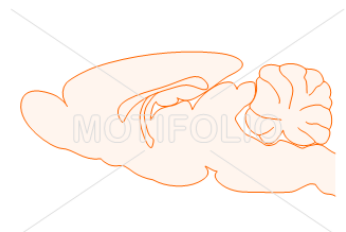
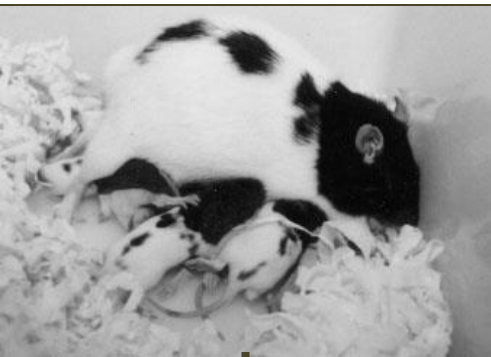
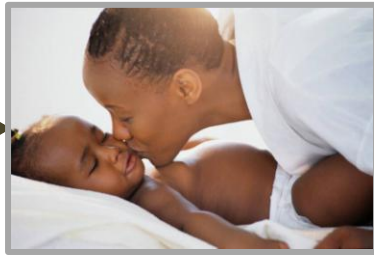


Evaluating Early Intervention Strategies For Early Learning and Positive Mental Health

Emis Akbari, PhD

Fraser Mustard Institute for Human Development
Atkinson Centre for Society and Child Development
Ontario Institute for Studies in Education (OISE)





The Importance of Early Life in Healthy Development

- Events experienced early in life contribute to the psychobiosocial development of offspring (Caldji et al., 2000; Gonzalez et al., 2001; Lehmann et al., 2002; Moore, 1982, 1984)
- Normal variations in maternal behavior result in long-lasting changes in the offspring.
 - Differential maternal stimulation of males and females within a litter
 - Male/Female ration – differential parenting
 - High/low lickers (Meaney)
- Early life isolation or maternal separation results in:
 - increases in activity (Lovic & Fleming, 2004; Gonzalez et al., 2001)
 - deficits in attention (Lovic & Fleming, 2004)
 - impulsivity (Lovic et al., in prep)
 - deficits in maternal behavior and memory (Gonzalez et al., 2001; Melo et al., 2006)
 - deficits in social memory and spatial learning (Levy et al., 2003)
 - enhancement to the effects of psychostimulants (Akbari et al., in prep; Ammari et al., in prep; Lovic et al., 2006)
 - disruptions in reproductive reflexes (Lenz et al., 2008)

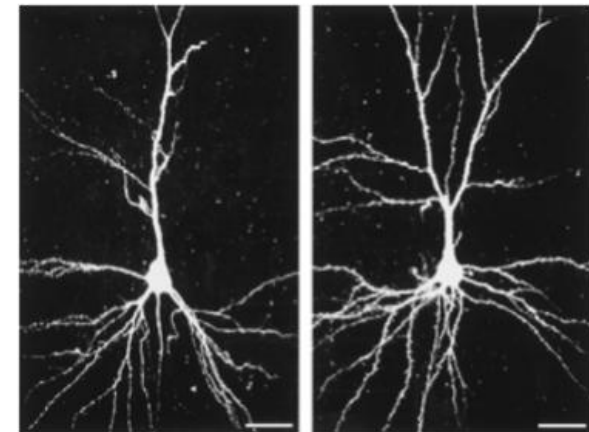
Reversal of Deficits



Mimicking the mothers' behaviour towards her young partially or fully reverses many of these deficits



Enriched environments including physical, challenging and social environments partially or fully reverses deficits and results in a changes in the brain



Implications

- Early isolation also shows similar effects in other species. e.g. Harry Harlow's now famous experiments: first 6 months isolation = incapable of normal sexual behavior
- Similar effects of early life isolation in rats have been found in children raised in institutions (Rutter, 1981; O'Connor et al., 2000; Fisher et al., 1997)
- Developmental neuropathology is increasingly thought to be an etiological factor in a number of mental illnesses
- There is a strong influence of early adverse events or poor parenting during childhood on the development of anxiety and mood related disorders (McCauley et al., 1997; Young et al., 1997)
- Using early isolation and maternal deprivation as a model of early life adversity may help elucidate mechanisms related to the effects of early life stress on neurobiological development and allow for new approaches for prevention and treatment of mental illnesses associated with early life stress



poor parenting to extreme deprivation



Early Preventative Intervention Strategies

WHY PARENTING?

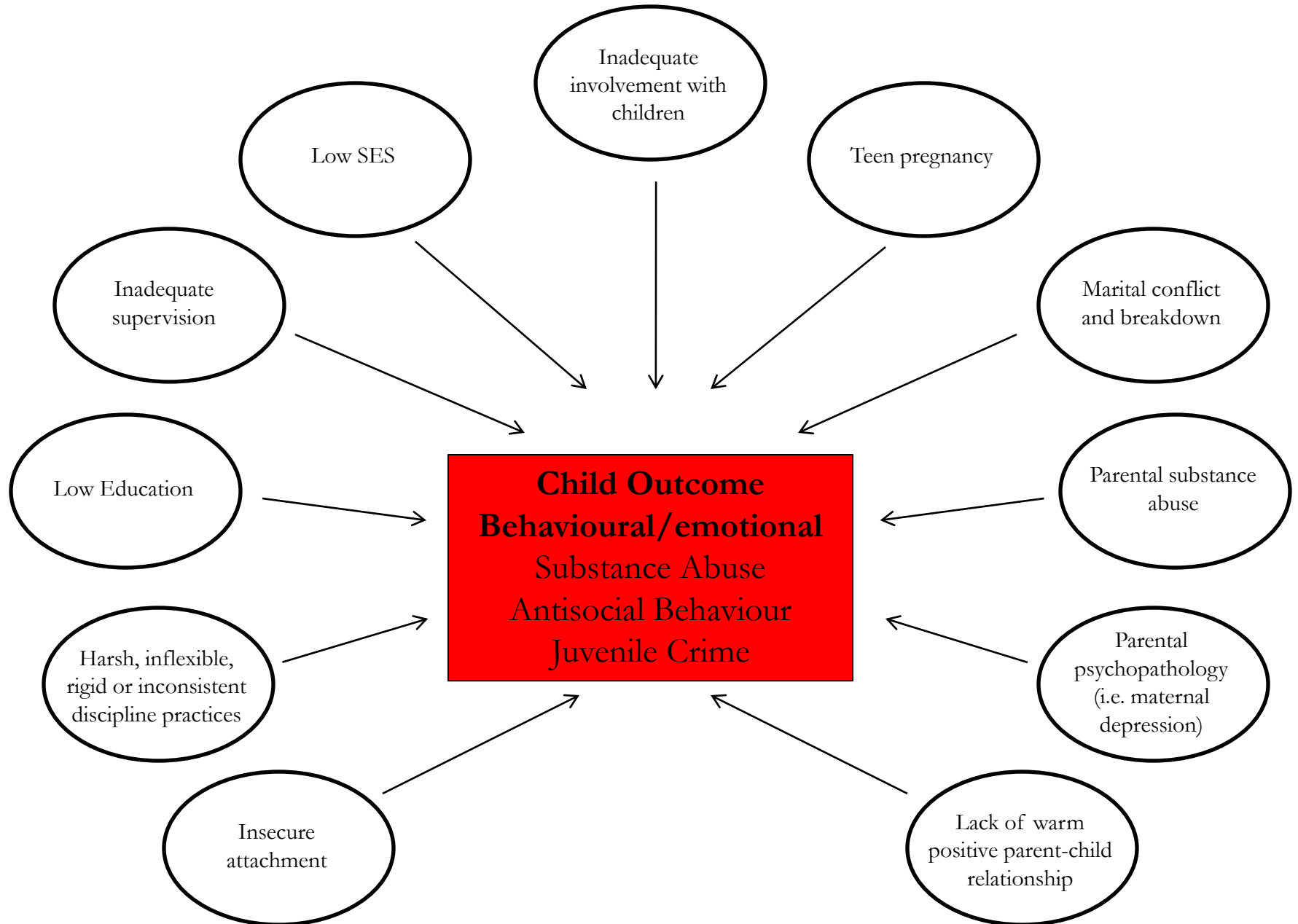
Consistent relationship between early parental care & child intellectual, emotional & behavioural outcomes (Bornstein, 1995)

Time surrounding birth (especially true following the first child) – requires the greatest change of the parents hedonic-homeostasis (Clutton-Brock, 1991) and corresponding brain based neural circuitry (Fleming)

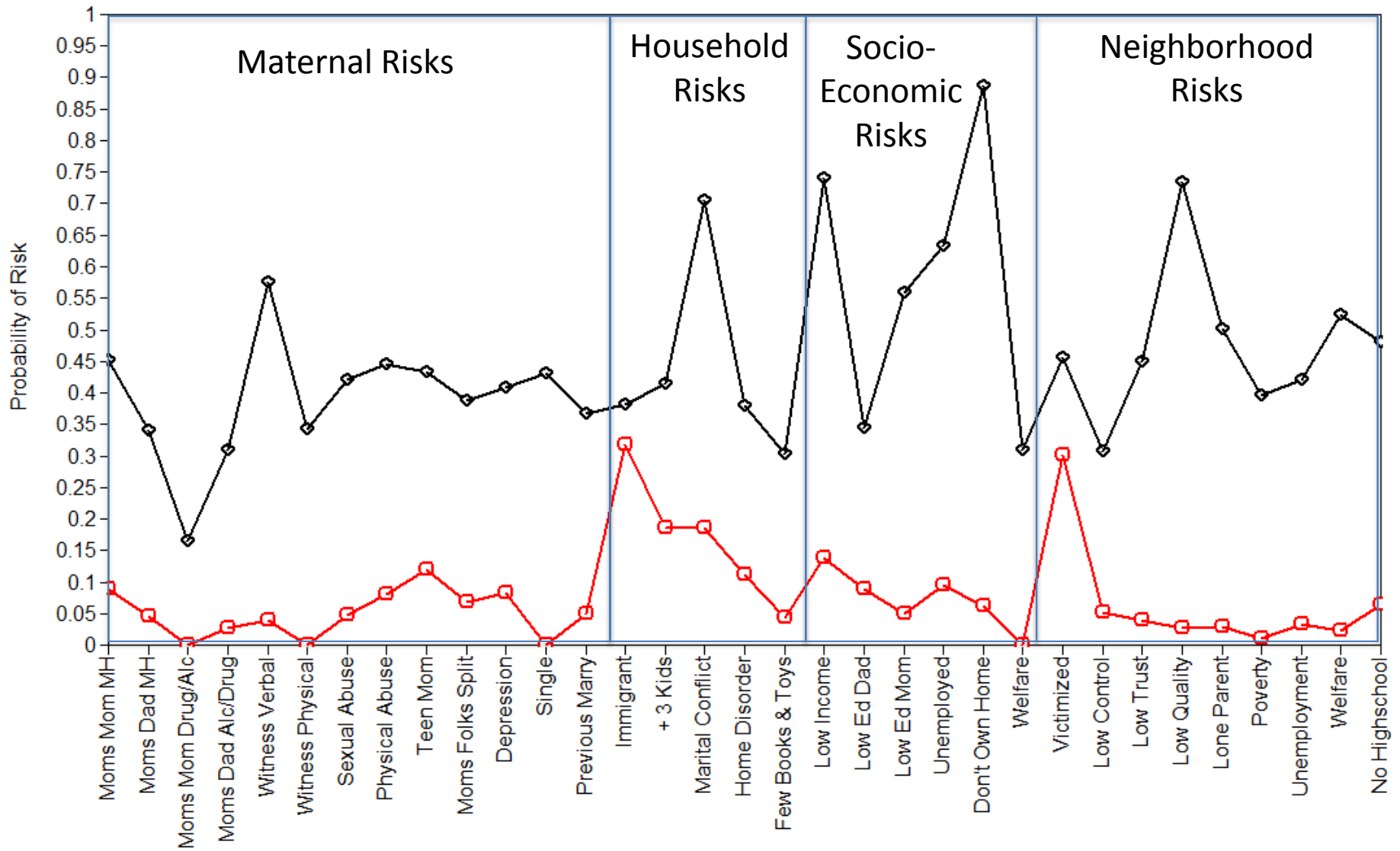
Problematic parenting (harsh/inconsistent discipline, low involvement, poor supervision) are major predictors of conduct problems and antisocial behaviour in children/adolescents (Capaldi et al., 1997; Loeber & Stouthamer-Loeber, 1986)

