

Computer-Based Augmentation of Early Home Visitation:

The E-Parenting Project

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Overview

- Review four key principles that guided the development of this project
- Provide an overview of the project itself
 - Participants
 - Intervention
 - Measures and follow-up
 - Analyses
- Discuss challenges, concerns, questions

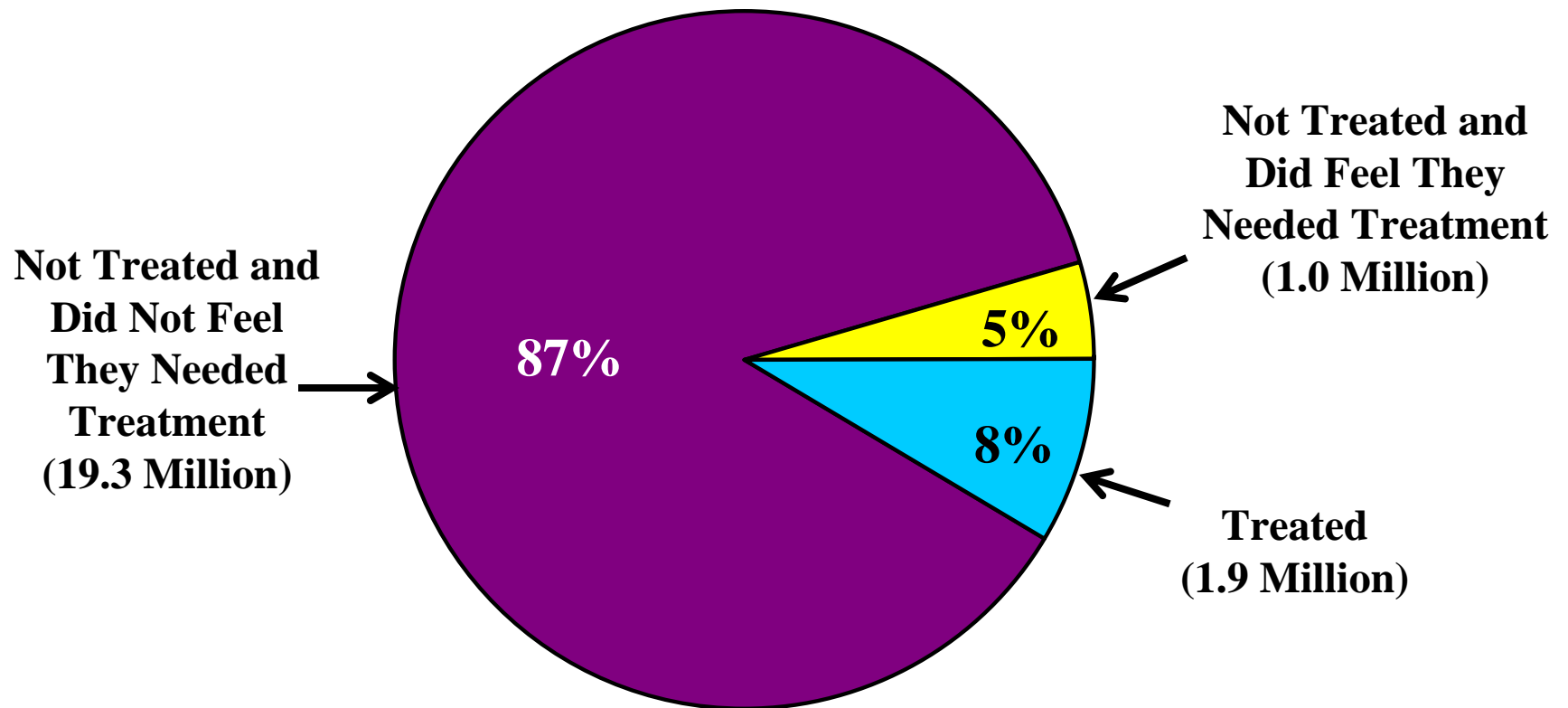
Four Guiding Principles



Guiding Principle 1: Begin With Motivation

- At any given moment, less than 25% of persons with a given problem behavior are willing to initiate change in that behavior
- Dropout from behavioral/psychosocial interventions is at least 50%
- Of those who do change successfully, many do so on their own (e.g., 75% of those with substance use disorders)
- Motivational interventions are highly efficacious as precursors to standard treatment (e.g., 64% vs. 29% success in alcohol treatment; Brown & Miller, 1993)

