental tables and references*. Asheville, NC: Orelena Hawks Puckett Institute. Retrieved from http://www.puckett.org/docs/ijcelldocs.pdf.

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

Dunst, C. J., & Hamby, D. W. (2015). A case study approach to secondary reanalysis of a quantitative research synthesis of adult learning practices studies. *International Journal of Learning, Teaching and Educational Research, 13*(3), 181-191. Available at www.puckett.org

Characteristics Used to Code and Evaluate the Adult Learning Methods[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

Learner Application

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

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

Deep Understanding

Reflection   Engage the learner in self-assessment of his or her 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

Research Synthesis of Adult Learning Studies

- 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 nonuniversity settings

- Study outcomes included learner knowledge, skills, attitudes, and self-efficacy beliefs

- The influences of the adult learning methods on the learner outcomes were determined by weighted Cohen's d effect sizes for the differences on the post test scores for the intervention vs. nonintervention group participants

Most Effective Adult Learning Method Practices

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

Cumulative Effects of Different Combinations of the Most Effective Adult Learning Method Practices
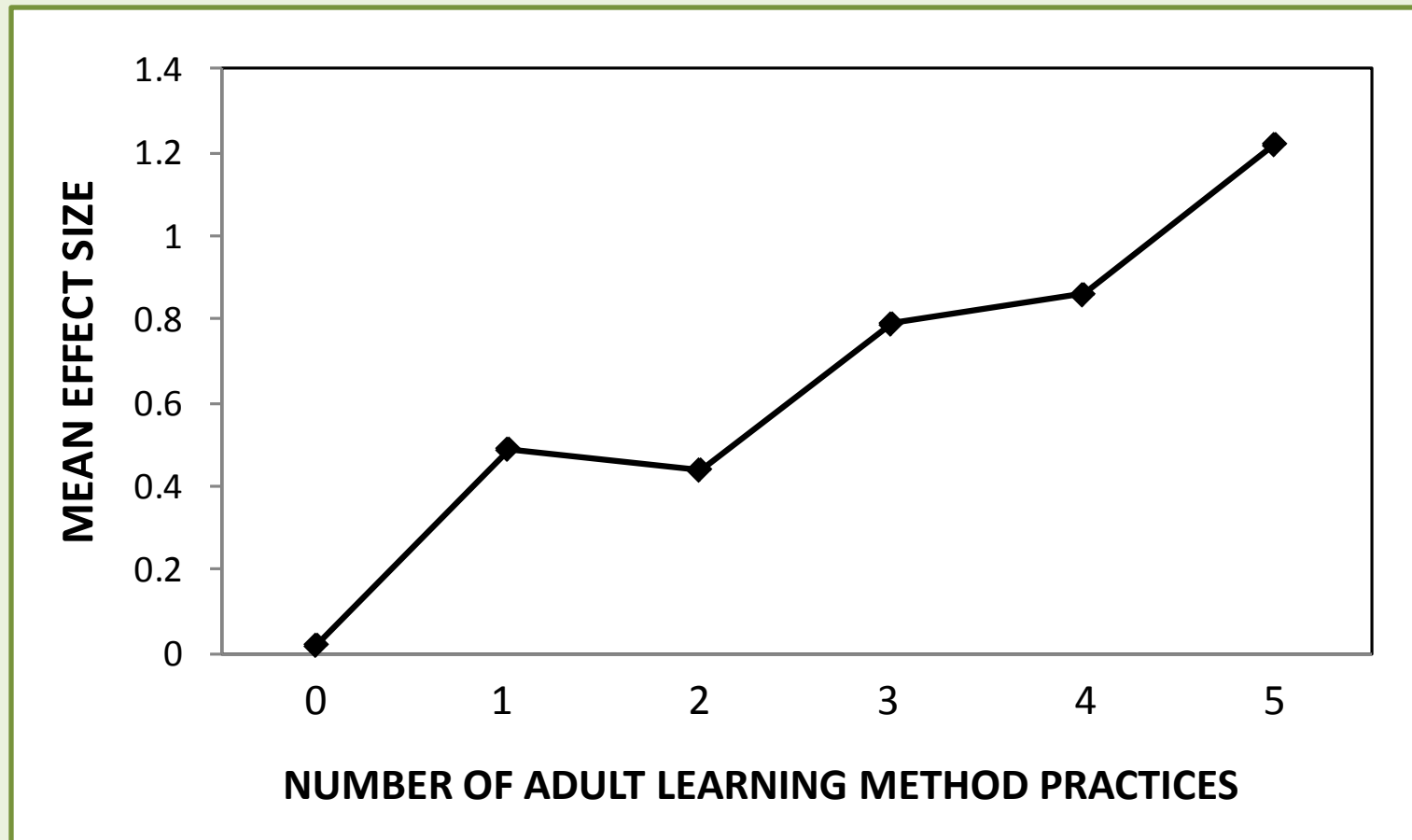
Other Important Findings from the Meta-Analysis