Parental behaviours have been shown to mediate a wide range of child outcomes

Family Risk Factors and Child Development



Multilevel Risk (13%) – Low Risk (43%)



Goals & Challenges We Face

Improve parental and child competencies early in life as a means of promoting child health, development, and behaviour

- 1 – Choosing the appropriate aspects of parenting/environment to attempt to improve
- 2 – Establishing critical periods for these interventions
- 3 – Understanding any barriers to, or facilitators of behavioural change
- 4 – Designing / implementing interventions that dependently and consistently engage parents and bring about lasting changes in a cost effective manner

Intervention Strategies by Developmental Age of Children

prenatal environment/nutrition

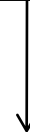
responsivity-contingencies

management of child initiated
aversive behaviour – behavioural
management

PERINATAL

BIRTH – 18 MONTHS

2-4 YEARS



Nurse-Family

Partnership (David Olds)

Family Integrated Care (O'Brien)

Playing & Learning Strategies

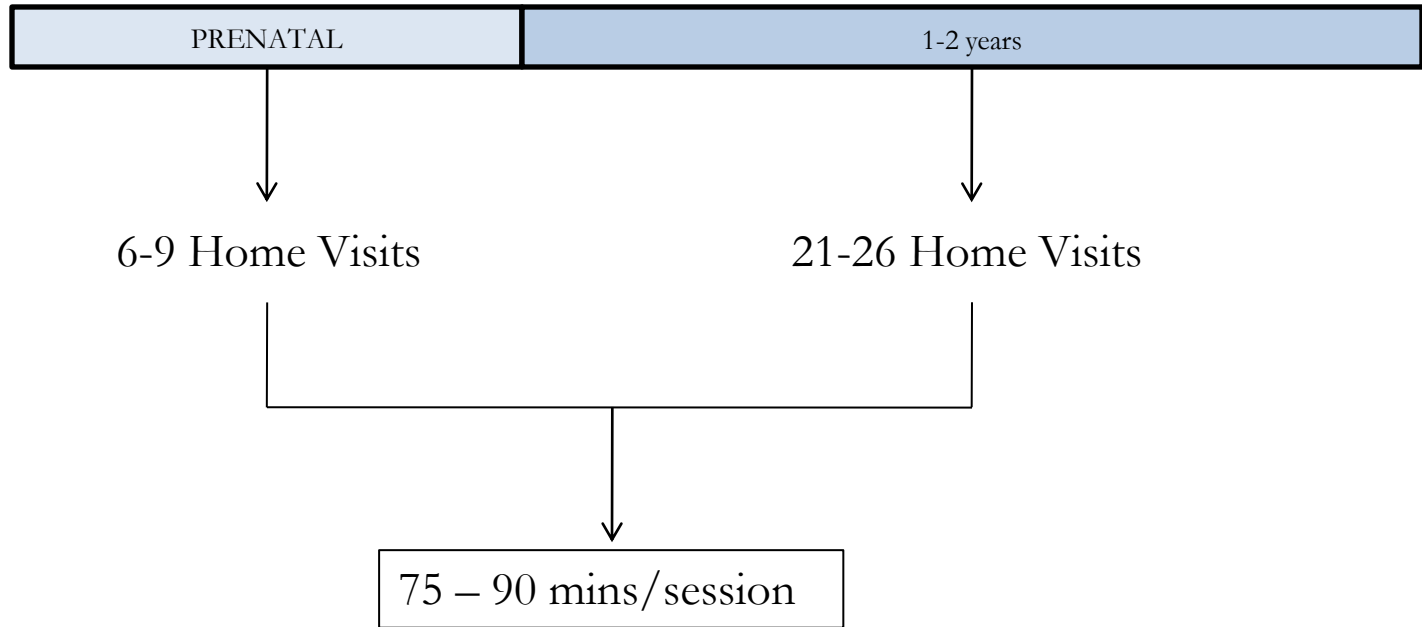
(PALS – Susan Landry)

The Incredible Years

(Webster-Stratton)

Nurse-Family Partnership (NFP)

Program Design

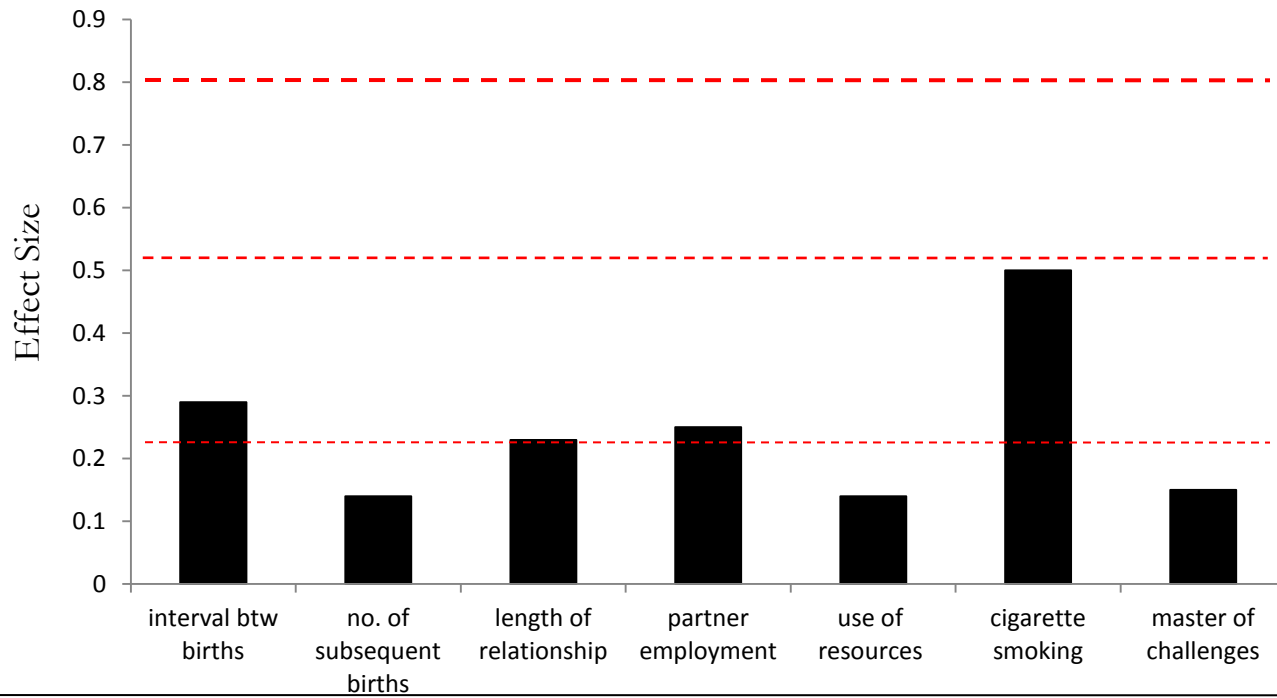


Detailed visit-by-visit guidelines – content reflects challenges parents likely to confront during specific stages of pregnancy and the first 2 years of life.

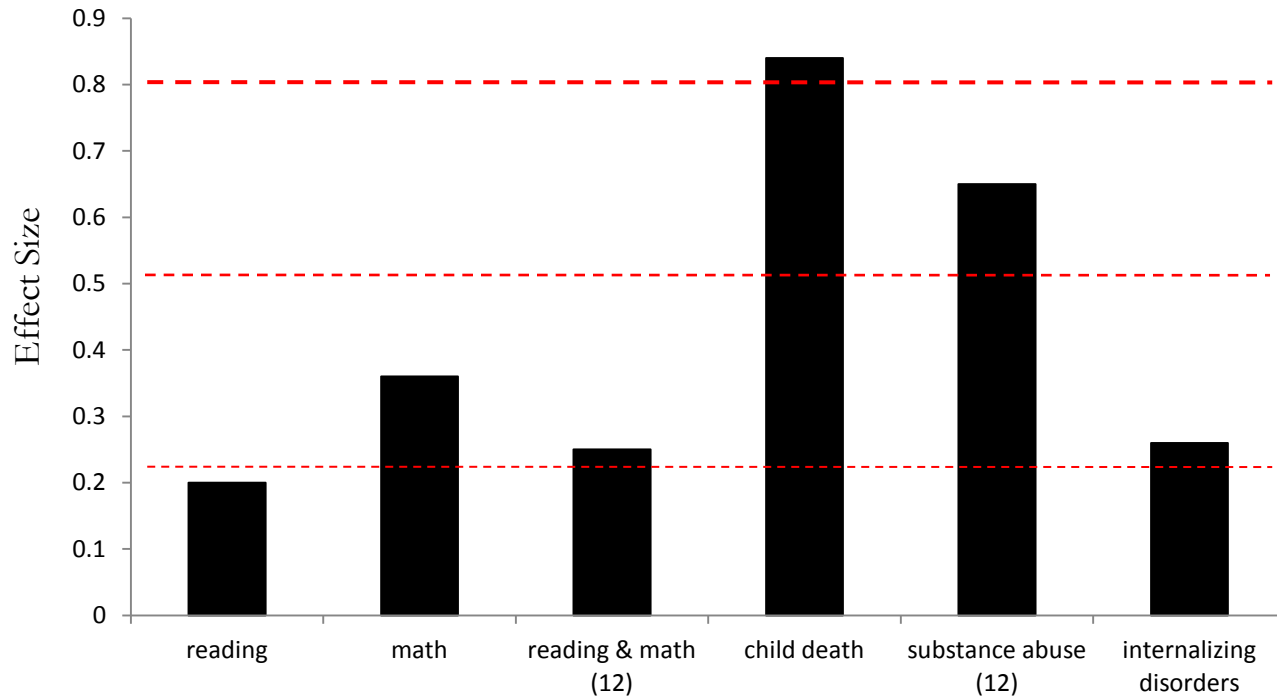
Goals:

- (1) improve the outcomes of pregnancy by promoting women's healthy prenatal behaviours
- (2) improve the health and development of the child by promoting parents' competent care of their children
- (3) enhance parents life-course development by encouraging parents to plan subsequent pregnancies, complete their education, and find work