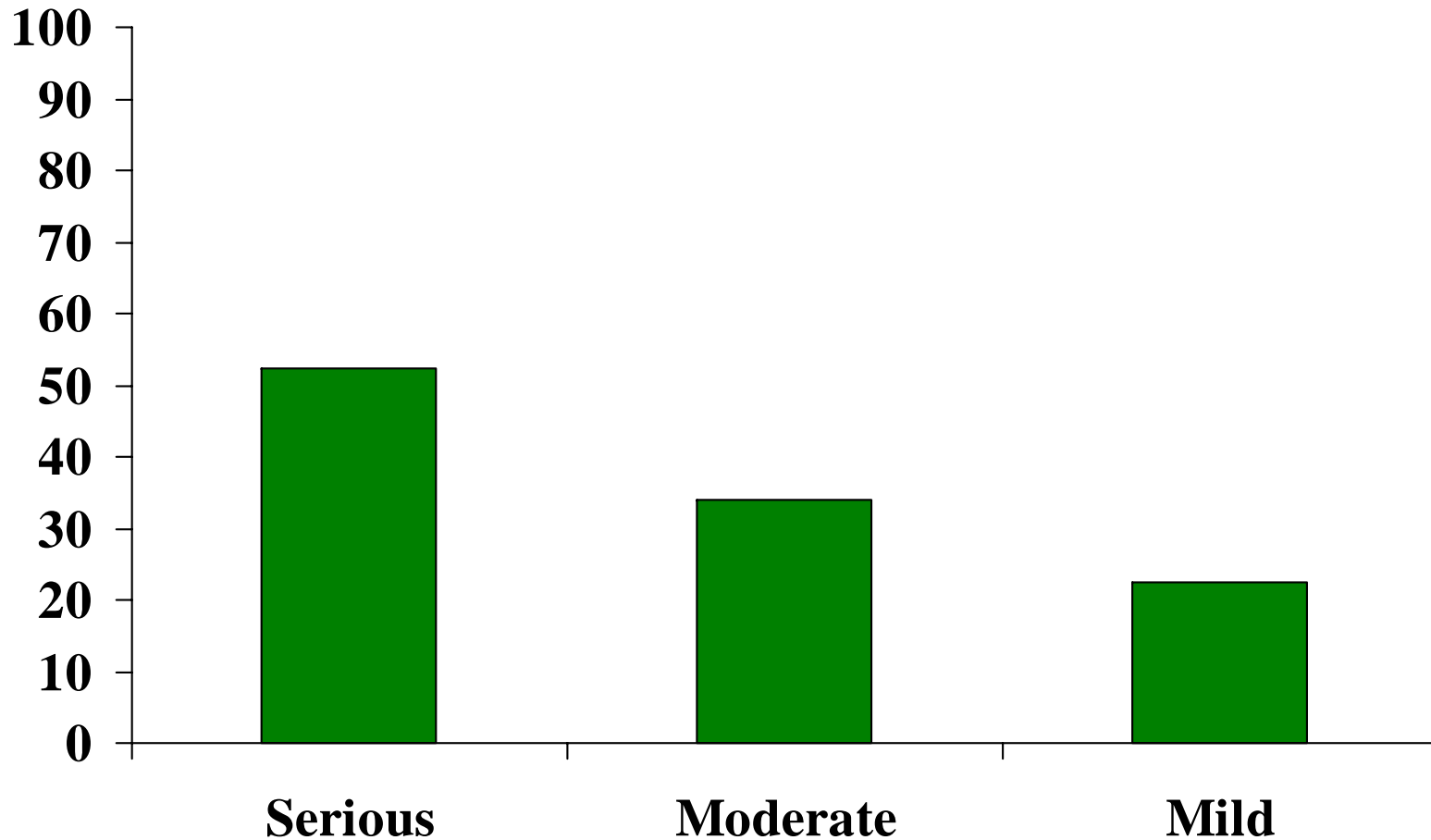
Perceived Need for Treatment Among Persons with Substance Use Disorders: 2003



