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A randomized pilot study of the Engaging Moms Program for family drug court

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Abstract

In response to the need for effective drug court interventions, the effectiveness of the Engaging Moms Program (EMP) versus Intensive Case Management Services (ICMS) on multiple outcomes for mothers enrolled in family drug court was investigated. In this intent-to-treat study, mothers ($N = 62$) were randomly assigned to either usual drug court care or the Engaging Moms drug court program. Mothers were assessed at intake and 3, 6, 12, and 18 months following intake. Results indicated that at 18 months post drug court enrollment, 77% of mothers assigned to EMP versus 55% of mothers assigned to ICMS had positive child welfare dispositions. There were statistically significant time effects for both intervention groups on multiple outcomes including substance use, mental health, parenting practices, and family functioning. EMP showed equal or better improvement than ICMS on all outcomes. The results suggest that EMP in family drug court is a viable and promising intervention approach to reduce maternal addiction and child maltreatment.

Keywords: Child maltreatment; Drug courts; Women; Addiction

1. Introduction

The devastating effects of drug abuse on the lives of addicted parents, their children, and extended families are undeniable: family disruption, child maltreatment, poor developmental outcomes, and the continuation of multigenerational poverty and addiction (Grogan-Kaylor, Ruffolo, Ortega, & Clarke, 2008; Keller, Catalano, Haggerty, & Fleming, 2002; Kelley & Fals-Stewart, 2004; Stanger et al., 1999; Walsh, MacMillan, & Jamieson, 2003). Given the association between parental drug use and child maltreatment (Walsh et al., 2003), it is not surprising that many drug-dependent parents, particularly mothers, are involved in the child welfare system. Between 50% and 80% of children involved in the child welfare system have a drug-dependent parent (Barth, Courtney, Duerr Berrick, & Albert, 1994; Curtis & McCullough, 1993; Locke & Newcomb, 2004), and these families are characterized by particularly poor outcomes, including increased re-referral to child welfare (Wolock & Magura, 1996), placement instability (Connell, Bergeron, Katz, Saunders, & Tebes, 2007), increased number of out-of-home placements (Barth et al., 1994; Dore, Doris, & Wright,1995), and termination of parental rights (Marcenko, Kemp, & Larson, 2000). Clearly, the family environment of children of substance-abusing parents is often compromised by instability, neglect, and poor parenting practices leading some to suggest that "…the mission of child welfare depends in large part on the success in providing services to address parental substance abuse" (Choi & Ryan, 2006, p. 313).

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There is evidence to suggest that improving the functioning of the biological parents—especially reducing parental drug use—not only reduces the risk to their children (Catalano, Gainey, Fleming, Haggerty, & Johnson, 1999; Drapela & Mosher, 2007; Kelley & Fals-Stewart, 2008) but also improves child welfare outcomes (Green, Rockhill, & Furrer, 2007; Grella, Needell, Shi, & Hser, 2009). However, substance abuse treatment completion among parents who come in contact with the child welfare system is low (Choi & Ryan, 2006; Gregoire & Schultz, 2001).

Looking for solutions to the problem of parental substance use and child maltreatment, many communities have turned to drug courts (Harrell & Goodman, 1999; Huddleston, Marlowe, & Casebolt, 2008; Semidei, Radel, & Nolan, 2001). Adapted from the adult drug court model, family drug courts were established to enhance the effectiveness of child welfare agencies by increasing enrollment and retention in substance abuse treatment, motivating parents to address their addiction, and coordinating the many social services needed to stabilize families. Ultimately, these courts aim to help parents "become emotionally, financially, and personally self-sufficient and to develop parenting and coping skills adequate for serving as an effective parent on a day-to-day basis" (p. 5, OJP, 1998). It should be recognized, however, that although family drug courts are based on the adult court model, there are features of family drug court that distinguish it from adult drug court, namely, these courts do not operate in the criminal justice system, most participants are female, and the court addresses dual issues of parental addiction and recovery as well as child safety and permanency (Edwards & Ray, 2005; Green, Furrer, Worcel, Burrus, & Finigan, 2009). Given these complexities, it has been argued that the mission of Dependency Drug Court (DDC) is more complex than the mission of adult criminal or juvenile delinquency drug courts (Bryan & Havens, 2008; Pach, 2009).