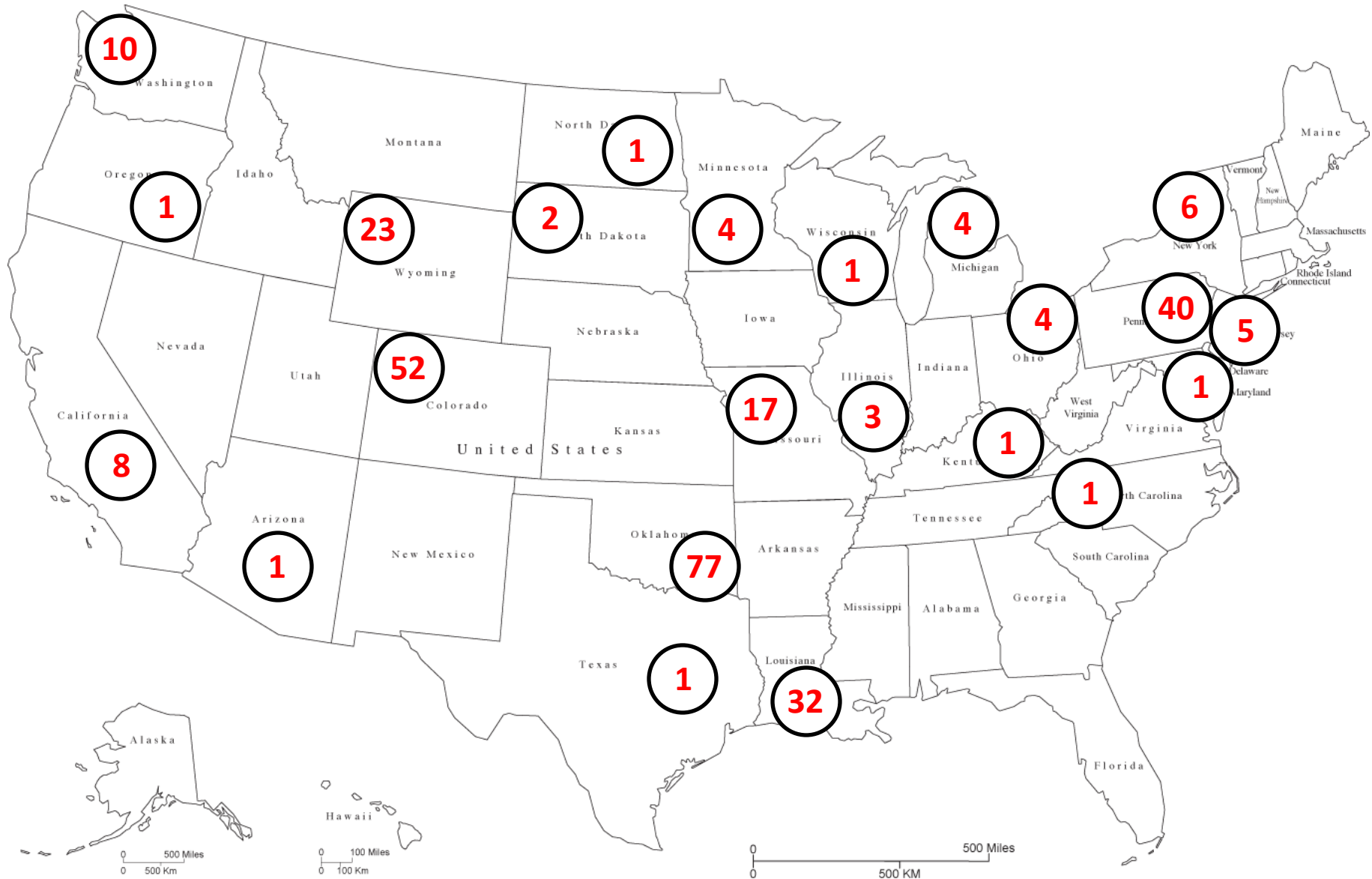
Maternal Outcomes



Child Outcomes



Counties Served by the NFP as of Sept 2007



NFP in Canada

From 2008-2012, in a collaboration between McMaster University and the City of Hamilton Public Health Service, a pilot study to determine the feasibility and acceptability of delivering the NFP program to Canadian families was completed.

Hamilton Community Foundation implements the NFP – 1/9 pregnancy are between ages of 15-19 (higher than the Canadian average).

January 2012 – BC launched the NFP to high risk families.

Transportability is demonstrated to be better in districts with poorer access to medical care and support resources – does very well in the USA but not as well in communities with good health care and resource support.

Family Integrated Care (FIC)

- In the NICU, infants are physically, psychologically and emotionally separated from their parents
- Many programs have addressed this issue (e.g. kangaroo care) – to encourage greater parent involvement
- Parents often see themselves as “voyeurs” who are “allowed” to hold their infants – resulting in feeling anxious and unprepared after discharge



Family Integrated Care (FIC)

Program Design

- Mount Sinai Pilot Study – RCT currently underway
- Parents learn how to provide all care (except I.V. fluid and medication administration) for their infants in the NICU
- Nurses become educators and coaches for the parents
- Multidisciplinary project, the FIC program was designed by veteran NICU parents, a physician, nurses, a parent educator, a lactational consultant and a social worker.
- Parents are provided parking/transit passes, rest/sleep rooms, kitchen, screens and breast-pumps, psychological support by veteran parents, education sessions
- Based on the ‘Humane Neonatal Care’ model in Estonia (Adik Levin)

Family Integrated Care (FIC) Program Design

7am ————— >8 hours ————— 8pm



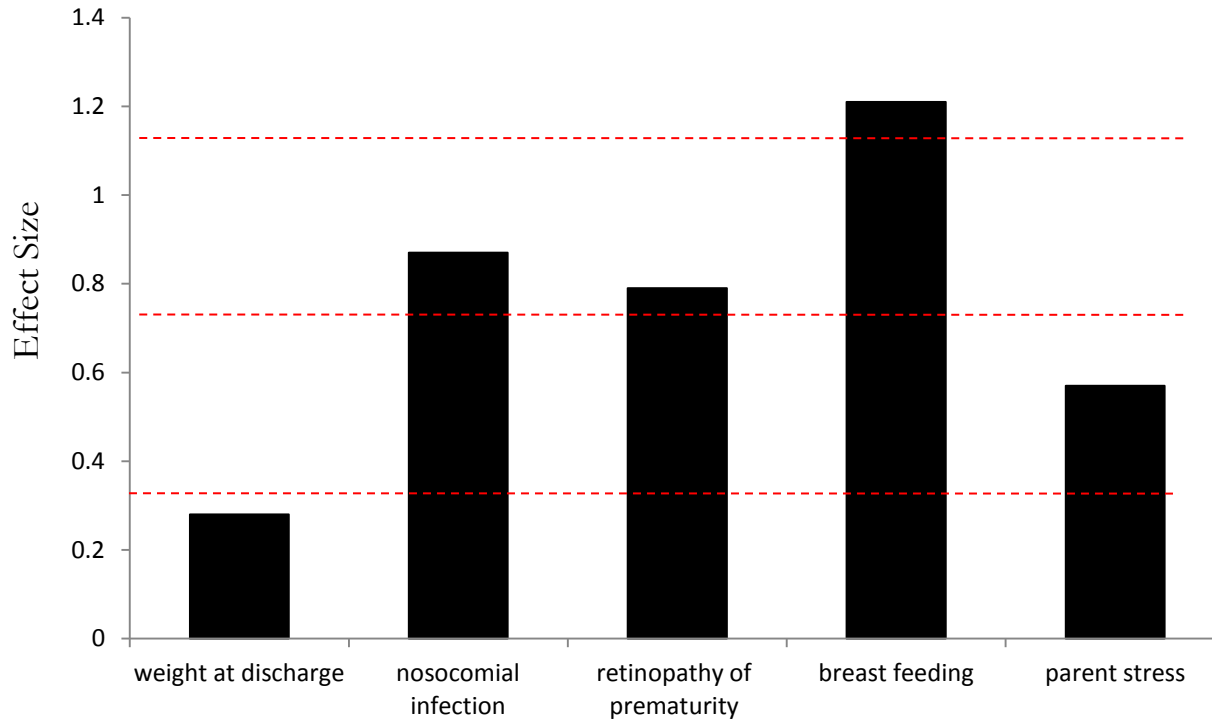
Education session
set curriculum
coordinated and led by a
parent resource
nurse/veteran parent
held at bedside or
classroom
Some sessions taught by
other members of the
multidisciplinary team

Additional session
One-to-one provided
as needed

Medical Rounds

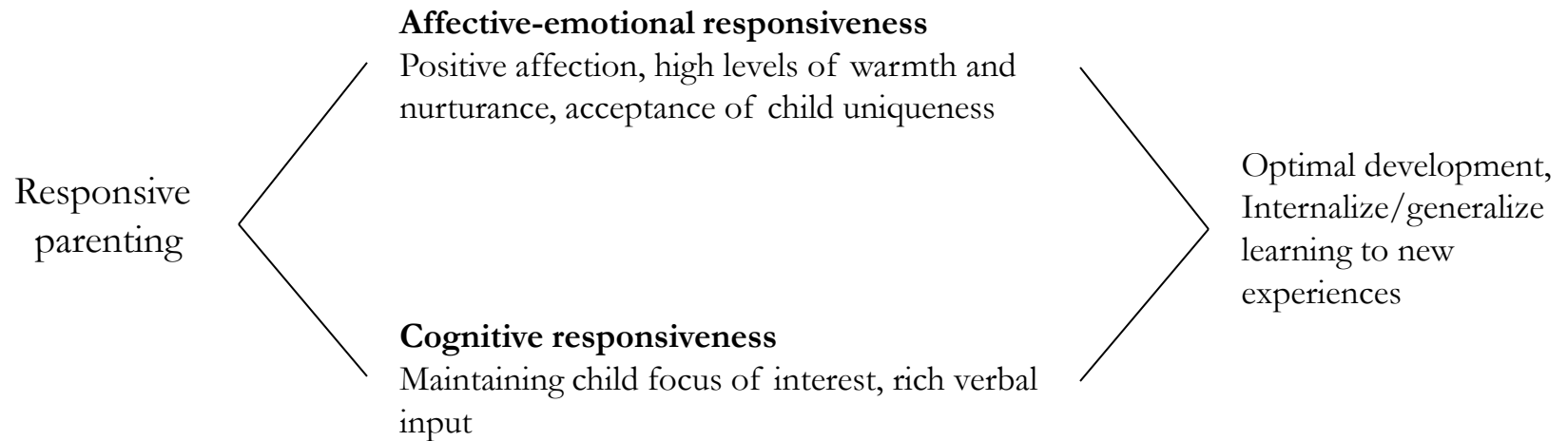
Provide infant care
Feeding, bathing,
dressing, holding,
skin-to-skin care,
charting, their own
learning

Family Integrated Care (FIC)



Susan Landry: Responsive Parenting Intervention

Program Content



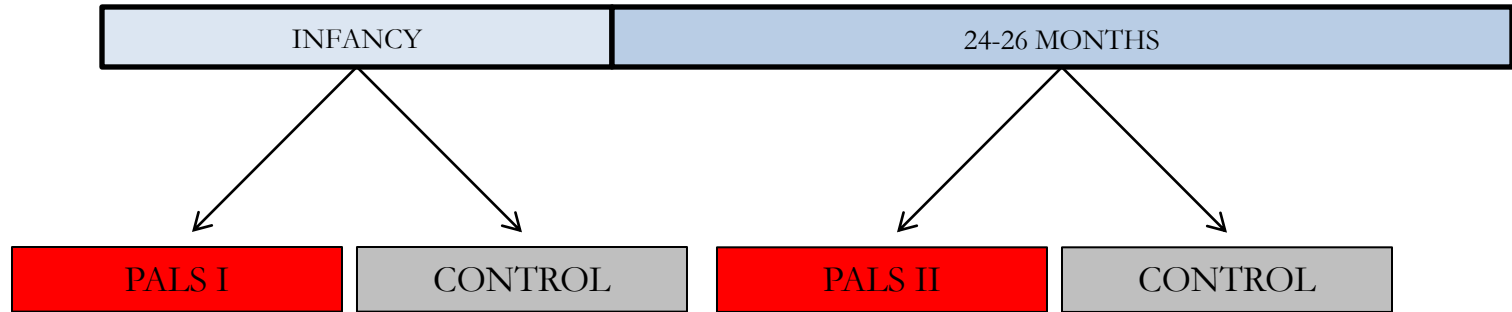
Critical Developmental Periods for Influence of Parenting Style

Infancy

Early
Childhood

Susan Landry: Playing and Learning Strategies (PALS)

Program Design



Playing and Learning Strategies Intervention (PALS I & II)

10-session curriculum that targets responsive parenting style – used in LBW babies