Of 22.2 Million Needing Treatment for Substance Use Disorder

12-Month Receipt of Treatment by DSM-IV Disorder Severity, 2001-2003

% Receiving Treatment



WHO, JAMA, 2004

DSM-IV Disorder Severity

Guiding Principle 2: Less Can Be More

- Brief interventions are often as or more efficacious than more intensive approaches
- Evidence that longer is better primarily comes from within-subjects analyses

Meta-Analysis of Motivational Interviewing (Burke et al., 2003)

Problem area	Effect size (<i>d</i>) vs. no Tx	Effect size (<i>d</i>) vs. active Tx
Alcohol (frequency)	.25	.09
Alcohol (peak BAC)	.53	---
Drug Use	.56	-.01
Diet & Exercise	.53	---

Bakermans-Kronenberg et al., 2003

- Meta-analysis of interventions designed to increase parental sensitivity and/or infant attachment
- Shorter interventions were as or more efficacious than longer interventions:

	<u>Sensitivity</u>	<u>Attachment</u>
■ < 5 sessions	$d = .42$	$d = .27$
■ = 5-16 sessions	$d = .38$	$d = .13$
■ > 16 sessions	$d = .21$	$d = .18$

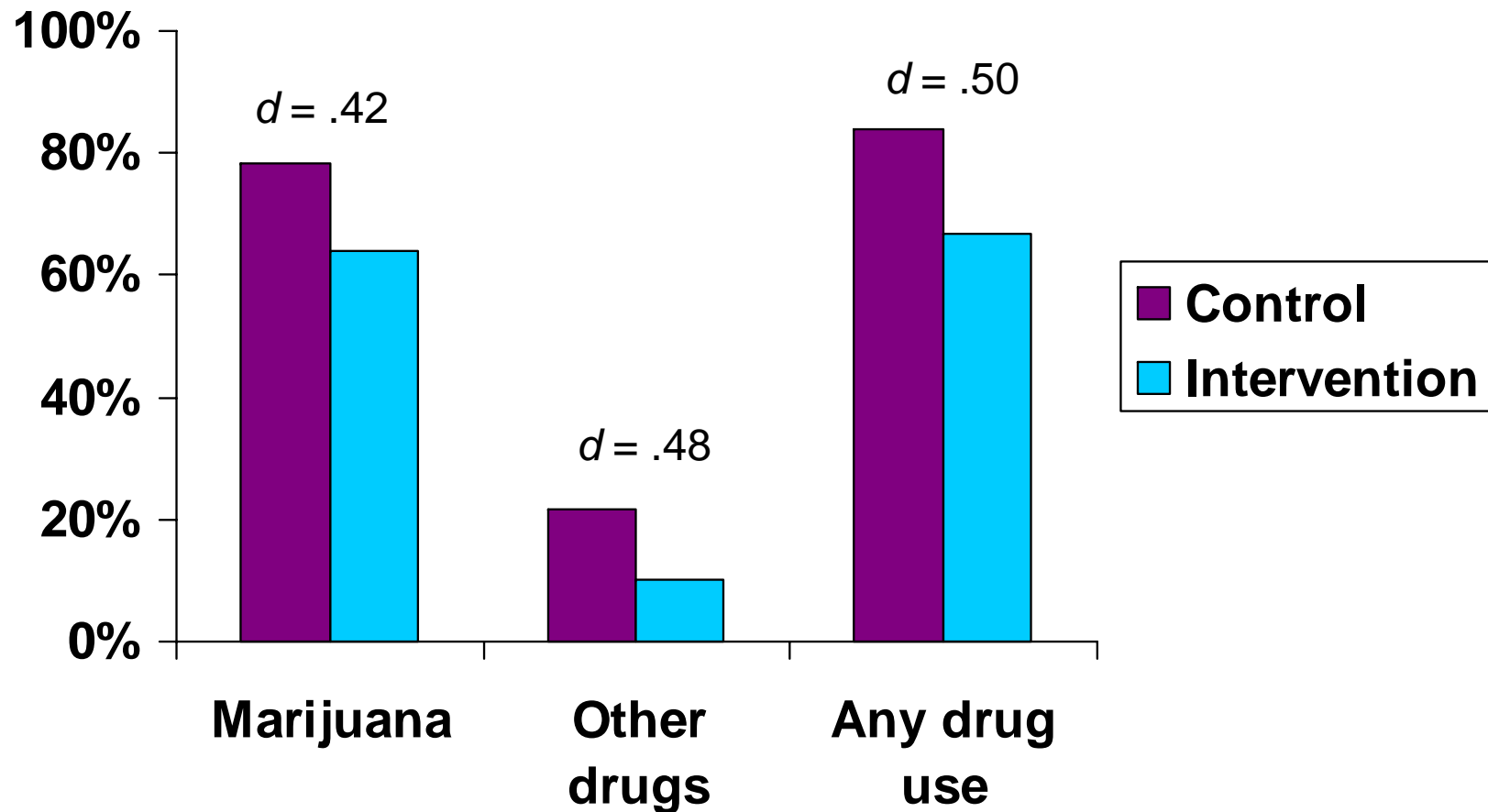
Bakermans-Kronenberg et al., 2003

- Four studies with no helper contact at all did better than the average intervention ($d = .62$ vs. approximate $d = .31$)
- These four studies utilized very simple approaches:
 - Video (Black & Teti, 1997)
 - Provision of soft baby carriers (Anisfield et al., 1990)
 - Provision of a workbook (Wiksen-Walraven, 1978)
 - Kangaroo holding method (Tessier et al., 1998)

Single 20-Minute Computer-Based Intervention With Post-Partum Women

(Ondersma et al., 2007)

Drug use prevalence, 4-month follow-up



Guiding Principle 3: Population Impact Is Priority One (Not d)

- ***Population Impact*** is a function of:
 - *Effect size* (usually expressed as Cohen's d)
 - *Reach* (the number of affected persons the intervention is presented to)
- Of the two, reach is the far more fruitful route to maximizing population impact