- 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 a total of 10 hours or more was more effective than one-time training

- Training provided in the context of real-life (authentic) application in learners' work settings was more effective than "outside" training

Assistive Technology Meta-Analysis

Dunst, C. J., Trivette, C. M., Meter, D., & Hamby, D. W. (2011). Influences of contrasting types of training on practitioners' and parents' use of assistive technology and adaptations with infants, toddlers and preschoolers with disabilities. *Practical Evaluation Reports, 3*(1), 1-35. Retrieved from www.puckett.org/Practical_Evaluation.php

Dunst, C. J., & Hamby, D. W. (2015). Research synthesis of studies to promote parent and practitioner use of assistive technology and adaptations with young children with disabilities. In D. L. Edyburn (Ed.), *Advances in special education technology (Vol. 1): Efficacy of assistive technology interventions* (pp. pp. 51-78). United Kingdom: Emerald Publishing.

Research Synthesis of Assistive Technology Studies

- 25 group design studies and 15 single participant design studies that included information about the type of training to promote adult use of assistive technology and adaptations

- The 40 studies included 820 adult participants (practitioners, parents, students) and 1,075 child participants

- Same set of characteristics used in the adult learning synthesis were used to code and analyze the study results

- Cohen's d effect sizes were used to evaluate the effects of the professional development/inservice training practices on adult use of assistive technology and adaptations and child outcomes

Types of Practices Used to Promote Adoption and Use of Assistive Technology and Adaptations (AT/A)

Methods	Practices
Introduction	Participant needs assessment of their knowledge of the AT/A
	Trainer description/presentation/lecture on the AT/A
Illustration	Real-life demonstration/real-life demonstration and role playing using AT/A
	Role playing/simulation using the AT/A
	Participant input/experience used to explain or describe the AT/A
	Rainer instruction on how to use the AT/A
	Multimedia presentation/video illustrating the use of the AT/A
Practicing	Real-life use of and/or role playing with the AT/A
	Trainer-guided participant practice using the AT/A
	Participant developed activity/implemented use of the AT/A
	Participant elicited trainer explanation/discussion of the AT/A
Evaluation	Joint trainer-participant evaluation of using the AT/A
	Participant assessment of their strengths and weaknesses using the AT/A
	Trainer feedback to participants in response to using the AT/A
	Participant group discussion of the understanding and abilities using the AT/A
Reflection	Participant journaling about their experiences with the AT/A
	Participant standards-based self-assessment of their knowledge and skills
Mastery	Participant self-assessment of knowledge or practice

Cohen's *d* Effect Sizes Between the Most Effective Training Practices and the Adult and Child Outcomes

Adult Learning Methods/Practices	Adult Outcomes	Child Outcomes
Introduction		
Trainer descriptions/presentations	0.93	1.12
Needs assessment	1.48	1.43
Illustration		
Learner-informed input	1.50	1.48
Role playing	1.61	1.58
Real-life/role playing	1.69	1.49
Practicing		
Real life/real-life + role playing	1.01	1.54
Trainer-guided practice	1.17	1.86
Trainer engagement	1.37	1.19
Evaluation		
Trainer Feedback	1.09	1.55
Trainee-requested feedback	0.61	1.07
Joint evaluation	0.57	1.06
Assess strengths/weaknesses	0.51	1.27
Reflection		
Journaling	0.63	1.23
Group discussion	0.54	1.78
Mastery		
Generalization test	3.00	3.35
Trainee self-assessment	0.55	1.10