Use of educational videotapes and critiquing the videos

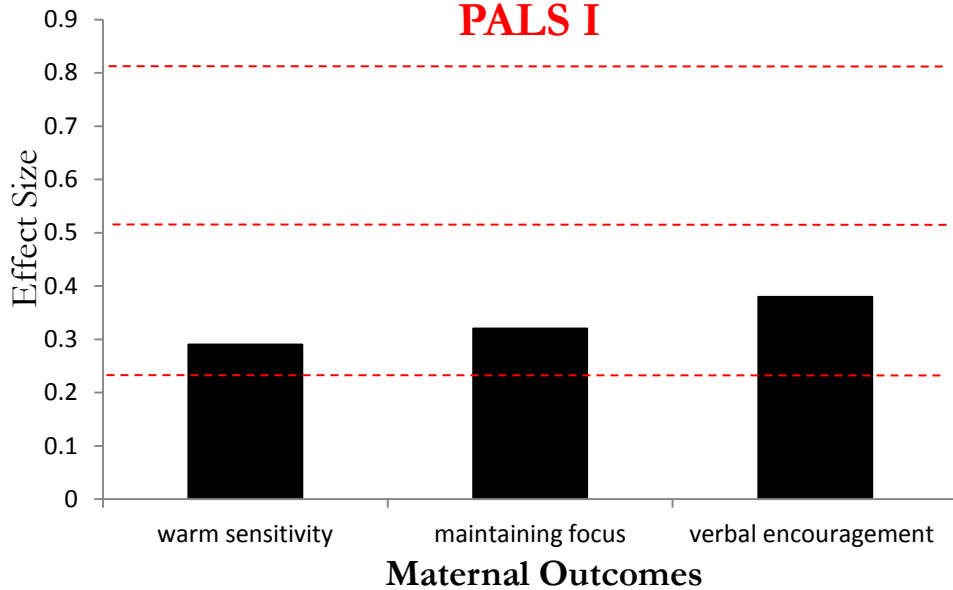
Each session includes:

- 1) review of experiences of the prior week & efforts for target behaviours
- 2) describing the target behaviours for the current visit
- 3) watching/discussing videotapes of mothers-infants with similar background demonstrating target behaviours
- 4) videotaping coached interactions btw mother-child
- 5) supporting mother to critique her behaviours and child's responsiveness
- 6) planning integration of responsive behaviours into daily activities for upcoming week

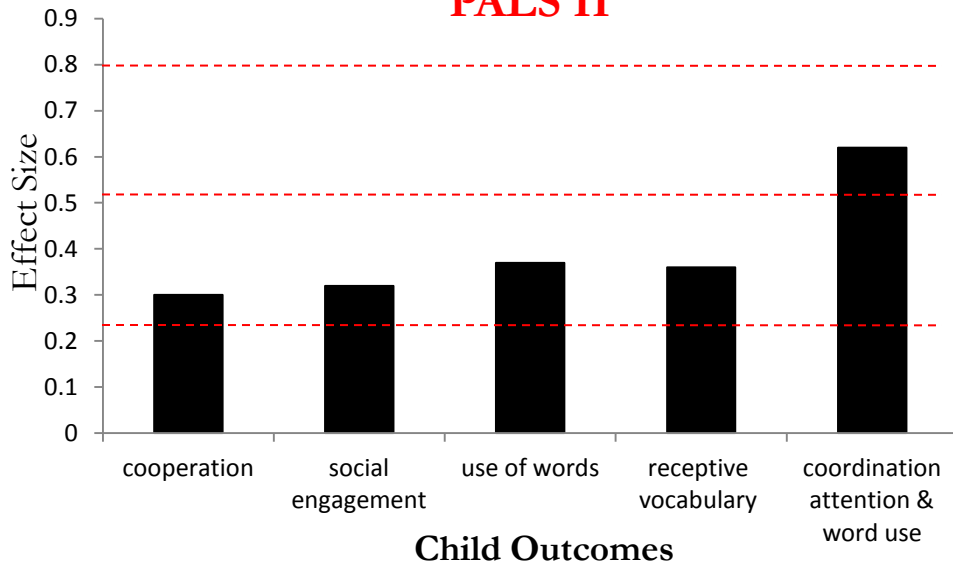
Fidelity Check at Sessions 5 & 10

Playing and Learning Strategies (PALS)

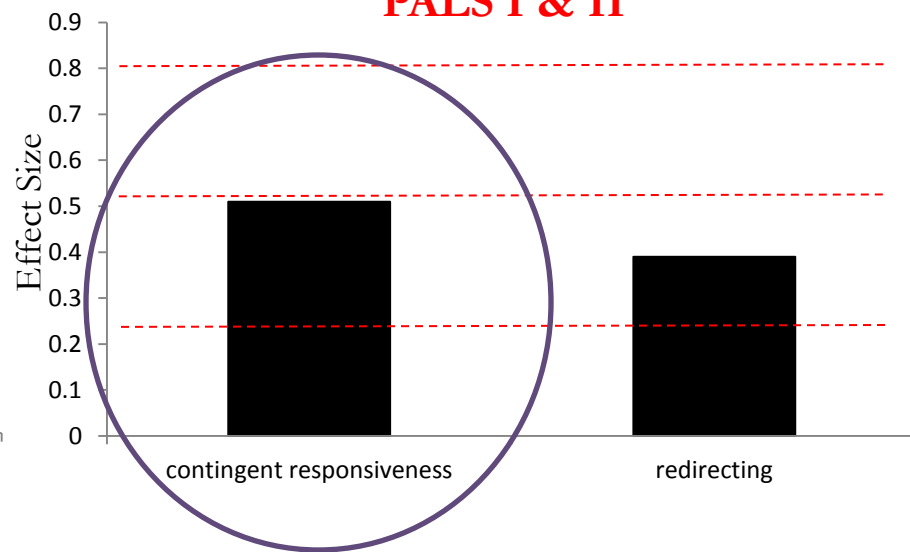
PALS I



PALS II



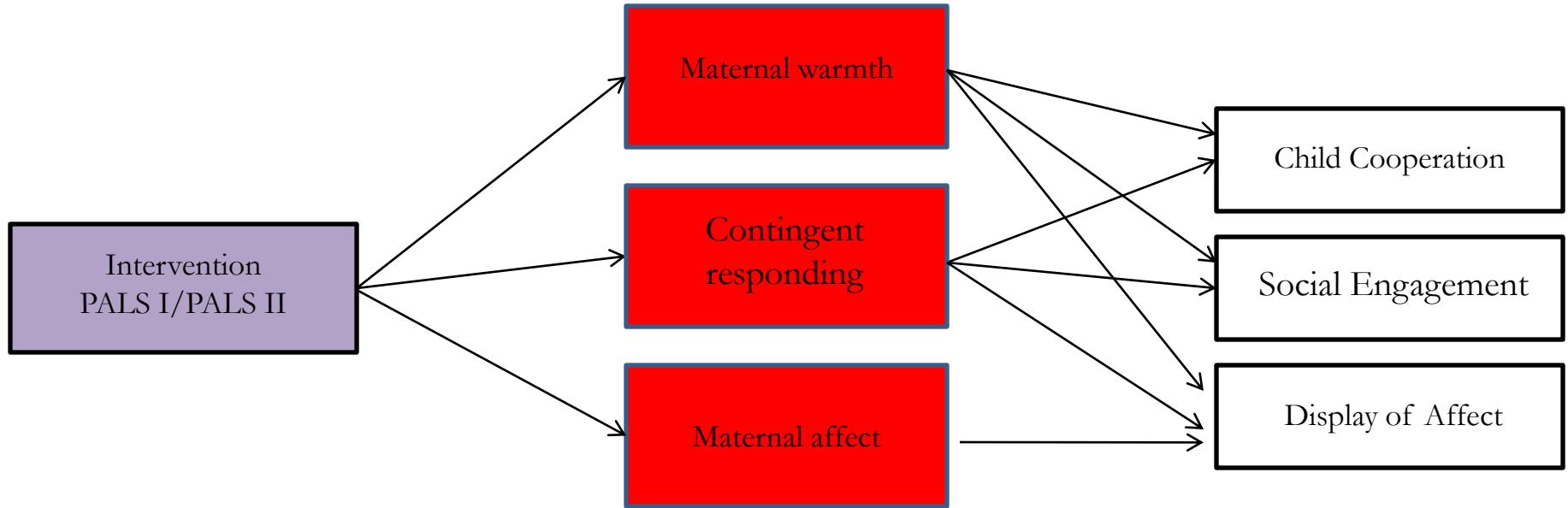
PALS I & II



Susan Landry: Responsive Parenting Intervention

Mediation Models

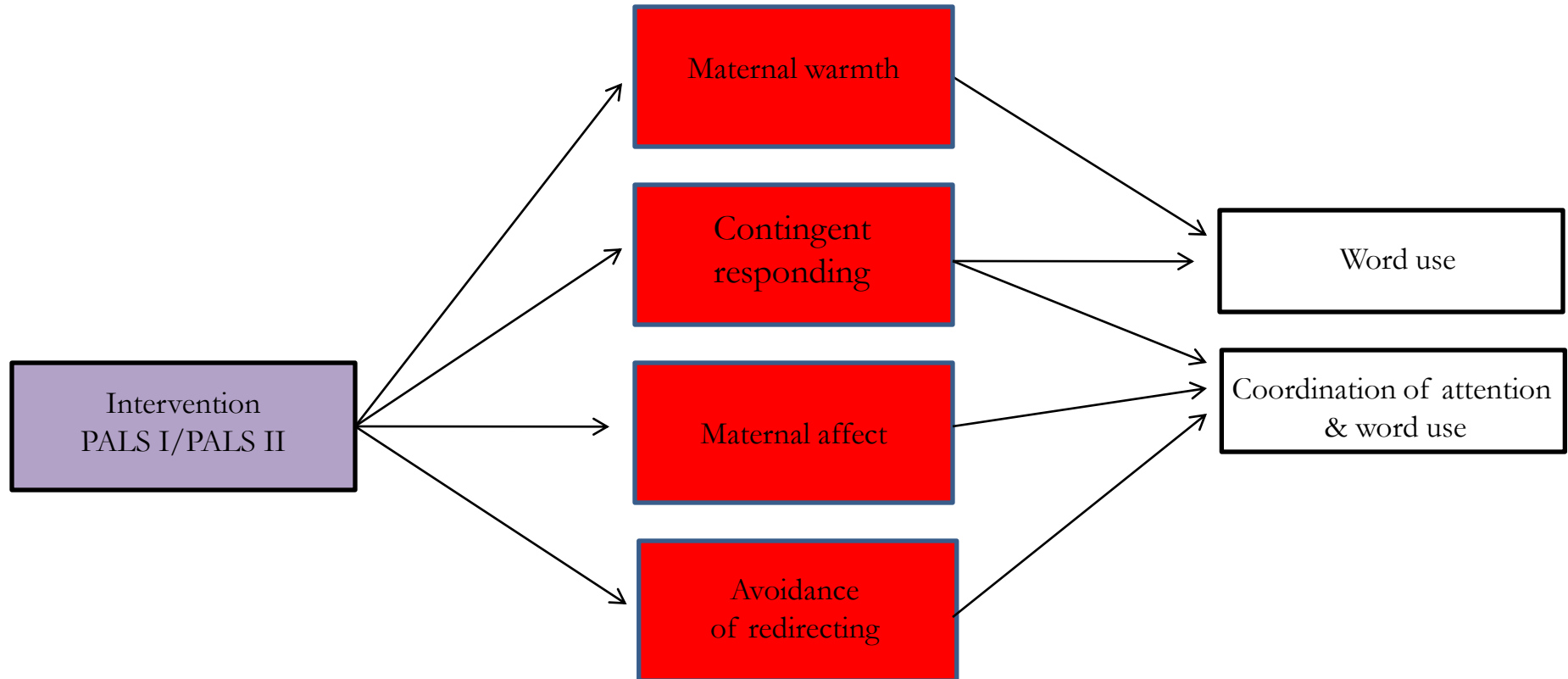
Social Skills With Mother



Susan Landry: Responsive Parenting Intervention

Mediation Models

Communication Skills With Mother



The Incredible Years – Webster-Stratton

Program Content

A series of programs focused on strengthening parenting skills (monitoring, positive discipline, confidence) and promoting parents' involvement in children's school experiences in order to promote children's academic, social /emotional competencies and reduce conduct problems.