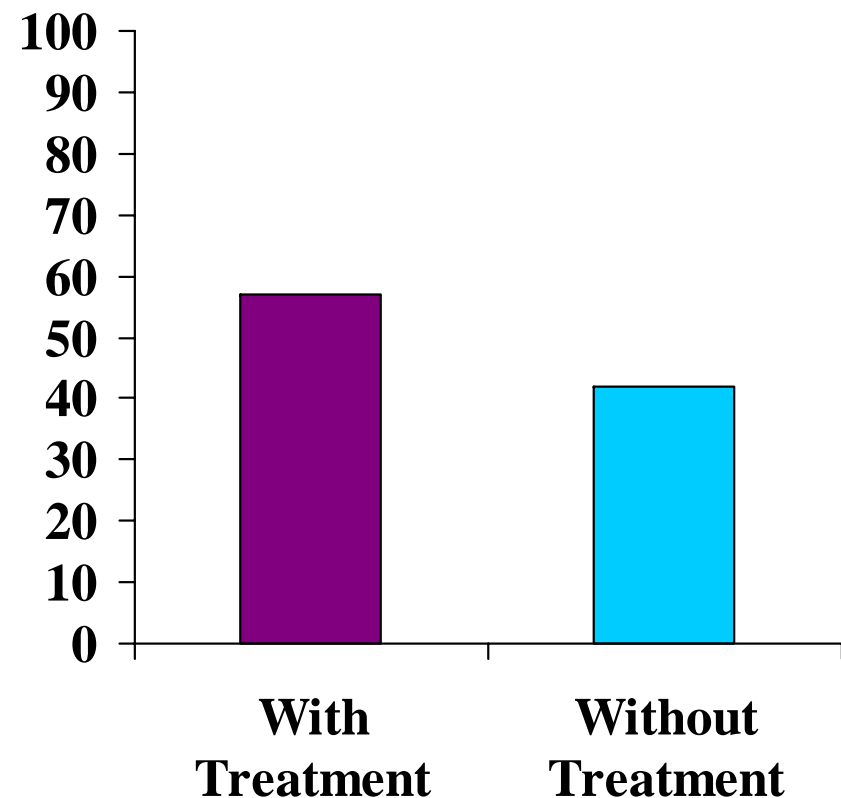
Effect Sizes Are Fickle, Inelastic, And Modest

- Many intensive and popular interventions show no efficacy in controlled trials
- Effect sizes for efficacious interventions rarely exceed the $d = .3$ to $.5$ range, especially in effectiveness studies
- We assume that treatment has a much greater effect than it actually has

Modest Association Between Receipt of Treatment and Positive Outcomes

- Treatment IS beneficial
- However, treatment has—at best—a moderate positive effect
- Recent meta-analysis of treatment for drug use disorders: $d = .30$
- 57% success in treated persons vs. 42% in untreated

% Positive Outcome



Data from Prendergast et al., DAD 2002

Reach Is A Challenge For Many Current Intervention Approaches

- Training in efficacious interventions is often only weakly associated with behavior change (e.g., Miller & Mount, 2001; Baer et al., 2004)
- Community providers have limited willingness or ability to replicate manualized approaches
 - Effect size for Multi-Systemic Therapy in efficacy studies: $d = .81$ (Curtis et al. meta-analysis, 2004)
 - Effect size in effectiveness studies: $d = .26$ (Curtis et al., 2004)

Reach Is Far More Elastic

- Parents filter through obstetric and other primary care settings in proportions approaching 100%
- With sufficient reach, even very weak interventions can yield unprecedented levels of population impact:

	<u>d</u>	<u>Reach</u>	<u>Pop. Imp.</u>
■ Intensive Treatment:	.40 *	.09	= .04
■ Brief Intervention:	.20 *	.60	= .12

Guiding Principle 4: Computers Have Tremendous Potential

- Unprecedented reach (given replicability, ease of use, and low cost once developed)
- Multi-language capability
- Highly engaging, interactive, and tailored
- Ability to screen for & address topics that otherwise might go unreported or unaddressed
- Ability to replicate efficacious approaches
- New findings are easily implemented
- Ability to evolve into a low-cost, nationwide research network

The E-Parenting Project (EPP)



Background: The Promise of Early Home Visitation

- Early Home Visitation Programs work with approximately 400,000 families per year
- There is an extensive network supporting these activities, perhaps most notably that of Healthy Families America
- This approach is popular and well-established

However, Challenges Abound

- The most rigorous studies often show no effects on child maltreatment (Chaffin, 2005; Duggan et al., 2004)
- Attrition at one year is at least 50%, with parents who do remain receiving 50% of intended visits (Gomby et al., 1999)
- Implementation of best practices is a challenge; for example, in Duggan et al., 2004:
 - Home visitor recognition of key risk factors ranged between 11% and 29%
 - In the few cases in which risk factors were recognized, outside referrals were made in only 33% of cases of partner violence, 8% of cases of mental illness, and in no cases of substance abuse