Although community and judicial acceptance of, and enthusiasm for, drug courts are broad and deep, there are few investigations of their effectiveness generally (Belenko, 2001; Wilson, Mitchell & MacKenzie, 2006) and even fewer on family drug courts in particular (Green et al., 2009). A small number of evaluations of DDCs indicate that drug court has promise (Boles, Young, Moore & DiPirro-Beard, 2007; Green, Furrer, Worcel, Burrus & Finigan, 2007; Haack, Alemi, Nemes, & Cohen, 2004; Worcel, Furrer, Green, Burrus & Finigan, 2008, Green et al., 2009). However, it should be noted that each evaluation has serious limitations including, among others, nonrandomized designs and samples that are lacking in minority representation.

There appears to be considerable variation in the structure, components, and practices over the more than 250 DDCs in the United States (Bureau of Justice Assistance, Drug Court Clearinghouse, 2009) and no consensus beyond identifying key general components. Most DDCs share certain basic features including a nonadversarial relationship among the parties, comprehensive assessment of service needs, frequent court hearings and drug testing, intensive judicial supervision, enrollment in substance abuse treatment and other necessary services, and court-administered rewards and sanctions. To graduate from DDCs, participants must have successfully completed substance abuse treatment, have a specified period of continuous abstinence, show evidence of a safe and stable living situation, spend a substantial period adequately performing the parent role, and have a life plan initiated and in place (e.g., employment, education, vocational training).

Most family drug courts employ court counselors whose job is to refer clients to substance abuse treatment and other court-ordered services, develop a recovery service plan, and monitor and report clients' ongoing progress to the court (Edwards & Ray, 2005). Although the influential roles of the drug court judge and the court-affiliated substance abuse treatment program on drug court outcomes have been noted (e.g., Edwards & Ray, 2005; National Associate of Drug Court Professionals, 1997; Henggeler, 2007), little attention has focused on the intervention models drug court counselors employ, nor on the quality of their work. Undoubtedly, court counselors have a significant role in drug court; therefore, it seems reasonable to suggest that the effectiveness of drug court is at least partially due to the services provided by the drug court caseworkers.

The Engaging Moms Program (EMP), which is the focus of this study, was initially developed as a family-oriented intervention aimed at facilitating treatment entry and retention among mothers of substance-exposed infants. In the first study of this approach (Dakof et al., 2003), mothers were recruited either from a public hospital where either the mother or her newborn tested positive for cocaine; or from child welfare after infant abuse/neglect involving maternal cocaine use was reported. All mothers were referred to an agency where they received an in-home psychosocial evaluation and a substance abuse treatment referral. Mothers who agreed to participate in this study were then randomized to receive either community services as usual (i.e., scheduled intake appointment at a substance abuse treatment program; reminder phone calls before the scheduled appointment; follow-up telephone calls following the appointment; and if necessary repeating the sequence two more times) or the EMP. The results showed that EMP successfully facilitated substance abuse treatment entry and initial retention of non-treatment-seeking drug-abusing mothers. Significantly, more mothers assigned to EMP enrolled into substance abuse treatment than did mothers assigned to community services as usual (88% vs. 46%), and 67% of the participants in EMP received at least 4 weeks of treatment compared with 38% of the mothers assigned to the usual services condition.

Given the promising results of the EMP with addicted mothers of infants, the growth of family drug courts throughout the nation, the lack of specific guidelines or intervention manuals for drug court counselors, and disappointing outcomes of our local DDC, we adapted the EMP for use in a drug court context. We conducted a natural

experiment on 80 consecutive enrollments: 37 who participated in the DDC prior to the implementation of the EMP and 43 who received drug court with EMP. The results were very encouraging: 72% of the mothers receiving EMP versus 38% receiving case management services graduated from drug court, and at 15 months post-entry, 70% of EMP mothers were reunified with their children versus a 40% reunification rate among mothers who received drug court with traditional case management services (Dakof, Cohen, & Duarte, 2009). Although the results were encouraging, this study had several limitations (nonrandomized design, judicial bias, limited outcome information), and therefore was a hypothesis-generating and not a hypothesis-testing study.