The programs are grouped by age.

Babies & Toddlers (0-3 years)

BASIC Early Childhood (3-6 years)

BASIC School-Age (6-12 years)

ADVANCED (6-12 years)

The *Leader's Manuals* for these programs include questions commonly asked by parents, value exercises, role play practice suggestions, home activities and handouts.

These manuals can be used when the program is being self-administered by a parent or teacher either at home, in a clinic or school.

The Incredible Years – Webster-Stratton

Program Design

Parents and Babies Program

Ages 0-12 months.

Consists of a 6-part program focused on helping parents learn to observe and read their babies' cues/signals and learn ways to give nurturing and responsive care including physical, tactile, and visual stimulation as well as verbal communication.

The program includes:

- Part 1 - Getting to Know Your Baby (0-3 months)
- Part 2 - Babies as Intelligent Learners (3-6 months)
- Part 3 - Providing Physical, Tactile and Visual Stimulation
- Part 4 - Parents Learning to Read Babies' Minds
- Part 5 - Gaining Support
- Part 6 - Babies' Emerging Sense of Self (6-12 months)

The Incredible Years – Webster-Stratton

Program Design

Parents and Toddlers Program

Ages 1-3.

It consists of an 8-part program focused on strengthening positive and nurturing parenting skills. Each program builds on the previous.

The series includes:

Part 1 - Child-Directed Play Promotes Positive Relationships

Part 2 - Promoting Toddler's Language with Child-Directed Coaching

Part 3 - Social and Emotion Coaching

Part 4 - The Art of Praise and Encouragement

Part 5 - Spontaneous Incentives for Toddlers

Part 6 - Handling Separations and Reunions

Part 7 - Positive Discipline-Effective Limit Setting

Part 8 - Positive Discipline-Handling Misbehaviour

The Incredible Years – Webster-Stratton

Program Design

Preschool/Early Childhood BASIC Series

Ages 3-6 Years

Consists of Programs 1 - 4 and focuses on strengthening parenting skills and consists of components which build upon one another.

The series includes:

Program 1 - Strengthening Children's Social Skills, Emotional Regulation and School Readiness Skills

Program 2 - Using Praise and Incentives to Encourage Cooperative Behavior

Program 3 - Positive Discipline - Rules, Routines and Effective Limit Setting

Program 4 - Positive Discipline - Handling Misbehaviour

Preschool Home Visiting - Coaches and Parents Manual - one-to-one option

The Incredible Years – Webster-Stratton

Program Design

School Age BASIC Series

Ages 6-12 Years

Focuses on the importance of promoting positive behaviors, interpersonal issues such as building social skills, and effective praise.

The series includes:

Promoting Positive Behaviors in School Age Children

Reducing Inappropriate Behaviors in School Age Children

Supporting Your Child's Education

ADVANCED Series

Ages 4-12 Years

Builds on the BASIC School Age Program. Focuses on parent interpersonal issues such as effective communication and problem solving skills, anger management and ways to give and get support.

The series includes:

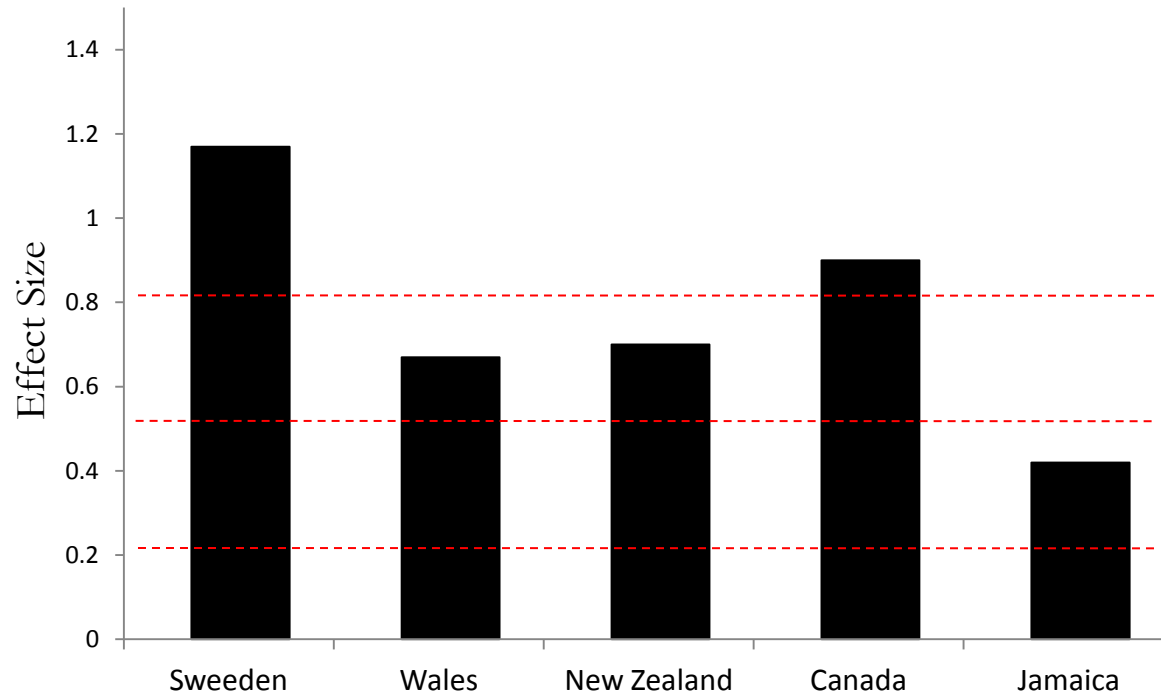
How to Communicate Effectively with Adults and Children

Problem Solving for Parents-Adults

Teaching Children to Problem Solve

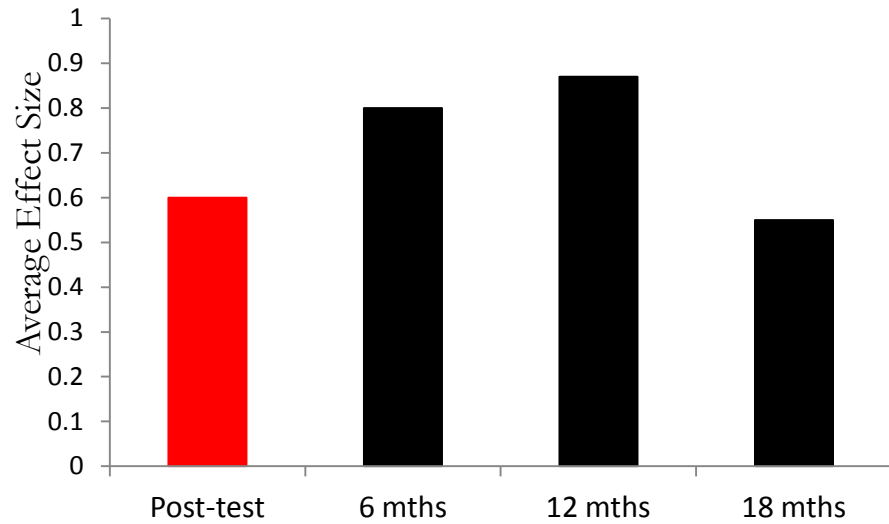
Incredible Years (IY) – International Results

Child Outcomes

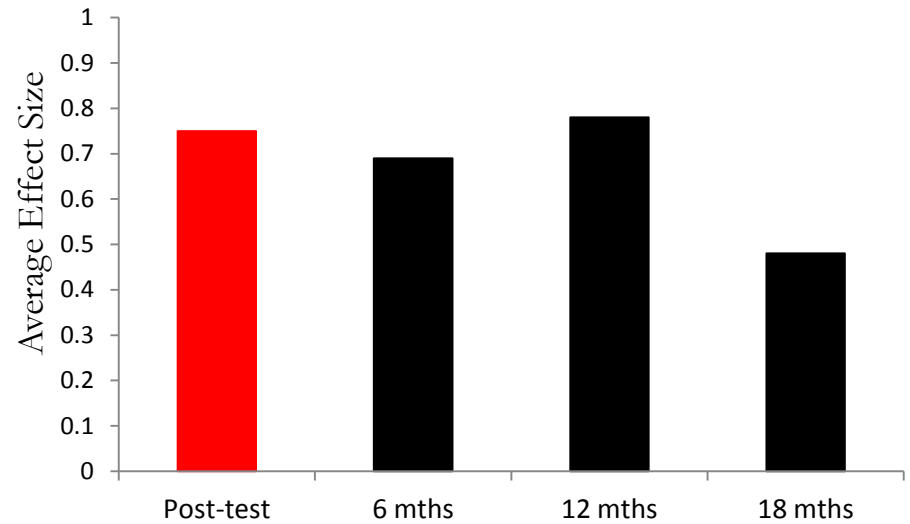


Eyberg Child Behaviour Inventory (ECBI)

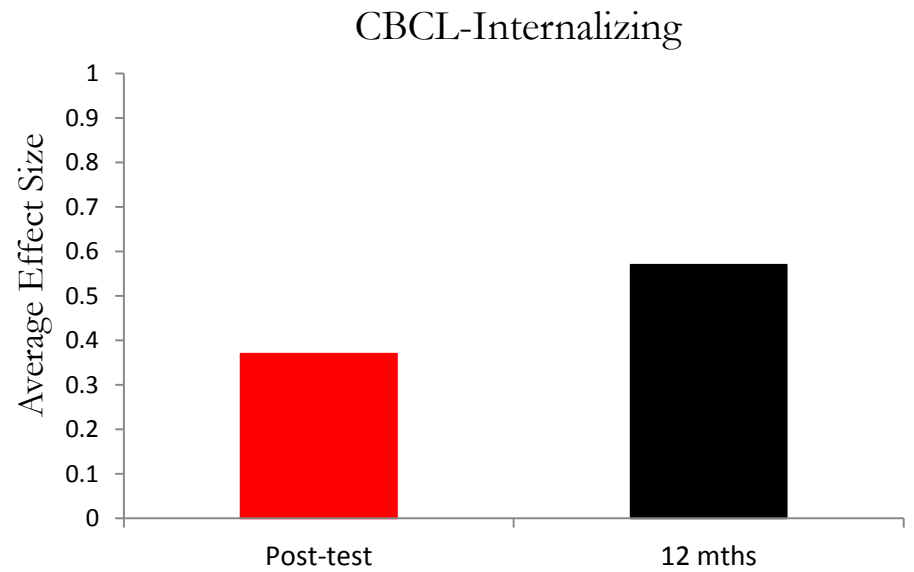
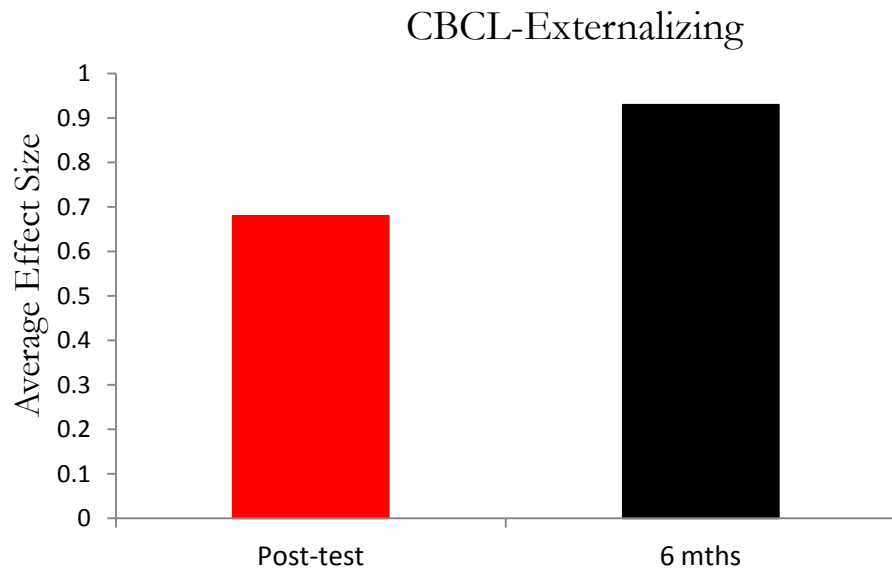
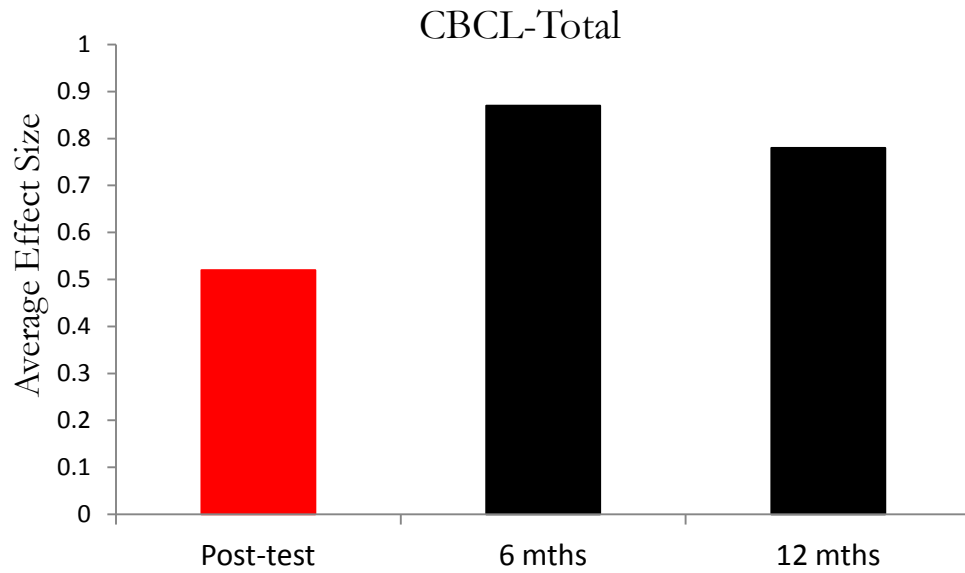
ECBI-Intensity Scale