Research Questions

- Can a brief series of computer-based interventions be feasibly and acceptably integrated with ongoing early home visitation?
- Can this supplementation lead to decreases in child maltreatment?
 - Can address low levels of recognition and targeting of major risk factors
 - Can replicate efficacious approaches not yet prevalent in home visiting programs

Project Timeline

- Year 1: Development and iterative refinement of software (including videos)
- Year 2: Baseline data and intervention
- Years 3 and 4: Follow-up data collection

Setting: Two Agencies. Four Sites

- **MOM Project** (Indianapolis, IN; Joanne Martin, Director)
 - Active caseload of 315; 17 eligible cases/month
 - 20% White
- **SCAN, Inc.** (Fort Wayne, IN; Marty Temple, Director)
 - Active caseload of 500; 23 eligible cases/month
 - 51% White

Participants

- Participants will be mothers age 18 or older, recruited either pre- or postnatally, who:
 - Qualify for and begin receiving HFA services
 - Complete baseline research assessment within 4 weeks of giving birth
 - Have not yet completed the first post-partum treatment plan
- Approximately 50% will be first-time parents

Experimental Design And Methods

- Randomized clinical trial:
 - Treatment as usual (TAU)
 - Software-supplemented (SS)
 - Community referral
- Randomization will take place at the home visitor level (approximately 20 at each site)

Measures: Four Sources

- **Parent self-report:** Child maltreatment, substance abuse, mental health, domestic violence, attributions, working alliance
- **Blinded research assistant:** HOME, NCAST recordings, LPICS, hair sample
- **Home Visitors (and HVTIS):** Working alliance, Life Skills Progression, Denver-II, process variables (content, duration, frequency, missed appointments, etc.)
- **State CPS databases:** substantiated reports

Human Subjects Protections

- Data from hair samples and CPS records will be de-identified, but **will** be linked with group assignment, level of services received, and baseline risk
- A Certificate of Confidentiality will be obtained
- RA's will not have access to data, but PI will receive a "red flag" notice if suicide risk or child maltreatment are endorsed
- All participants will be offered a list of local, no-cost services

Intervention Outline

- Eight 20-minute sessions, conducted at the beginning of regularly scheduled home visits
 - Designed to be minimally disruptive
 - 87% of parents who begin services complete at least 8 sessions
- Three validated components:
 - Motivational Interviewing (MI)
 - Cognitive Retraining (CR)
 - SafeCare
- Participants will have the option of allowing their home visitor to know the content of their responses (when permission granted, will be provided along with suggestions for following up on computer session)


Content Delivery Platform



- Home visitors and research assistants will carry Tablet PCs (laptop computers with integrated touch screens; also headphones)
- Software (CIAS):
 - Utilizes a 3-dimensional, animated, and emotive talking narrator
 - Accepts user input via multiple choice, checkbox, or visual analogue scale
 - Rated as highly easy to use, even by those with no computer literacy (4.98 on 1-5 scale)
 - Flexible authoring capability




Where I'd Like To Go From Here



What are you thinking right now?

- A** I think I want to quit, either now or sometime in the future
- B** I'm not sure if I want to quit or not
- C** I don't want to quit



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Navigation icons: back, play/pause, forward

Intervention Component #1: Motivational Interviewing

- Clients are ambivalent
- Counselor advocacy for change evokes “resistance” from the client
- Resistance predicts lack of change
- Evoking the client’s own change talk will enhance behavior change
- Clients usually have within them the means with which to change

Slide adapted from that of William R. Miller, PhD

Basic Structure of MI

- MI is brief: It is typically conducted in 1-4 sessions (usually only 1 or 2)
- It is conducted in two phases:
 - Phase I: Building motivation for change by preventing resistance and eliciting change talk
 - Phase II: Strengthening commitment to change through client-driven goal-setting and selection of specific strategies from a menu