That work, however, brought us to the current study, which is a true pilot test of the Engaging Moms for family drug court intervention. This study was designed to examine the effectiveness of EMP in comparison to Intensive Case Management Services (ICMS) on the primary goal of family drug courts—producing positive child welfare outcomes. A secondary but also important goal of the EMP was to support recovery from substance use and enhance family functioning among drug court participants.

2. Materials and methods

2.1. Participants

This study was implemented at the State of Florida 11th Circuit Judicial Juvenile Court in Miami, FL. All mothers accepted into the family drug court, called DDC, were eligible for the study. DDC eligibility criteria were that parents had to (a) to be 18 years or older; (b) to have at least one child adjudicated dependent; (c) to have a diagnosis of substance abuse or dependence; (d) to have a potential for family reunification (parents with severe cognitive, emotional or physical disorders, or who have had their parental rights previously terminated were considered ineligible for re-unification); and (e) after consultation with their attorney, to voluntarily enroll in drug court.

2.2. Procedures

The University of Miami Institutional Review Board (IRB) approved all materials and procedures. Mothers who participated in this study were adjudicated in a single drug court with one judge (not the founding family drug court judge) presiding and received the same types of substance abuse treatment, parenting interventions, and other services as ordered by the judge. The judge was blind to study hypotheses and aims. The only difference between the two conditions was the intervention administered by the drug court counselors: EMP versus ICMS. Upon enrollment in drug court, mothers were referred to the study. Study staff met with mothers to describe the study and obtain written informed consent prior to the first assessment session. It was emphasized to the mothers that participation in the study was voluntary and did not influence their status in drug court or their child welfare case generally and that they had the right to discontinue participation in the study at any time. Mothers who refused to participate in the study were still able to participate in drug court and received standard drug court ICMS. After the baseline assessment, mothers were randomly assigned to either ICMS (n = 31) or EMP (n = 31). An urn randomization program was used to ensure equivalence on four key variables: age, ethnicity, number of children, and years using drugs. In this intent-to-treat design, all mothers were assessed at the following time points regardless of the extent of their participation in drug court: intake into the study and 3, 6, 9, 12, and 18 months following intake. Participants were paid to complete the research assessment interviews: $100 for the intake interview; $50 for the 3-, 6-, and 9-month interviews; and $100 for the 12- and 18-month interviews. All research data (e.g., questionnaires, research urine screens) were collected by University of Miami research staff who were not affiliated with the court, and records were kept confidential as required by the University of Miami IRB.

2.3. Drug court counselors

Five counselors, all female, participated in this study: three delivering EMP and two delivering ICMS. Counselors in each condition received 30 hours of initial training as well as ongoing weekly supervision in their respective approaches. Counselors in each condition received similar amounts of training and supervision to facilitate adherence to and quality control of each approach.

2.4. Interventions: ICMS and EMP

Mothers were expected to follow the same basic requirements of participating in family drug court (i.e., completing drug treatment and remaining drug-free; completing parenting classes and demonstrating adequate parenting skills; participating in educational/vocational training, domestic violence or other counseling as ordered by the judge; obtaining adequate and stable housing; and being gainfully employed or in school).

The DDC program was a 12 to 15-months program organized into four phases. Progression through the phases was related to the mother's level of substance abuse treatment and compliance with court orders. Mothers were drug tested (urine screens) at each court hearing and in their substance abuse treatment programs. During the first month of drug court, mothers were required to attend weekly drug court hearings. Thereafter, if reports to the court indicated that the mother was progressing well, court hearings were typically reduced to twice monthly. During the second phase of the program, which lasted 3 months, clients continued to attend twice-monthly hearings. In the third phase, which lasted another 3 months, the frequency of hearings was

reduced to once per month. In the fourth and final phase, which extended to graduation from the drug court program, clients attended hearings every 6 to 12 weeks. This multiphased process included a collaborative team approach that involved court counselors, child welfare workers, treatment providers, parent educators, and other social and health care service providers, as needed. Drug court counselors had contact with their clients, either in-person or on the telephone, on a weekly basis through Phase 2, reducing to biweekly in Phase 3, and monthly in Phase 4. Workers were available more frequently on an as-needed basis. The caseload for drug court counselors was between 10 and 15 active cases. The only difference between the two groups (EMP and ICMS) was how the drug court counselors worked with the mothers. All other aspects of the programs were the same.

