

Research Syntheses of Early Childhood Intervention Practices: What Counts As Evidence?

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Purpose

- Describe a practice-based translational approach to conducting research syntheses
- Illustrate the approach using several syntheses of different kinds of intervention practices
- Describe the implications of the approach for informing the adoption of evidence-based practices

What Counts As Evidence?

- This depends on the purpose of a study or a research synthesis and the question that is being asked. This can include either or both quantitative and qualitative data, observed or latent measures, etc.
- No *a priori* assumptions are made about the type of research design that is considered the “gold standard.” Different research designs are like different tools: You pick the right tool for the right job.
- Some measure of the size of effect between variables of interest, either in a single study or in a research synthesis, is the type of information needed to establish an evidential relationship.

Types of Research Studies^a

- Efficacy Studies
- Effectiveness Studies

^a Flay, B.R. et al. (2005). Standards of evidence: Criteria for efficacy, effectiveness and dissemination. *Prevention Science*, 6, 151-175.

Definitions of Terms

Efficacy is the extent to which an intervention (technology, treatment, procedure, service, or program) does more good than harm when delivered under optimal conditions (Flay et al., 2005, p.1).

Effectiveness is the extent to which interventions are effective under “real-world conditions” or in “natural conditions.” (Flay et al., 2005, p. 7).

Types of 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 in 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).

Translational Research Studies^a

- Type 1 Translational Research
- Type 2 Translational Research

^a U.S. Department of Health and Human Development, National Institutes of Health, Office of Behavioural and Social Sciences Research.

Definition of Terms

Type 1 translational research (often called “bench to bedside” research application) applies discoveries generated through basic science research to the development and testing of research-informed interventions in real-world settings

Type 2 translational research (called implementation research) refers to the methods and procedures used to promote adoption and sustained use of research-informed interventions

Types of Research Syntheses

- Efficacy Syntheses
- Effectiveness Syntheses
- Efficiency Syntheses
- Translational Syntheses

Purpose of Efficacy Syntheses

Efficacy syntheses combine findings from different studies using randomized controlled trials or similar types of research designs and ascertain the size of effect for an intervention (treatment, practice, experience, etc.) comparing the outcome against a nonintervention group.

Purpose of Effectiveness Syntheses

Ascertain the size of effect of an intervention tested under controlled conditions in everyday application under less controlled or more typical conditions compared to “business as usual.”

Purpose of Efficiency Syntheses

Ascertain the size of effect for the difference between two or more contrasting interventions (treatments, practices, etc.). Efficiency syntheses focus on which types of interventions under which conditions are associated with the largest effect size on outcomes of interest.

Purpose of Translational Syntheses

Ascertain the size of effect for the characteristics and features of an intervention (treatments, practices, etc.) that are associated with study outcomes to isolate the active ingredients of the intervention which become the foundations for developing evidence-based practices.

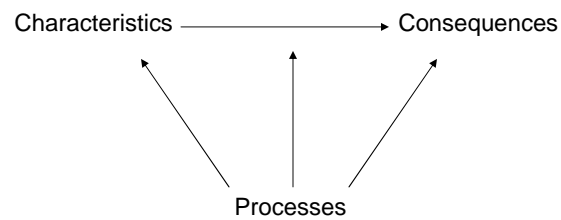
A Practice-Based Approach to Conducting Translational Research Syntheses

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

An Applied 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.

Framework for Evaluating the Relationship Between the Characteristics and Consequences of an Intervention Practice



Types of Characteristics--Consequences Relationships

- The consequences of a practice are measured to establish the presence of desired or expected behaviour or outcomes
- The characteristics of a practice are measured to establish that the practice was implemented as intended
- The characteristics and consequences of a practice measured but not related to each other
- The characteristics and consequences of a practice are measured and related to one another to establish a functional or statistical dependency
- The characteristics and consequences of a practice are measured and related to one another (functionally or statistically) and alternative explanations are explicitly ruled out
- The relationship between the characteristics and consequences of a practice are replicated across studies and alternative explanations are explicitly ruled out

Examples of Practice-Based Research Syntheses

Effects of Adult Verbal and Vocal Contingent Responsiveness on Increases in Infant Vocalizations^a

Carl J. Dunst Ellen Gorman Deborah W. Hamby

Number of Studies: 22 studies including 214 infants and toddlers (15 studies of typically developing infants and 6 studies of infants and toddlers with disabilities)

Research Designs: Baseline (A) and experimental (B), ABA, and ABAB single participant or group design studies