Relationship Between the Use of Different Combinations of Training Practices to Promote Adult Use of Assistive Technology and Adaptations and the Adult and Child Outcomes
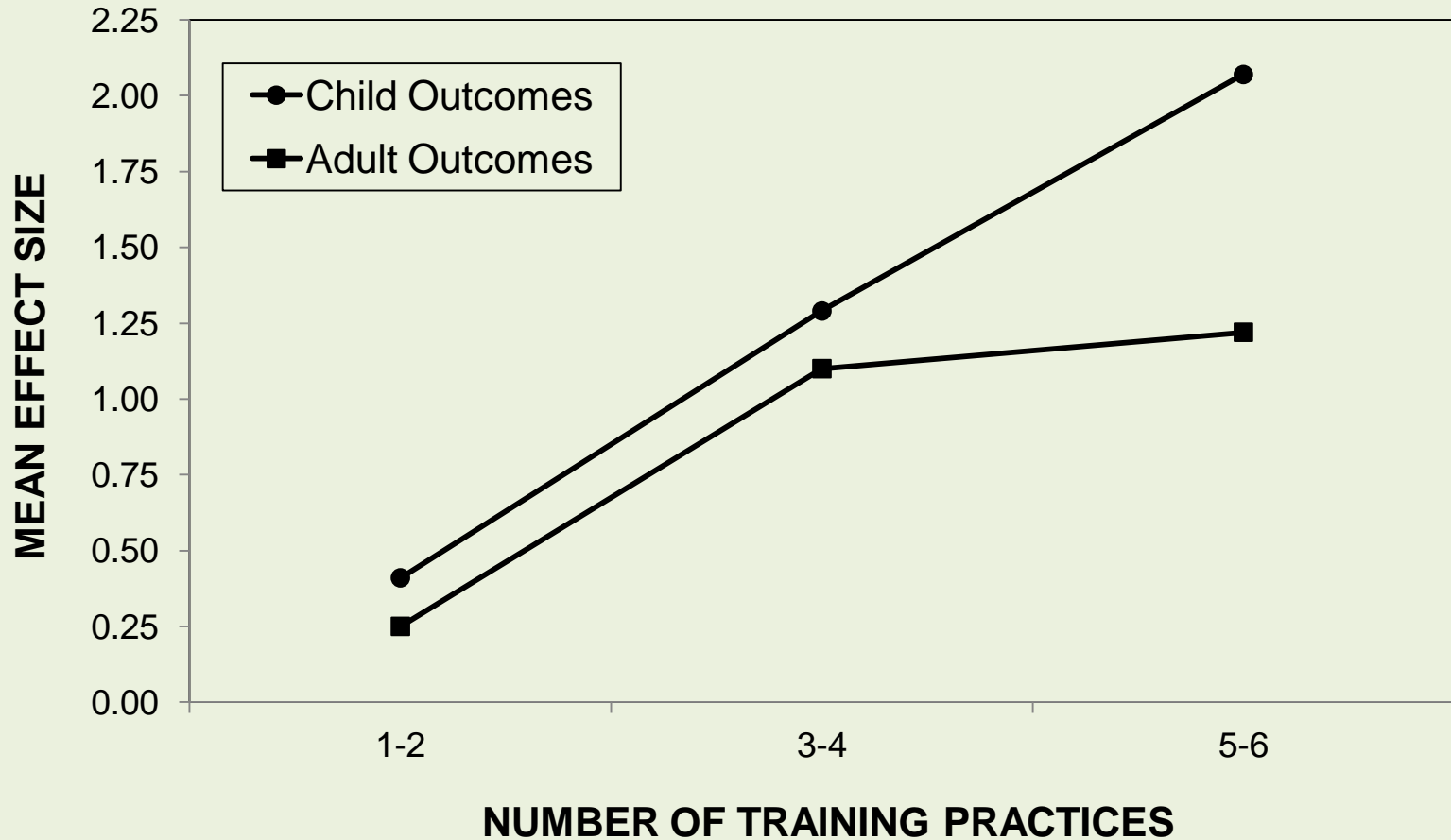
Inservice Professional Development Metasynthesis

Bruder, M. B., & Dunst, C. J. (2015). *Inservice professional development: Elements associated with effectiveness and implications for practice*. Paper presented at the U.S. Department of Education, Office of Special Education Programs Leadership Conference, Washington, DC. Retrieved from www.puckett.org/presentations