ICMS was closely aligned with the drug court case management services recommended by the National Drug Court Institute, the ICMS model provided five key case management functions: assessment, planning, linkage, monitoring, and advocacy within the context of a strong case manager–client therapeutic alliance (Monchick, Scheyett, & Pfeifer, 2006). The overall objective was to assess needs, engage in collaborative intervention planning, provide referral to suitable drug abuse treatment and other services, coordinate the system of care providing services to the mother, closely supervise and monitor compliance with court orders, advocate for the mother with service providers, and provide emotional support. Case managers in this system served as a liaison between the court, substance abuse treatment providers, child welfare, and the client. The case manager was responsible for referrals to treatment and other court-ordered services, developing a recovery service plan, monitoring and reporting clients' ongoing progress to the court, reducing any barriers to the delivery of treatment and other services, and providing emotional and practical support to the mother.

EMP is based on the theory and method of Multidimensional Family Therapy (Liddle, Dakof, & Diamond, 1991) and was adapted for use in family drug court. EMP was designed to help mothers succeed in drug court by complying with all court orders such as attending and benefiting from substance abuse and other intervention programs (e.g., domestic violence counseling, parenting classes), attending court sessions, remaining drug-free, and demonstrating capacity to parent their children. EMP counselors conducted individual and conjoint sessions with the mother and her family, focusing on six core areas of change: (a) mother's motivation and commitment to succeed in drug court and to change her life, (b) the emotional attachment between the mother and her children, (c) relationships between the mother and her family of origin, (d) parenting skills, (e) mother's romantic relationships, and (f) emotional regulation, problem solving, and communication skills.

EMP counselors achieve change in the six core areas by conducting a series of integrated individual and family sessions (e.g., individual sessions with mother, individual sessions with family/partner, family and couple sessions). The intervention is organized in three stages: Stage 1—alliance and motivation, Stage 2—behavioral change, and Stage 3—launch to an independent life.

In Stage 1, the counselor is focused on two goals: (a) building a strong therapeutic alliance with the mother and her family and (b) enhancing mother and family motivation to participate in drug court and to change. EMP counselors provide support to both the mother and her family. They empower and validate; highlight strengths and competence; build confidence in the program; and are very compassionate, loving, and nurturing. To enhance motivation, the EMP counselor highlights the pain, guilt, and shame that the mother and her family have experienced and the high stakes involved (e.g., losing child to the child welfare system) while simultaneously creating positive expectations and hope.

Stage 2 is focused on behavioral change in both the mother and her family/spouse. EMP has several goals for this stage. First, counselors enhance the emotional attachment between the mother and her children by working individually with the mother to help her explore her maternal role. Mother and children sessions designed to enhance the mother's commitment to her children are also provided. Equally important is enhancement of the attachment between the mother and her family of origin and/or spouse. This is accomplished by helping the family restrain from negativity and offer instrumental and emotional support to the mother. Considerable attention is devoted to repairing the mother's relationship with her family, which frequently has been damaged by past hurts, betrayals, and resentments. Romantic relationships, typically with men, have often been a source of pain and distress for many of the mothers involved in the child welfare system. Hence, the EMP program addresses these relationships by helping the mother conduct a relationship life review, including examining tensions between having a romantic relationship and being a mother. The counselors help the mother examine the choices she has made and continues to make in terms of romantic relationships and teaches her how to make better decisions for herself and her children. EMP counselors also help the mother deal with slips, mistakes, setbacks, and relapses in a nonpunitive and therapeutic manner (i.e., forward looking). Finally, in Stage 2, the EMP specialist facilitates the mother's relationship with court personnel (judge, child welfare workers, and attorneys) and treatment or other service providers. The EMP counselor conducts "shuttle diplomacy" between the mother and service providers to prevent and resolve problems and helps the mother take full advantage of the services being provided to her. With respect to the court, the drug court counselors facilitate therapeutic jurisprudence in the courtroom by preparing mothers for court appearances and advocating for the mother in front of the judge and at weekly drug court case reviews.

In the final launching phase (Stage 3), the EMP counselor helps the mother prepare for an independent life by developing a practical and workable routine for everyday life; addressing how the mother will balance self-care, children, and work; outlining a plan to address common emergencies with children and families; and addressing how the mother will deal with potential problems, mistakes, slips, and relapses.