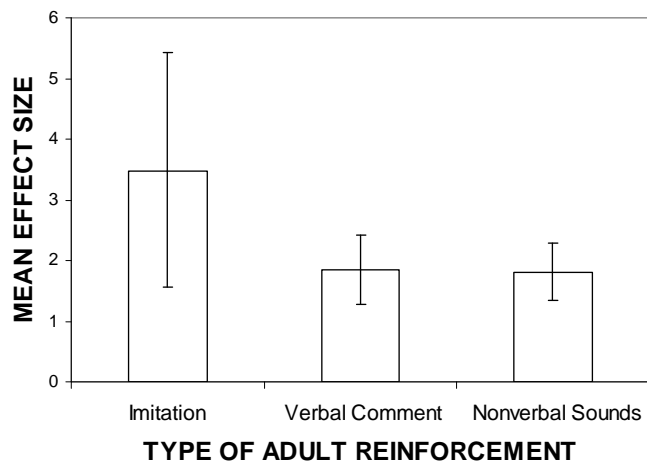
Adult Reinforcement: Imitation of child vocalizations, verbal comments (e.g., "good girl") or pre-determined vocal sounds ("tsk,tsk, tsk")

Social Concomitants: Influences of visual, social, and tactile adult concomitant behaviour on infant vocalizations

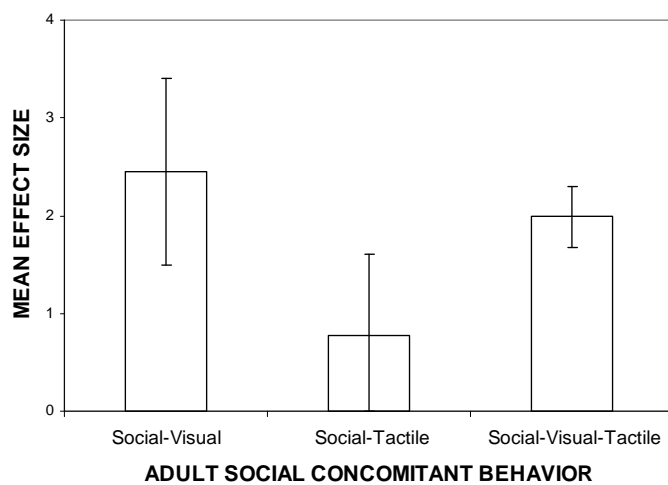
Size of Effect: Cohen's *d* effect size for the difference between the baseline vs. experimental study conditions

^a *CELLreviews*, 2010, Vol. 3, No. 1 (Available at www.earlyliteracylearning.org)

Relative Effectiveness of Three Types of Adult Reinforcement on Infant Vocalizations



Effects of Adult Social Concomitant Behaviour on Infant Vocalizations



Caregiver Sensitivity, Contingent Social Responsiveness, and Secure Infant Attachment^a

Carl J. Dunst

Danielle Kassow

Number of Studies: 75 studies including more than 4500 parent-child dyads

Research Design: Observational studies of parent-child interactions that included measures of child attachment (mostly the Stranger Situation)

Caregiver Sensitivity: Explicit and implicit measures of caregiver contingent social responsiveness and sensitivity

Size of Effect: Cohen's *d* effect size for the relationship between caregiver behaviour and secure infant attachment

^a *Journal of Early and Intensive Behaviour Intervention*, 2008, 5(1), 40-56.

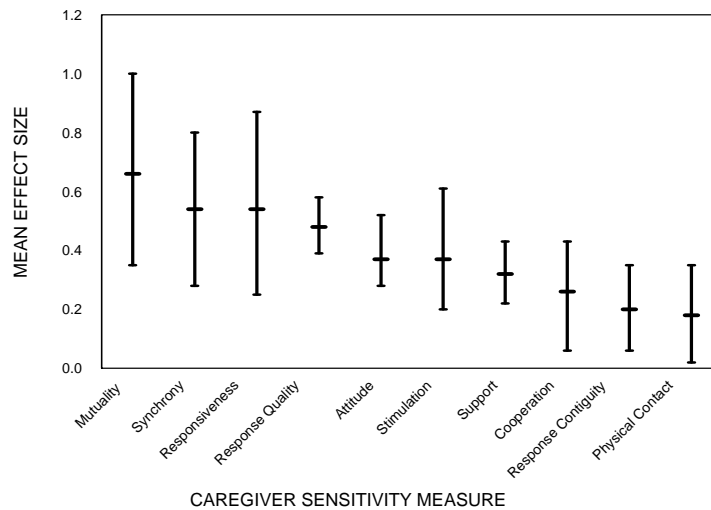
Explicit Measures of Caregiver Sensitivity Behaviour