Dunst, C. J., Bruder, M. B., & Hamby, D. W. (2015). Metasynthesis of in-service professional development research: Features associated with positive educator and student outcomes. *Educational Research and Reviews, 10*(12), 1731-1744. Available at www.puckett.org

Metasynthesis of Inservice Professional Development Studies

The metasynthesis included:

- 15 research reviews of different types of inservice professional development

- The 15 reviews included 555 studies

- 50,000+ early intervention, preschool, elementary, and secondary education teachers, educators, and practitioners

Characteristics of Inservice Professional Development Coded in the Metasynthesis

Inservice Setting: Job-embedded or non job-embedded inservice training

Inservice Characteristics: Trainer introduction and illustration of a practice; authentic educator/practitioner learning opportunities and learner reflection; and professional development specialist coaching, mentoring, or performance feedback during the inservice training

Ongoing Supports: Extended learner supports in the educators' schools or classrooms, or practitioners' intervention settings to reinforce initial inservice learning

Dosage: Inservice dosage of a sufficient amount distributed over time to provide multiple opportunities to learn to master the focus of inservice training

Outcomes: Educator/practitioner outcomes and student/child outcomes

Method of Analysis of the Inservice Reviews

- A multiple case study research design (Yin, 2014) was used to identify which inservice professional development characteristics under which conditions were associated with positive educator and child/student outcomes

- Replication logic (Hak & Dul, 2010) and pattern matching (Hak & Dul, 2010) were used to determine if the same or similar inservice characteristics in the different reviews were found to be associated with the same or similar study outcomes

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Hak, T., & Dul, J. (2010). Pattern matching. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 664-666). Thousand Oaks, CA: Sage.

Hak, T., & Dul, J. (2010). Replication. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 805-807). Thousand Oaks, CA: Sage.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Thousand Oaks, CA: Sage.

Characteristics of Effective Inservice Professional Development

- Professional development specialists' descriptions and illustrations of the specific content knowledge and practice to be learned

- Active and authentic job-embedded practitioner opportunities to learn to use a practice and to engage in evaluation of their experiences

- Explicit inclusion of different types of practices for engaging practitioners in reflection on their understanding and mastery of a practice

- Coaching, mentoring, or performance feedback by a professional development specialist during inservice training

- Ongoing follow-up supports by professional development specialists, coaches, supervisors, peers, etc. to reinforce inservice learning

- Inservice professional development of sufficient duration and intensity to provide multiple opportunities to become proficient in the use of a practice

From Research to Evidence-Informed Professional Development

- The findings from the two research syntheses and meta-syntheses as well as results reported by others were used to revise and refine a professional development model and set of practices for improving inservice training to promote early childhood practitioners' use of evidence-based early childhood intervention practices

- The professional development practices have been used with practitioners in both home-based and center-based early childhood intervention programs to promote their use of different types of early childhood practices

The Professional Development Model and Practices are Described in a Number of Different Journal Articles and Web-Based Reports

Dunst, C. J. (2009). Implications of evidence-based practices for personnel preparation in early childhood intervention. *Infants and Young Children, 22*(1), 44-53.

Dunst, C. J., & Trivette, C. M. (2009). Let's be PALS: An evidence-based approach to professional development. *Infants and Young Children, 22*(3), 164-175.

Dunst, C. J. (2013). Guide for evaluating professional development: Opportunities in early childhood education. *The Early Childhood Educator, 28*(3), 7-10.

Raab, M., Dunst, C. J., & Trivette, C. M. (2013). Adult learning procedure for promoting caregiver use of everyday child language learning practices. *Everyday Child Language Learning Reports, Number 3*, 1-9. Retrieved from http://www.cecll.org/download/ECLLReport_3_AdultLearning.pdf

Dunst, C. J. (2015). Improving the design and implementation of inservice professional development in early childhood intervention. *Infants & Young Children, 28*(3), 210-219.