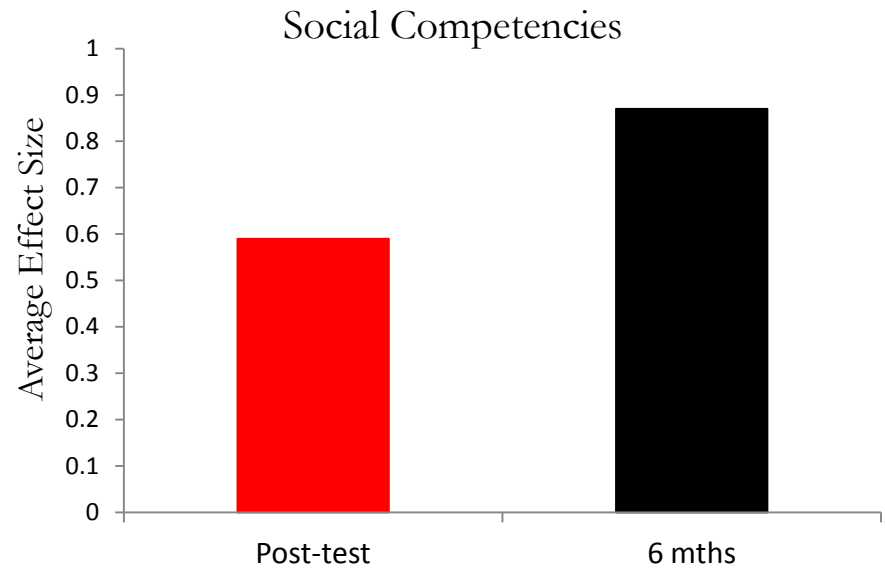
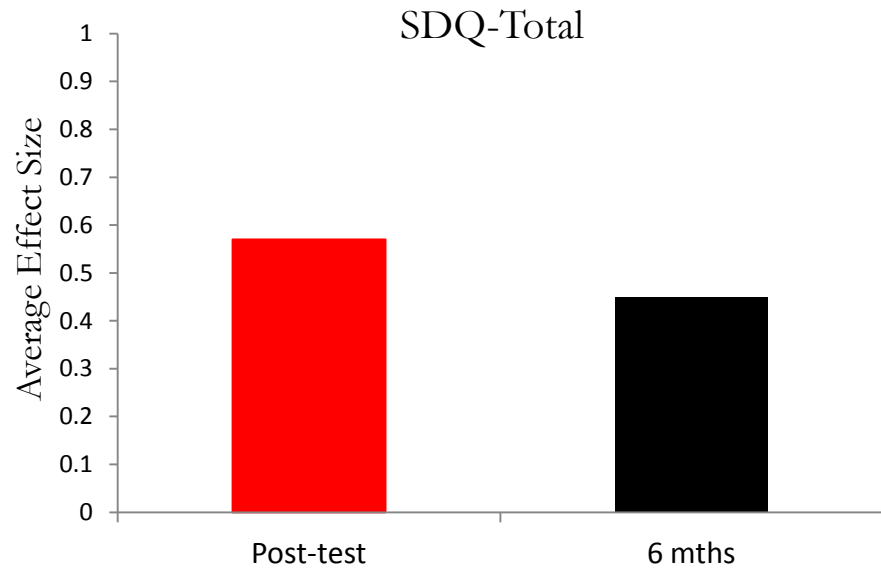
ECBI-Problem Scale



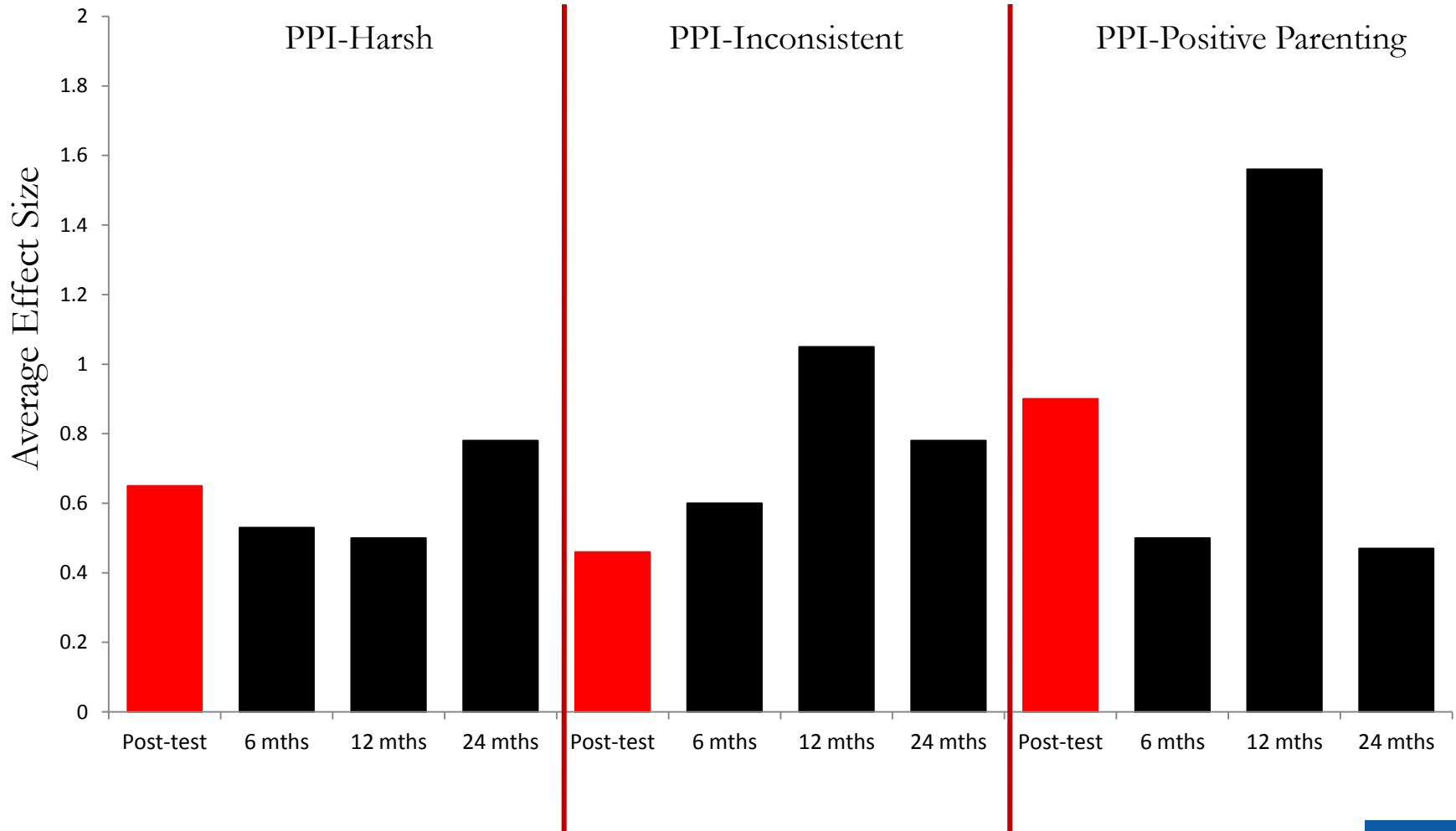
Child Behavior Checklist (CBCL)



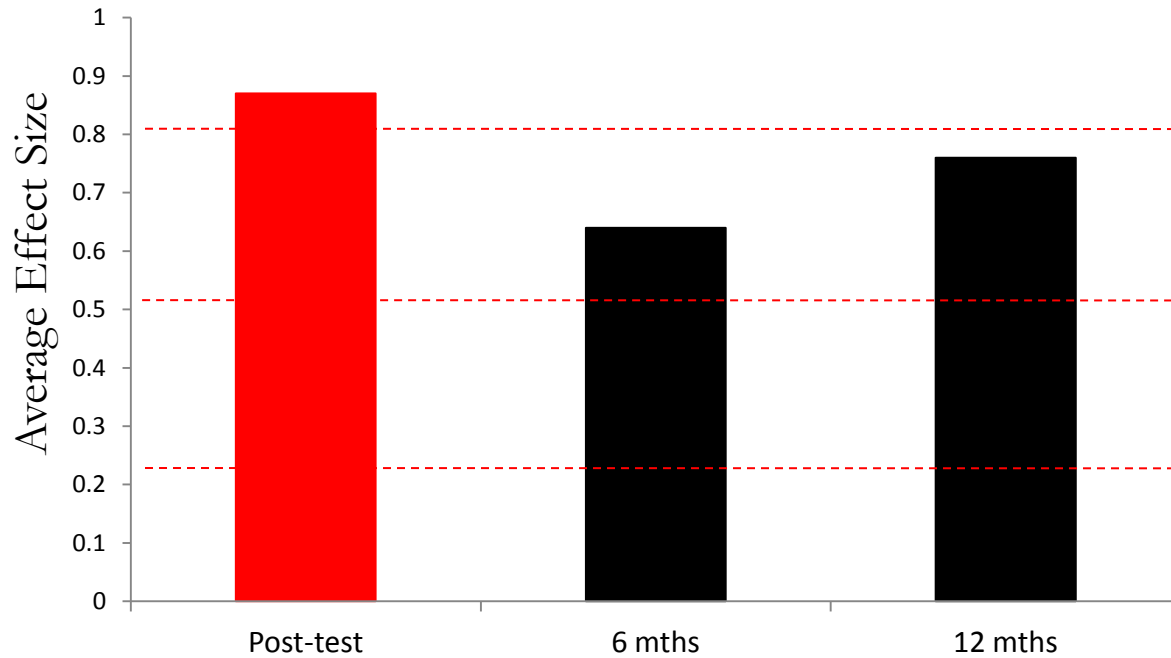
Other Outcome Measures



Parenting Practices Interview (PPI)



Parent Stress Index (PSI)



Intervention Strategies by Developmental Age of Children

prenatal environment/nutrition	responsivity-contingencies	management of child initiated aversive behaviour – behavioural management
PRENATAL	BIRTH – 18 MONTHS	2-4 YEARS
<p style="text-align: center;">↓</p> <p style="text-align: center;">Nurse-Family Partnership (David Olds)</p> <p style="text-align: center;">Maternal <i>d</i>=0.14-0.5</p> <p style="text-align: center;">Child <i>d</i>=0.23-0.82</p>	<p style="text-align: center;">↓</p> <p style="text-align: center;">Playing & Learning Strategies (PALS – Susan Landry)</p> <p style="text-align: center;">Maternal <i>d</i>=0.33</p> <p style="text-align: center;">Child <i>d</i>=0.3-0.68</p>	<p style="text-align: center;">↓</p> <p style="text-align: center;">Incredible Years (Webster-Stratton)</p> <p style="text-align: center;">Maternal <i>d</i>=0.36-0.47</p> <p style="text-align: center;">Child <i>d</i>=0.39-0.95</p>

PROCESS ELEMENTS

Intervention Characteristics That are Associated with Effectiveness

Important questions

broadly focused vs. specific focused

length & intensity of intervention

timing of intervention – critical periods

universal effectiveness **or** effectiveness based on specific at-risk populations

Public Dissemination & Target

Target Group for intervention

Who are we targeting?