| Caregiver Sensitivity Behaviour | Definition |
|---------------------------------|--|
| Caregiver/Child Synchrony | Synchrony is characterized by caregiver-child interactions that are reciprocal and rewarding to both the caregiver and child (Isabella, Belsky, and von Eye, 1989). |
| Caregiver/Child Mutuality | Mutuality is characterized by positive caregiver-infant interactions where both the caregiver and child are attending to the same thing simultaneously. |
| Response Quality | Caregiver response quality is characterized by a caregiver's ability to perceive infant signals accurately, interpret signals accurately, and respond to signals promptly and appropriately (Ainsworth, Bell, & Strayton, 1974; Ainsworth, Blehar, Waters & Wall, 1978). |
| Responsiveness | Caregiver responsiveness is characterized by a caregiver's response to the infant's behaviour where the response functions as a reinforcement maintaining or sustaining infant behaviour directed toward the adult (Gewirtz, 1991). |
| Response Contiguity | Caregiver response contiguity is characterized by a caregiver's promptness and frequency or rate of response to the infant's signals (DeWolf & van Ijzendoorn, 1997). |

Implicit Measures of Caregiver Sensitivity Behaviour

| Caregiver Sensitivity Behaviour | Definition |
|---------------------------------|--|
| Physical Contact | Caregiver physical contact is characterized by a caregiver's quality and quantity of physical contact with the infant (DeWolf & van Ijzendoorn, 1997). |
| Cooperation | Caregiver cooperation is characterized by a caregiver's presence or absence of intrusive or interfering behaviours toward the infant whether the caregiver respects the infant's autonomy, if the caregiver avoids interrupting the infant's activities or demonstrates skill when interruption is necessary, and/or does not exert direct control over the infant (Ainsworth et al., 1974). |
| Support | 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 (Matas et al., 1978). |
| Positive Attitude | Caregiver positive attitude is characterized by the caregiver's expression of positive affect, warmth, empathy, and affection toward the infant (Zaslow, Rabinovich, Suwalsky, & Klein, 1988). |
| Stimulation | Caregiver stimulation is characterized by any caregiver action toward the infant (Miyake, Chen, & Campos, 1985). Stimulation typically includes caregiver encouragement, affective-stimulation, and stimulation/arousal of the infant. |

Mean Cohen's *d* Effect Sizes and 95% Confidence Intervals for the Relationship Between the 10 Caregiver Sensitivity Measures and Secure Infant Attachment



Practices for Increasing Referrals from Primary Care Physicians^a

Carl J. Dunst

Ellen Gorman

Number of Studies: 42 studies of more than 10,000 primary care physicians

Research Designs: Randomized controlled trials and time-series or before and after controlled designs

Types of Interventions: Information campaigns, referral guidelines, feedback to physicians, outreach to physicians, organizational interventions

Size of Effect: Percent difference in the referral rates of the experimental vs. comparison groups or baseline vs. experimental conditions

^a Cornerstones, 2006, Vol. 2, No. 5. (Available at www.tracecenter.info.)

Types of Interventions

Informational campaigns included distribution of educational materials (e.g., brochures) or videos to promote referrals to secondary care specialists

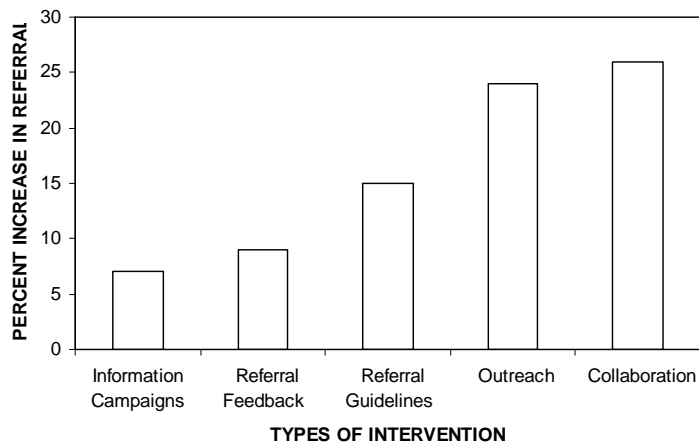
Referral or practice guidelines included descriptions of procedures for making referrals to secondary care specialists

Feedback to physicians included feedback on referral rates and feedback on the use of referral feedback forms

Outreach to physicians included specialist or consultant visits to primary care physicians to affect referrals

Organizational interventions included the provision of speciality care in the primary care settings or the attachment of a specialist to a general practice

Effectiveness of the Five Types of Interventions



Public Awareness and Child Find Activities in Part C Early Intervention Programmes^a