Key Characteristics of Evidence-Informed Inservice Professional Development

Key Characteristics	Main Focus
Introducing and Illustrating a Practice to Practitioners	Method(s) for describing the key characteristics of a practice and demonstrating or illustrating how to use the practice
Authentic and Active Practitioner Learning Experiences	Multiple practitioner opportunities to learn to use a practice in authentic real-life settings
Practitioner Understanding of a Practice	Practitioner description(s) of their use of a practice, what worked, and what child/student benefits were observed
Opportunities to Become Proficient in the Use of a Practice	Procedures used to engage practitioners in reflection on their use of the key characteristics of a practice for developing deep understanding of the practice
Professional Development Specialist (PDS) Supports, Feedback, and Guidance	PDS support (encouragement) during both inservice training and follow-up sessions to reinforce practitioner understanding and use of a practice
Professional Development (PD) of Sufficient Duration and Interest	PD that included multiple learning opportunities spread out over time for practitioners to become proficient in the use of a practice

Professional Development Activity Planning Process Checklist

This checklist includes a series of questions that can be used to think about and identify professional development activities to promote practitioners' knowledge and use of the practice constituting the focus of inservice training.
Which activities will be used to accomplish each of the following (if appropriate) for the practice that is being taught to participants?

Introduce and Illustrate

1.	Describe the practice in sufficient detail and provide multiple examples of the practice?
2.	Provide the practitioners a list of the key characteristics of the practice and the expected outcomes?
3.	Use photographs, videos, or other multimedia tools to illustrate the use of the practice?
4.	Demonstrate or illustrate how to use the key characteristics of the practice?
5.	Use learner experiences to illustrate the use of the practice?

Practitioner Use and Evaluate

6.	Use simulations or other exercises to have practitioners use the practice?
7.	Provide the practitioners authentic learning opportunities to use the practice?
8.	Engage the practitioners in multiple opportunities to use the practice during the training?
9.	Observe or have the practitioners record the real-time use of the practice?
10.	Engage the practitioners in evaluation of their experiences using the practice?

Reflection and Mastery

11.	Use a performance checklist or another method to have the practitioners' self-assess mastery of the practice?
12.	Engage the practitioners in discussions about the use and benefits of the practice?
13.	Facilitate the practitioners' reflection on their understanding of the practice?
14.	Use real-life teaching moments to promote the practitioners' deep understanding of the practice?
15.	Promote an understanding of the importance of becoming a reflective practitioner?

Ongoing Learning Opportunities

16.	Jointly identify with the practitioners' ongoing opportunities to improve their use of the practice?
17.	Incorporate ongoing learning opportunities into follow-up training sessions over repeated occasions?
18.	Provide the practitioners opportunities to identify different ways of using the practice?
19.	Provide opportunities for the practitioners to receive ongoing feedback on their use of the practice?
20.	Engage the practitioners in discussions of ways to best support ongoing use of the practice?