How do we target?

Timing of intervention

Screening and assessment tools? Cost? Practicality?

Upscaling and public dissemination

Identifying high risk groups

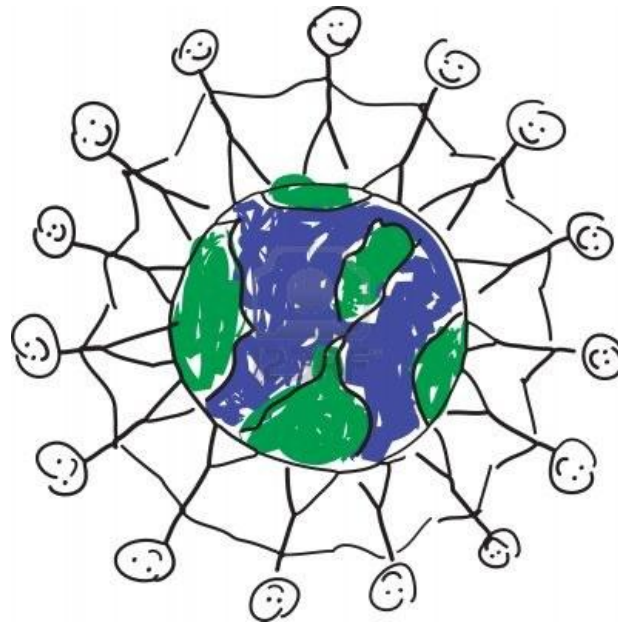
How do we offer the intervention?

How do we upscale and roll-out the intervention?

How effective are the screening tools to pick out high risk groups?



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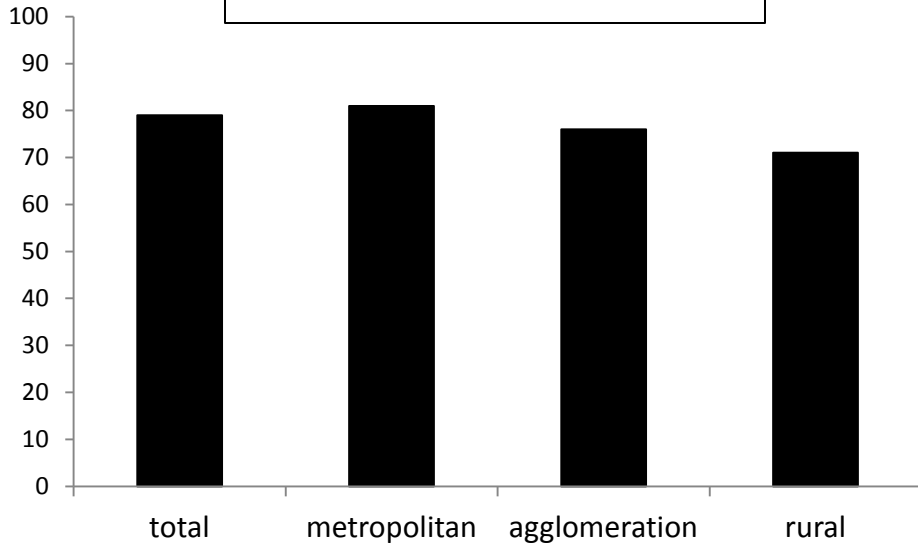
Atkinson Centre for Society and Child Development
Fraser Mustard Institute for Human Development

Web-Based Delivery

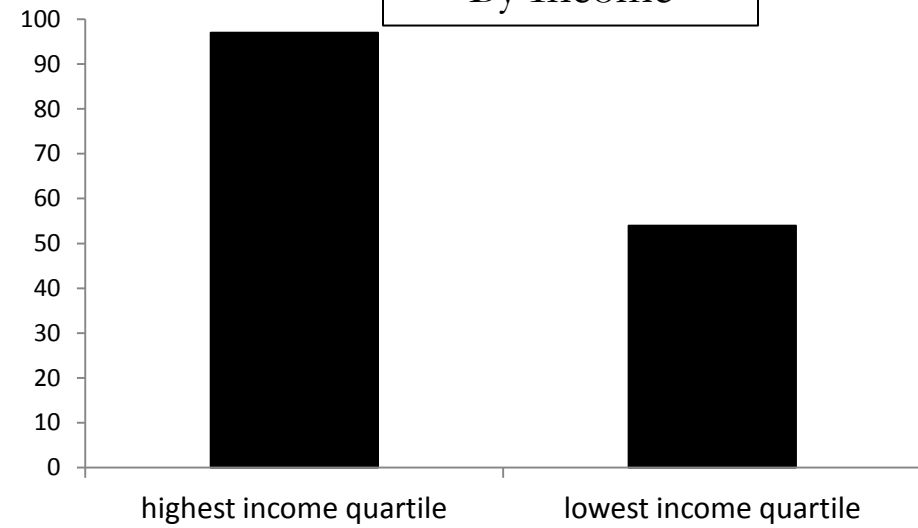


Internet Usage Statistics Canada 2010

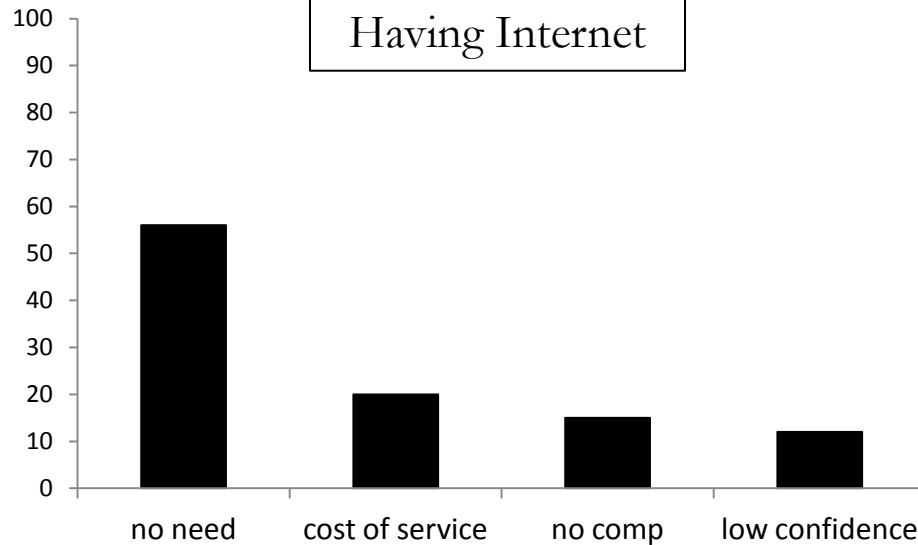
Total Across Canada



By Income



Reason for not Having Internet



Web-Based Delivery

Meta-analyses examining predictors of outcome have found that the strongest intervention effects have emerged for *behavioral programs* and for programs delivered in the *home* (Baggett et al., 2008; Bakersman-Kranenburg et al., 2003).

Barriers to Service Delivery & Utilization

Lack of medical coverage

Absence of reliable transportation

Lack of childcare

Limited flexibility in work schedules

Stigma associated with seeking psychological services, especially in sparsely populated and remote communities

***These barriers differentially affect women, minorities, and the poor**

Web-Based Delivery of PALS

Why appropriate for web-based delivery?

- 1) Manualized nature of the program
- 2) Videos that provide examples are easily delivered via internet
- 3) 10-session brief participation – retention is feasible

Four Primary Components of the Internet-Delivered PALS

- 1) Self-regulated learning of parenting skills that incorporate dynamic multi-media presentation and interactive queries
- 2) A mechanism to record remotely and transfer videos of parent-infant interactions captured through a computer “eyeball” – to encourage practice and facilitate discussion with the coach
- 3) Electronic system for professional and peer support
- 4) Online tracking system of participant knowledge acquisition and treatment engagement to monitor progress – including supervision of coaches

Literacy demands – grade 3 level – choice of audio

In the moment clarification

**Mothers are asked questions to promote progressive learning of material
either thought processes or assessment questions**

Web-Based Delivery of PALS

After each session – mothers are asked to record a video (5 minutes) of themselves with their infant practicing the skills taught during that session

Once recorded video is sent to an automated application for review by coach

Videos reviewed on weekly basis with mothers

Coaches have weekly review sessions over the phone with the mother after she has completed a session

Infant-Net administrator page with participant video

https://research.ori.org/infantnet/beta/admin/

https://research.ori.org/infantnet/beta/admin/

https://research.ori.org/inf...

Reports

- PALS Use Report
- Query Report
- Mem's Notes to Coach
- Participant Video


Forms

- User Administration

Links

- Back to Infantnet
- Logout

1029



Session **Display Name**

03	10/30/2007, 6:47:21 pm
01	10/11/2007, 4:41:56 pm
02	10/12/2007, 6:17:46 pm
03	10/30/2007, 6:43:48 pm
03	10/30/2007, 6:47:21 pm

Load Get video list

Play Stop 00:24/02:58

Infant-Net administrator page participant activity

Reports

- PALS Usage Report
- Query Answers Report
- Mom's Notes to Coach
- Participant Video

Calendar

Forms

User Administration

Links

- Back to Infantnet
- Logout

PALS Usage Report

Parent: Start date: Number of days:

Current level: 11

Current section: 01 [Congratulations]

Current page: 07

Last coach call: 02/12/2008

Last note to coach: No notes.