Carl J. Dunst

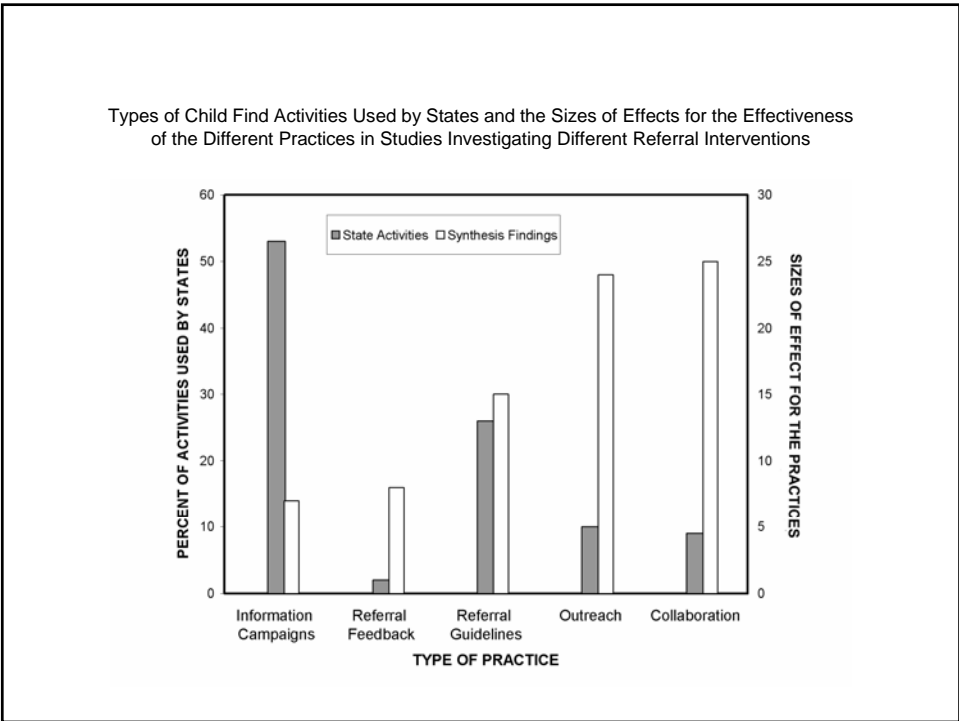
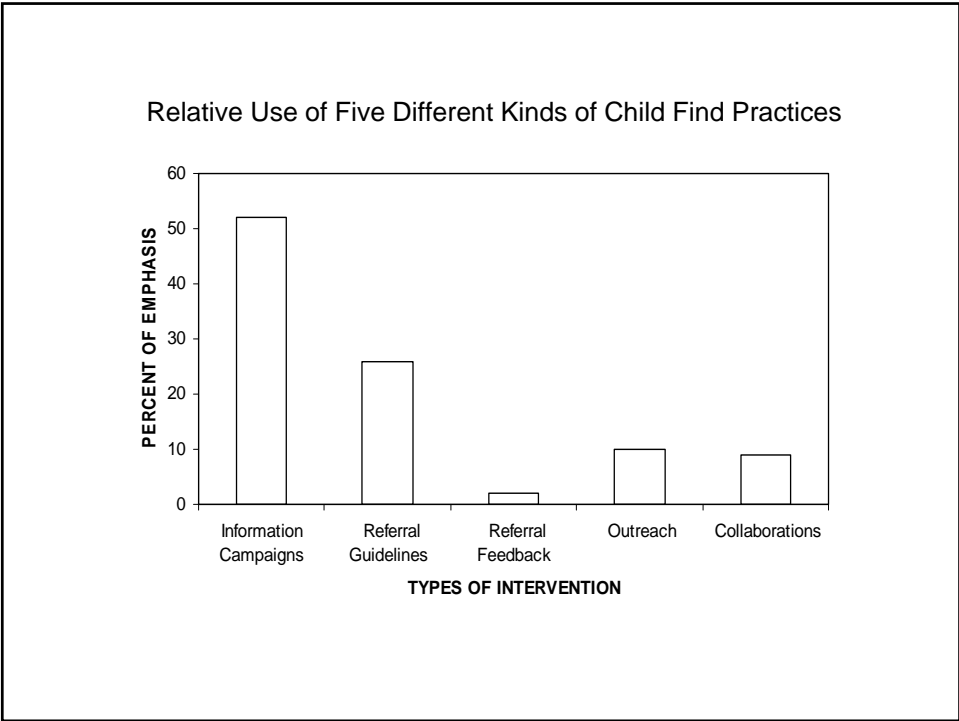
Patricia W. Clow

Focus of Analysis: Types of child find activities used by States to locate infants and toddlers eligible for early intervention

Types of Interventions: Information campaigns, referral guidelines, feedback to physicians, outreach to physicians, organizational interventions

Size of Effect: Relative emphasis of different child find activities and interventions

^a Cornerstones, 2007, Vol. 3., No. 1. (Available at www.tracecenter.info).



Conclusions

- Different types of research syntheses yield different kinds of information (evidence) about the effects of different intervention approaches or practices
- Practice-based translational research syntheses yield information that can directly inform the key characteristics of evidence-based practices
- The characteristics of evidence-based practices can be used as standards against which practices can be evaluated in terms of the likelihood of being effective