2.5. Measures

All data, with the exception of child welfare outcomes, which were gathered from court records, were gathered in face-to-face interviews with study participants at intake and at 3, 6, 9, 12, and 18 months following intake. Because drug court was designed to last between 12 and 15 months, the 18-month follow-up is post drug court participation. Measures described below were administered at all assessment points (except participant characteristics, which were measured at intake and child welfare status which was measured at 18 months). Trained research assistants, blind to intervention assignment and study hypotheses, administered measures in face-to-face interviews with the mothers. All the measures used in this study demonstrated adequate reliability and validity.

2.5.1. Background information

Background questions gathered directly from the mothers included age of mother, race/ethnicity, number of children, educational attainment, income, marital status, drug of choice, age at first drug use, age at birth of first child, lifetime arrests, lifetime physical abuse, and lifetime sexual abuse.

2.5.2. Child welfare status

Information on child welfare status at 18 months was extracted from court records. Child welfare status was defined as follows: (a) sole custody with one or more children, (b) joint custody with one or more children, (c) permanent guardianship with relative without termination of mother's parental rights, (d) permanent guardianship with relative with termination of mother's parental rights, or (e) child placed in foster care with termination of mother's parental rights.

2.5.3. Addiction Severity Index

The Addiction Severity Index (ASI, Fifth Ed.; McLellan, Alterman, Cacciola, Metzger, & O'Brien, 1992) is a semistructured interviewed that assesses the participant's past and current functioning in seven problem areas: medical status, employment/financial status, legal status, drug use, alcohol use, family/social relationships, and psychiatric problems. It is among the most widely used instruments in the field of addictions and has shown excellent reliability and validity (e.g., Carise et al., 2001). Trained research assistants at all assessment points administered the ASI, and composite scores that indicate the present status of the mother were calculated. In this study, the drug use, alcohol use, mental health, employment, medical, and family/social relationship composite scores were used in the analyses reported below.

2.5.4. Urinalysis

Urine specimens were collected at all research assessment points using the OnTrak TesTcup Pro8, an in vitro diagnostic test used for the qualitative detection of drug or drug metabolites in participant's urine. This method allowed for the identification of the presence of eight substances: alcohol, cannabis, amphetamines, barbiturates, benzodiazepines, cocaine, opiates, and phencyclidine (PCP).

2.5.5. Revised Conflict Tactics Scale

The Revised Conflict Tactics Scale (R-CTS) is based on the CTS, developed more than 39 years ago to assess family conflict and violence (Strauss, 1979). The CTS is widely used in the area of child maltreatment and has excellent psychometric properties. The Child–Parent CTS physical violence scale was used in this study ($\alpha = .73$).

2.5.6. Brief Child Abuse Potential I

The Brief Child Abuse Potential (B-CAP) is a brief version of the Child Abuse Potential Inventory designed to assess primarily physical child abuse. The B-CAP has seven scales including the 24-item risk scale that was used in this study. The B-CAP has demonstrated adequate predictive validity (Ondersma, Chaffin, Simpson, & LeBreton, 2005). Cronbach's alpha for this study was .79.

2.5.7. Brief Symptom Inventory

The Brief Symptom Inventory (BSI) is a 53-item psychological self-report symptom scale used to measure nine primary symptom dimensions and three global indices (Derogatis, 1993). The BSI is a shortened version of the Symptom Checklist-90, a widely used scale assessing current psychological distress and symptoms in both patient and nonpatient populations. The BSI is highly correlated with the SCL-90 and also has demonstrated high reliability and validity in hundreds of studies (Derogatis & Savitz, 1999). In this study, we used the Global Severity Index (GSI), which measures the level of overall psychological distress ($\alpha = .97$).

2.5.8. Stages of Change Readiness and Treatment Eagerness Scale

The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES) is designed to measure client readiness to change substance use-related behaviors. The 19-item version used in this study (Miller & Tonigan, 1996) measures three factors of readiness to change: taking steps ($\alpha = .87$), recognition ($\alpha = .80$), and ambivalence ($\alpha = .92$). This is one of the most widely used instruments for measuring motivation to change among adults with substance abuse problems.