Effectiveness of the Inservice Professional Development Model and Practices
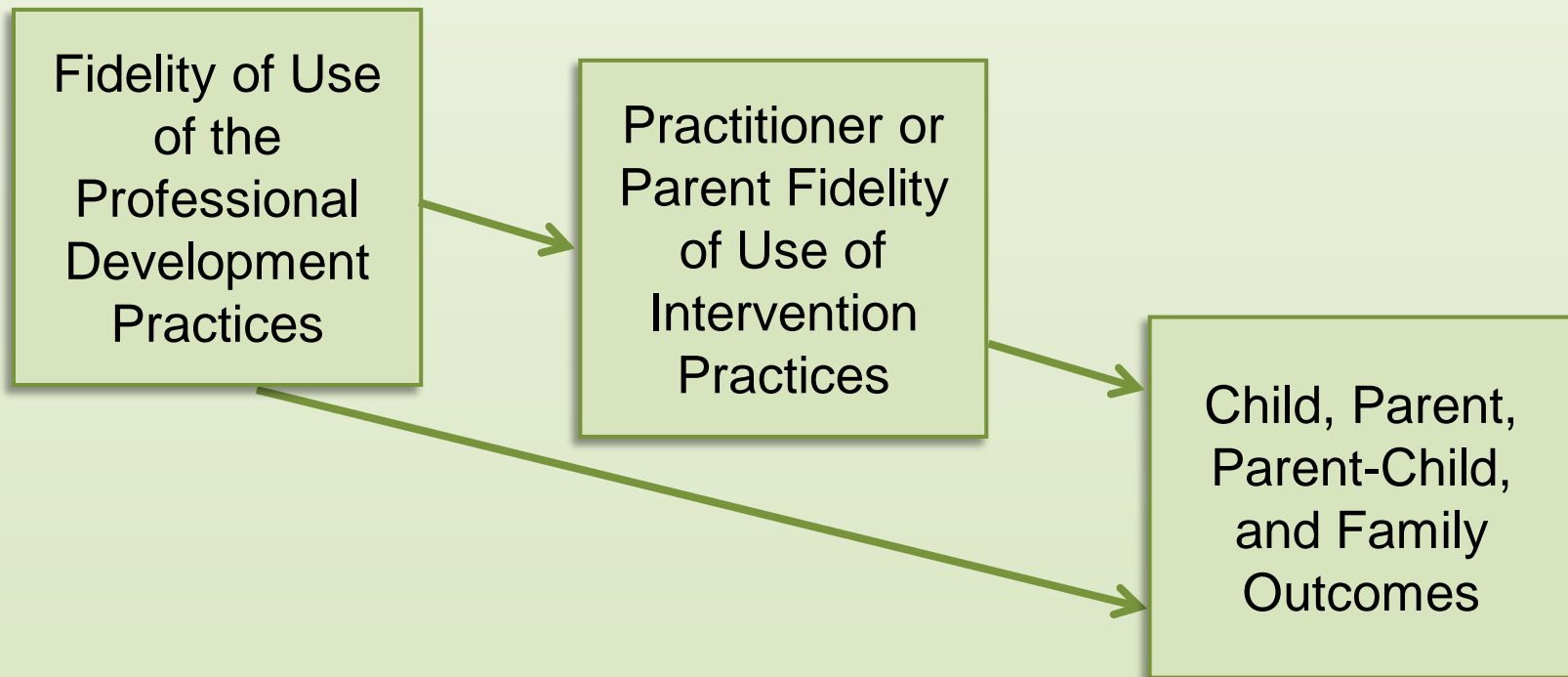
- Different generations of the professional development model and practices have been used to promote early childhood intervention practitioners' (and parents') use of different kinds of practices to improve parent, family, and child outcomes

- Professional development specialists' use of the inservice training practices with fidelity has consistently been found to be associated with practitioner and parent adoption and use of early childhood intervention practices

- The *lesson learned* from the various applications of the inservice professional development practices is that effective inservice training requires (demands) careful planning and considerable amounts of effort to produce sustainable changes in early childhood intervention practices
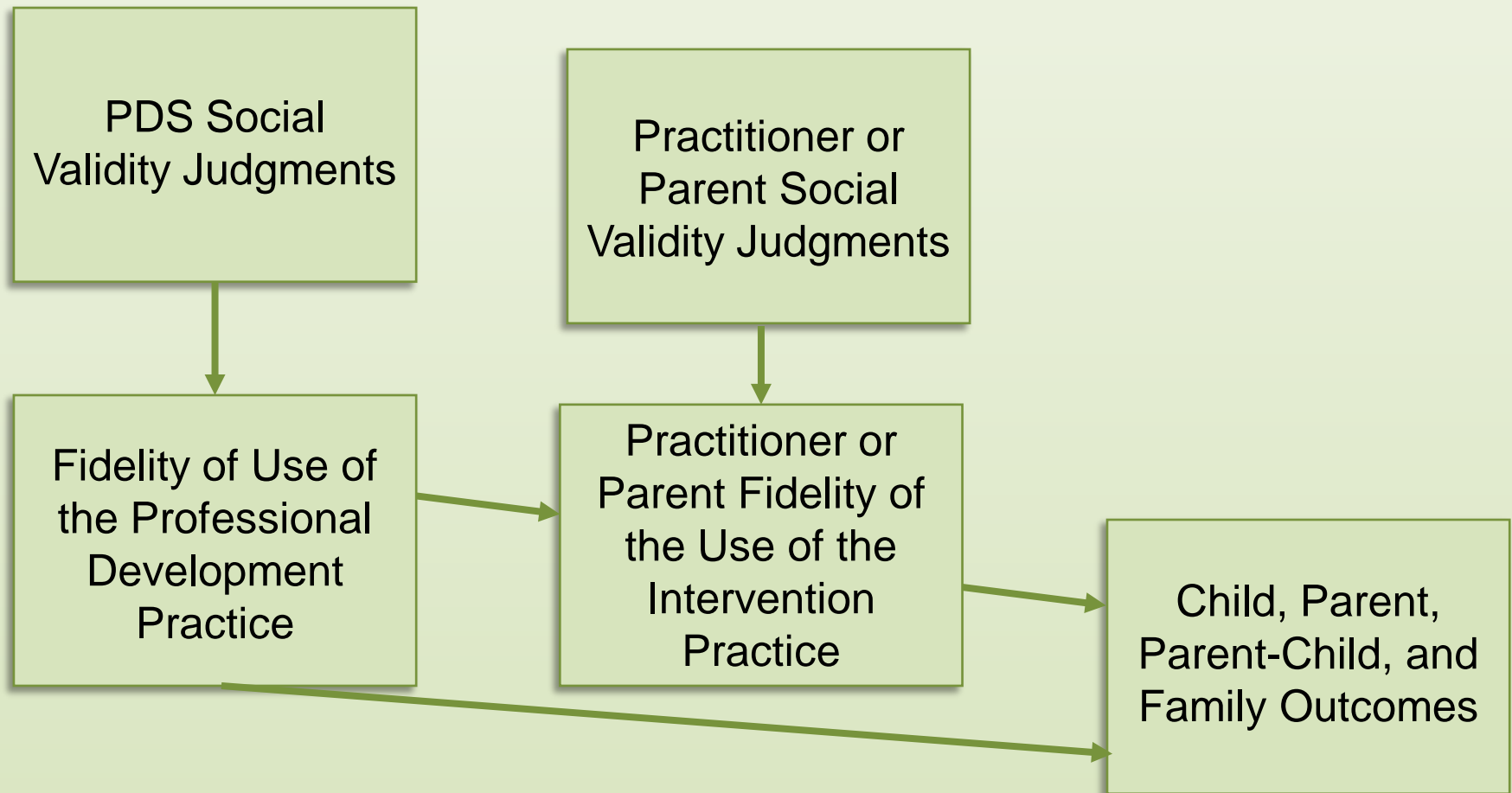
The Use of the Inservice Professional Development Practices Has Been Described in a Number of Journal Articles and Web-Based Reports