MI In The E-Parenting Project

- First two sessions will be motivational in nature
- Session one (immediately prior to first post-partum treatment plan): program participation
- Session two: key risk factors (substance abuse, partner violence, mental illness)
 - Priming/de-stigmatizing video
 - MI session for those who (a) show evidence of risk, and (b) choose not to set a change goal

Intervention Component #2: Cognitive Retraining (CR)

- Strong evidence links certain types of attributions of child behavior to maltreatment
 - Intentional, stable, global
 - Particularly in combination with low parenting self-efficacy
- A CR supplement for early home visitation showed strong effects on self-report of abusive behavior (Bugental et al., 2002) :
 - Wait-list control: 26%
 - TAU home visiting: 23%
 - TAU + CR: 4%

Basic Structure Of CR

- Identification of a recent, challenging situation involving the index child
- Guidance to assist the parent in identifying a non-pejorative cause of the challenging behavior
- Guided problem-solving to identify practical methods of responding

GOAL:
Positive
attributions
& feelings
of efficacy

CR In The E-Parenting Project

- Open-ended input is not practical at this time (although offering a great number of options is possible)
- The goals of positive attributions and parental self-efficacy can be achieved in other ways:
 - Video-based modeling, testimonial, scenarios
 - E-learning regarding infant behaviors & cues
 - Problem-solving using menu of options
- Proposed as first 5 minutes of sessions 3-8

The SafeCare Approach

- Six-month ***ecobehavioral*** approach to early home visitation, for ages birth-5
 - *Eco*: taking into account the entire social ecology of at-risk families
 - *Behavioral*: Direct assessment and training of specific skills
- Good evidence of efficacy when compared to Family Preservation (Gershater-Molko, Lutzker, & Wesch, 2002); 36-month child maltreatment reports present in:
 - 46% of families in Family Preservation condition
 - 15% of families in the SafeCare condition ($p < .001$)

Basic Structure Of SafeCare

- Covers three specific content areas:
 - Parent-child bonding (*shaken baby)
 - Home safety/accident prevention
 - Child health care
- Involves very detailed assessments and training to criteria-based skill mastery
- Video-based approaches to SafeCare have shown very encouraging results (Bigelow & Lutzker, 1998; Mandel, Bigelow, & Lutzker, 1998)

SafeCare In The E-Parenting Project

- SafeCare will be presented in sessions 3 through 7
- Observation and training to criterion are not possible; software will utilize:
 - Video-based modeling
 - E-learning
 - Computer-guided self-assessment

Follow-Up

- At 6-month increments following baseline assessment (6, 12, and 18 months)
- Two hours: 60-75 minutes self-report, with remainder being observation and hair sample
- Will be conducted in the home by University-based RA's blind to experimental condition
 - All will be trained and re-trained annually in ethical research with human subjects
 - All will be trained to criterion in the HOME and in setting up NCAST observations

Primary Analyses

- **Hypothesis 1:** Mothers and home visitors will rate the software as easy to use, and overall satisfaction with services will be equivalent in the SS condition
- **Hypothesis 2:** Mothers in the SS condition will have higher rates of involvement in home visiting
- **Hypothesis 3:** Mothers in the SS condition will report fewer abusive/neglectful behaviors and will show greater improvement on key risk factors
- **Hypothesis 4:** State child protection registries will contain fewer maltreatment reports for mothers in the software-supplemented condition

Secondary Analyses

- Compare CPS records for TAU, software-supplemented, **and** community control condition
- Examine site, home visitor, and parent characteristics as possible moderators of treatment effects
- Additional analyses:
 - Working alliance in SS vs. TAU
 - Predictors of retention, drug use, etc.
 - Child and parent correlates of hair testing data

Limitations And Discussion

■ Limitations

- Feasibility of all proposed tasks
- Low base rate of substantiated reports and physical/sexual abuse

■ Discussion

- Amounts to a large, exciting black box based on educated speculation
- Hopefully just the first in a long series of related studies