2.5.9. Working Alliance Inventory

The Working Alliance Inventory (WAI; Horvath & Symonds, 1991; Kivlighan & Shaughnessy, 1995) assesses the three components of therapeutic alliance: bonds (α = .85), goals (α = .91), and tasks (α = .82).

2.5.10. Services Satisfaction Scale-16

The Service Satisfaction Scale-16 (SSS-16; Greenfield & Attkisson, 1989) is designed to measure several components of satisfaction with outpatient services. It consists of five subscales (manner and skill, perceived outcome, procedures, accessibility, waiting) and a total satisfaction score derived from all items (α = .99). The SSS has been widely used, including with substance abusers (Attkisson & Greenfield, 1994; Parr & Greenfield, 2000). In the current study, we adapted it for use in drug court, and participants were instructed to report on their satisfaction with drug court services. The total satisfaction score was used in this study.

3. Results

3.1. Data analytic approach

The study examined the (a) effects of drug court over time (through 18 months after intake) and (b) comparative effects of two drug court interventions. This comparison was conducted using a 2 (intervention condition) by 6 (time) repeated measures intent-to-treat design. The focus of family drug court is to use the principles of therapeutic jurisprudence to work with drug-addicted mothers to maintain their parental rights, possibly even reunifying them with their children while ensuring their children's safety. Therefore, the primary outcome of family drug court is child welfare outcome, and we have highlighted this first. However, issues such as reducing parental substance use and improving parenting practices and mental and physical health status are critical to achieving positive child welfare outcomes, and we examined these issues in our secondary outcome analyses.

We conducted analyses in the following outcomes: (a) child welfare outcomes, (b) substance use (measured by the ASI and urine assays), (c) family functioning (measured by the ASI), (d) parenting practices (measured by the B-CAP and CTSs), and (e) maternal mental and physical health (measured by the BSI and ASI). We were also interested in process variables such as the mother's satisfaction with drug court services (SSS), her motivation to change (SOCRATES), and alliance with her drug court counselor (WAI).

For most outcomes (the exceptions being alliance and motivation to change for reasons we describe below), we analyzed individual client change with the latent growth curve (LGC) modeling method (Duncan, Duncan, Strycker, Li, & Alpert, 1999). Although sometimes considered a large-sample technique, it can be successfully used with smaller samples (Liddle, Rowe, Dakof, Henderson, & Greenbaum, 2009) and can result in greater power than traditional methods such as repeated measures analysis of variance (Delucchi & Bostrom, 1999). Missing data, which was rare (97% of follow-up assessments were completed), were handled with Full Information Maximum Likelihood (FIML) estimation under the assumption that the data were missing at random (Little & Rubin, 1987).

LGC modeling conducted with Mplus (Version 5.2; Muthén & Muthén, 1998–2009) proceeded in three stages. First, we tested a series of growth curve models, representing possible forms of growth (e.g., no change, linear change, discontinuous change), to determine the overall shape of the individual change trajectories. Given the shape of the observed average outcome trajectories, we initially tested a piecewise growth model (Crawford, Pentz, Chou, Li, & Dwyer, 2003) with two distinct phases of growth representing change in the initial intervention period (between intake and the 3-month follow-up) and maintenance of initial gains between the 3- and 18-month follow-up assessment. In order for this model to be identified, we constrained the variance of the initial growth phase to 0. Second, we added intervention condition to the models to test the impact of intervention type on initial status and change over time (i.e., the intercept and slope growth parameters). Intervention effects were demonstrated by a statistically significant slope parameter, as tested by the pseudo z test—calculated by dividing the coefficient by its standard error—associated with treatment condition. Finally, for those outcomes that showed significant improvements across intervention condition, we entered graduation status (yes or no) as a covariate in the LGC models to examine the extent to which change in outcome was associated with whether mothers successfully graduated from drug court (or not). We used FIML estimation, under the assumption that the data were missing at random (Little & Rubin, 1987), to accommodate missing data.

We considered process variables—specifically mothers' alliances with their drug court counselors[1], motivation to change, and satisfaction with services—to be more static rather than dynamic factors (i.e., we considered these variables to be important factors at certain critical time points rather than outcome variables that we expected to change over time). Therefore, we used more conventional statistical methods (independent samples t tests) to compare the two intervention conditions on these variables. In addition, we only report intervention comparisons, and not time effects, for these variables.