Dunst, C. J., & Raab, M. (2010). Practitioners' self-evaluations of contrasting types of professional development. *Journal of Early Intervention*, 32, 239-254.

Dunst, C. J., Raab, M., & Hamby, D. W. (2016). Interest-based everyday child language learning. *Revista de Logopedia, Foniatria y Audiologia, 36*, 153-161. Available at www.puckett.org

Dunst, C. J., Trivette, C. M., & Deal, A. G. (2011). Effects of in-service training on early intervention practitioners' use of family systems intervention practices in the USA. *Professional Development in Education, 37*, 181-196.

Raab, M., Dunst, C. J., & Trivette, C. M. (2013). Adult learning procedure for promoting caregiver use of everyday child language learning practices. *Everyday Child Language Learning Reports, Number 3*, 1-9. Retrieved from http://www.cecll.org/download/ECLL Report_3_AdultLearning.pdf

Swanson, J., Roper, N., Raab, M., & Dunst, C. J. (2006). Practitioner judgments of the usefulness of contextually mediated practices training activities. *CASEinPoint, 2*(9), 1-7. Retrieved from http://fipp.org/static/media/uploads/caseinpoint/caseinpoint_vol2_no9.pdf

Trivette, C. M., Raab, M., & Dunst, C. J. (2012). An evidence-based approach to professional development in Head Start classrooms. *NHSA Dialog, 15*, 41-58.

Trivette, C. M., Raab, M., & Dunst, C. J. (20214). Factors associated with Head Start staff participation in classroom-based professional development. *Journal of Education and Training Studies, 2*(4), 32-45.

Pattern of Results in the Use of the Inservice Professional Developmental Practices

Fidelity of Use of the Professional Development Practices

Practitioner or Parent Fidelity of Use of Intervention Practices

Child, Parent, Parent-Child, and Family Outcomes

Pattern of Results in the Use of the Inservice Professional Development Practices, *continued*

PDS Social
Validity Judgments

Practitioner or
Parent Social
Validity Judgments

Fidelity of Use of
the Professional
Development
Practice

Practitioner or
Parent Fidelity of
the Use of the
Intervention
Practice

Child, Parent,
Parent-Child, and
Family Outcomes

Participant Questions, Comments, Reflections, Etc.

PowerPoint available at
www.puckett.org/presentations