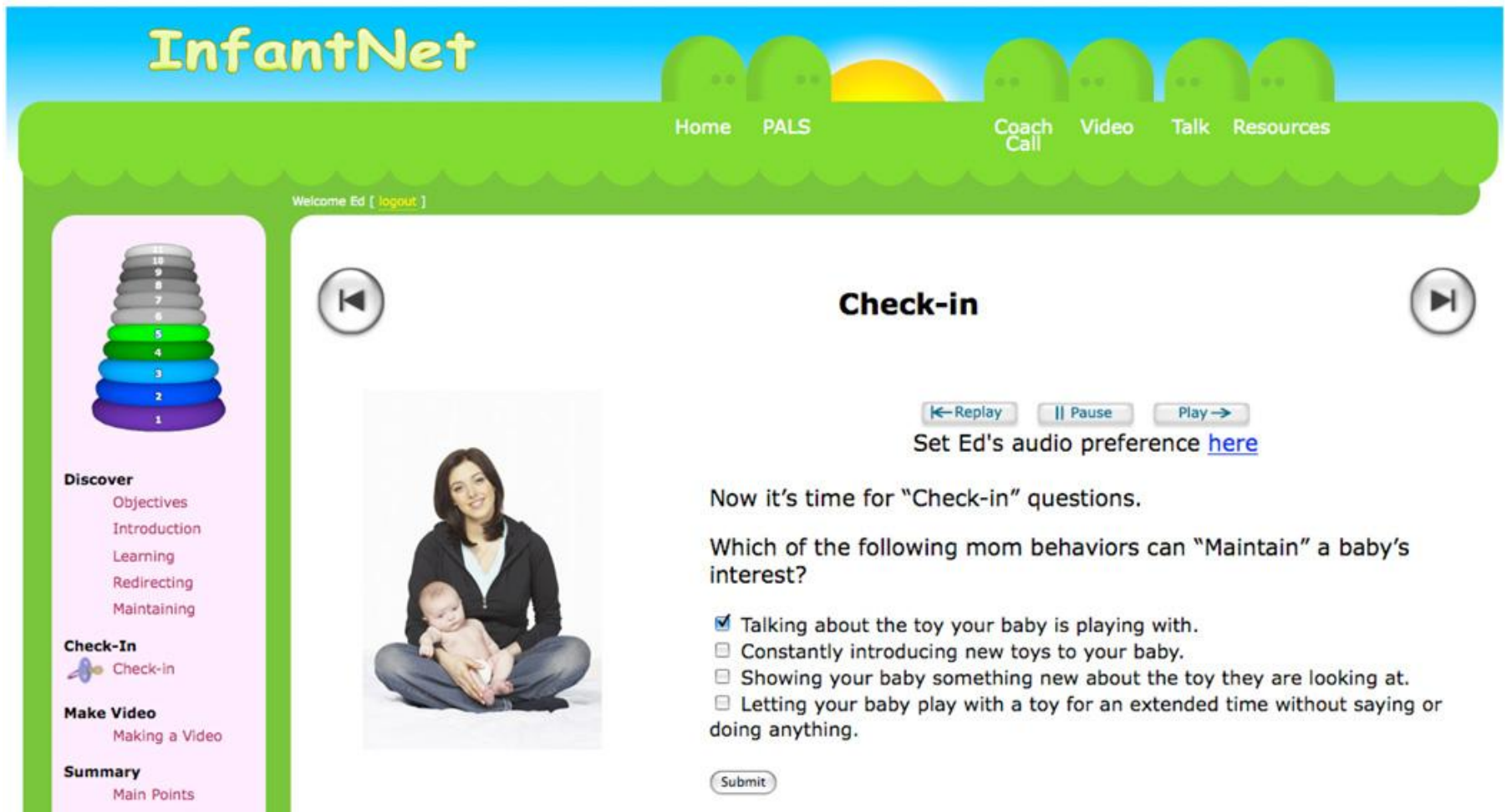
Time in PALS: 18h:19m:14s

Last log-in: 02/12/2008

Last video upload: 02/07/2008

Dates Data		Level Data	
	Nu	Time spent in PALS	Talk messages pc
01/03/2008	0	0h:5m:43s	
01/04/2008	0	0	
01/05/2008	0	1h:44m:33s	
01/06/2008	0	0h:0m:27s	
01/07/2008	0	0h:38m:34s	
01/08/2008	0	0	
01/09/2008	0	0	
01/10/2008	0	0	
01/11/2008	0	0	
01/12/2008	0	0h:17m:18s	
01/13/2008	0	0h:5m:51s	
01/14/2008	0	1h:7m:44s	
01/15/2008	0	1h:13m:34s	
01/16/2008	0	0h:10m:15s	
01/17/2008	0	0	

Screen Shot of Infant-Nets PALS page



The screenshot shows the InfantNet PALS page. At the top, the 'InfantNet' logo is in yellow on a blue background. Below it, a green navigation bar contains links for 'Home', 'PALS', 'Coach Call', 'Video', 'Talk', and 'Resources'. A user greeting 'Welcome Ed [logout]' is visible. On the left, a vertical sidebar lists menu items: 'Discover' (Objectives, Introduction, Learning, Redirecting, Maintaining), 'Check-In' (with a baby icon), 'Make Video' (Making a Video), and 'Summary' (Main Points). The main content area features a 'Check-in' section with a play button on the left and a right arrow button on the right. Below the play button is a photo of a woman holding a baby. To the right of the photo are audio controls: 'Replay', 'Pause', and 'Play' buttons, followed by the text 'Set Ed's audio preference [here](#)'. The main text asks for 'Check-in' questions and lists four behaviors with checkboxes. The first checkbox is checked. A 'Submit' button is at the bottom.

InfantNet

Home PALS Coach Call Video Talk Resources

Welcome Ed [[logout](#)]

Check-in

Set Ed's audio preference [here](#)

Now it's time for "Check-in" questions.

Which of the following mom behaviors can "Maintain" a baby's interest?

- Talking about the toy your baby is playing with.
- Constantly introducing new toys to your baby.
- Showing your baby something new about the toy they are looking at.
- Letting your baby play with a toy for an extended time without saying or doing anything.

[Submit](#)

Screen Shot of Infant-Nets PALS page

InfantNet Beta: Baby's Signals

https://research.ori.org/infantnet/beta/pals.php?page=102s03p09

InfantNet

Home PALS Coach Call Video Talk Resources

Welcome Ed [[logout](#)]

Baby's Signals

You might have noticed the following **Positive Signals**:

- Reaching for and holding the toys
- Trying to copy what mom did by tapping the toys
- Focusing his eyes on the toys
- Leaning in towards mom

If you would like to review the video to see these signals, click [here](#).

Set Ed's audio preference [here](#)

Discover
Objectives
Baby's Interest
Baby's Signals
Positive Signals
Negative Signals
Baby's Signals

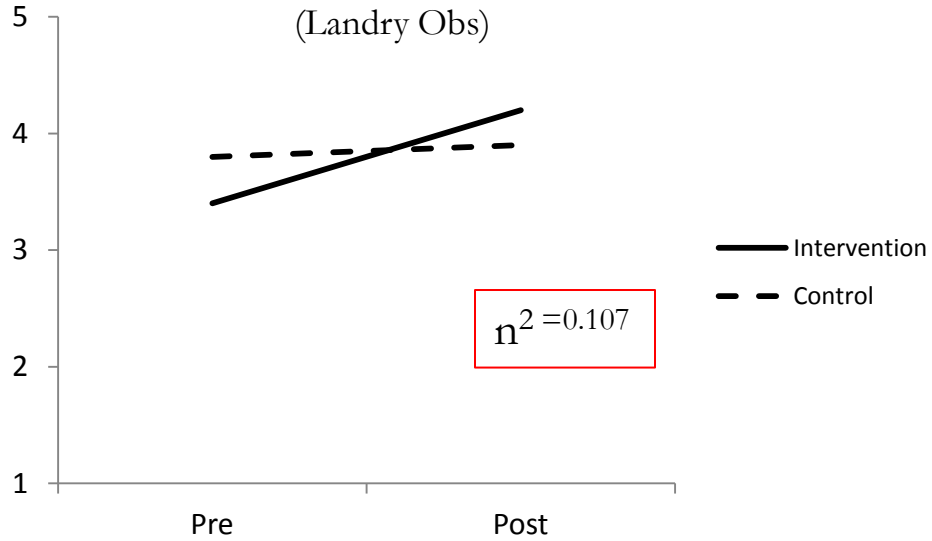
Check-In
Questions

Make Video
Making a Video

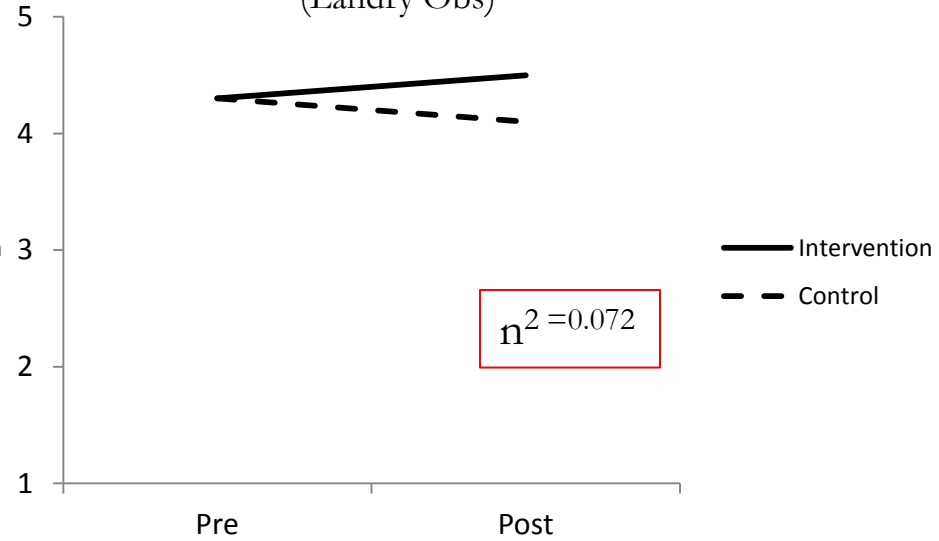
Summary
Signals

Preliminary Results

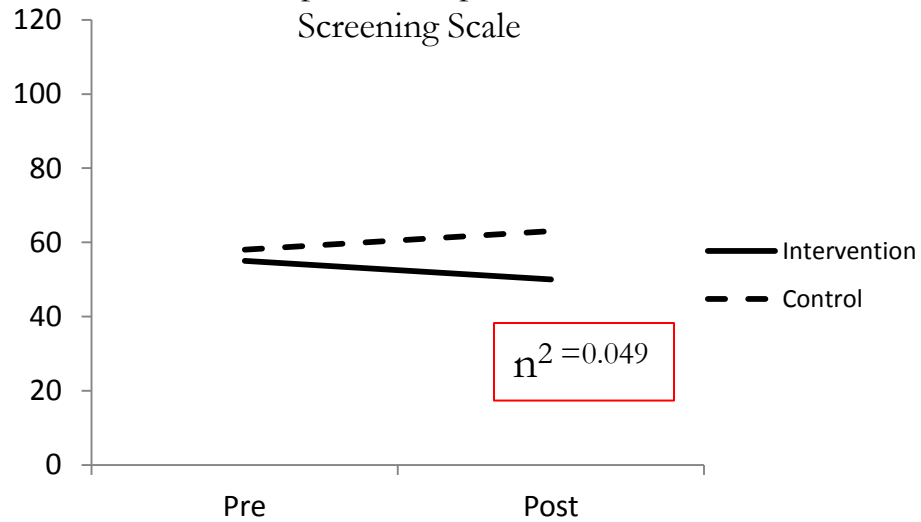
Infant Positive Behaviours
(Landry Obs)



Parent Positive Behaviours
(Landry Obs)



Postpartum Depression
Screening Scale



Web-based Incredible Years (IY)

Internet based with coaching and home visits

Chat rooms (social support) – has been shown to increase motivation to put what they have learned into practice

Same 250 videos offered in the group-based delivery

***Self-administered and self-paced version of the IY that includes same content as the group-based program - achieved most of the benefits by the group-based parenting program in the short-term. However, by 3-year follow-up had lost most of the gains

Web-based Incredible Years (IY)

Participants are able to watch the 250 videos in order

After each vignette, the last frame is frozen to allow a visual reminder –while audio recording poses questions similar to the group-based delivery

Summary of key points are presented with audio option to reduce literacy requirements

Have to click “next” for next vignette

Once topic is complete, several days must go by before system allows for next topic to give parents time to practice the skills

Home visits after topic 4 and 7 (coach must grant permission to continue)

4 home visits per family

Regular phone calls to reinforce and encourage

Increased parent satisfaction

Increased goal attainment by self report