In line with recommendations of researchers for intervention development, our primary goal was to develop an acceptable, feasible, and reasonably promising intervention that could be subsequently tested in a larger randomized controlled trial (RCT; Rounsaville, Carroll, & Onken, 2001).

[1] We examined change in working alliance using repeated measures analysis of variance, and the results suggested that the alliances did not change over time.

Also consistent with these researchers' recommendations given the work that goes into initial intervention development (e.g., specifying the theoretical rational and theory of change of the disorder, demonstrating feasibility of delivering the intervention, specifying process measures, developing a manual, testing the intervention on pre-pilot cases), the sample size was fairly small and in some cases may be underpowered for testing intervention effects. Therefore, we report both significance tests and effect sizes (Cohen's *d*) associated with the intervention effects. Effect sizes were calculated using Feingold's (2009) method for growth curve modeling. We base our interpretations of intervention effects on effect sizes of $d = 0.5$ or larger (considered a medium effect size), assuming that subsequent RCTs would include sample sizes sufficient for detecting a medium effect size with statistical power of .80 or greater[2].

3.2. Baseline demographic and clinical characteristics

Participants were 62 mothers recruited from family drug court. Table 1 summarizes participant characteristics. There were no significant differences between conditions on any variables listed in Table 1. Mothers who participated in this study were on average 30.2 years old ($SD = 11$) and were Black (42%), Hispanic (35%), and White Non-Hispanic (23%). They had low incomes, reporting a median monthly family income of $561, and 71% were unemployed at intake. Mothers were not well educated; only 43% had at least a high school diploma or general equivalency degree (GED). They had an average of 2.5 children, and only 10% reported being married. Many mothers were themselves victims of child maltreatment, with 55% reporting a history of child physical abuse and 36% a history of child sexual abuse. They were primarily polydrug users, either with (48%) or without alcohol (19%). Sixteen percent identified cocaine as their drug of choice. Mothers had considerable mental health problems with 68% showing symptoms of serious depression, 55% with serious anxiety symptoms, and 19% reported current suicidal ideation. Finally, mothers reported that they began using drugs between the ages of 16 and 17 and averaged approximately three lifetime arrests.

Table 1
Sample characteristics

Variable	EMP	ICMS	Overall
Age	29.1 (7.6)	31.2 (14.0)	30.2 (11.4)
Ethnicity, *n* (%)			
Black	14 (45)	12 (39)	26 (42)
Hispanic	11 (36)	11 (35)	22 (35)
White	6 (19)	8 (26)	14 (23)
Education, *n* (%)			
<High school graduation	16 (52)	19 (61)	35 (57)
Graduated high school/GED	15 (48)	8 (26)	23 (37)
Some college	0 (0)	4 (13)	4 (6)
Employment status, *n* (%)			
Employed	8 (26)	10 (32)	18 (29)
Unemployed	23 (74)	21 (68)	44 (71)
Monthly family income *M* (*SD*)	674 (652)	1,016 (1,138)	845 (939)
Mdn	507	561	561
No. of children *M* (*SD*)	2.5 (1.6)	2.5 (1.4)	2.5 (1.5)
Mdn	2.0	3.0	2.0
Marital status, *n* (%)			
Married	2 (6)	4 (13)	6 (10)
Divorced/Separated	7 (23)	8 (26)	15 (24)
Never married	22 (71)	19 (61)	41 (66)
% with physical abuse history	48	61	55
% with sexual abuse history	39	32	36
Age at first use, *M* (*SD*)	17.3 (2.8)	16.1 (4.5)	16.7 (3.7)
Drug of choice, *n* (%)			
Alcohol	1 (3)	2 (7)	3 (5)
Cannabis	3 (10)	3 (10)	6 (10)
Cocaine	4 (13)	6 (19)	10 (16)
Other sedatives	0 (0)	1 (3)	1 (2)
Alcohol and polydrug use	17 (55)	13 (42)	30 (48)
Polydrug use but no alcohol	6 (19)	6 (19)	12 (19)
Mental health history, *n* (%)			
Serious depression	23 (68)	21 (68)	44 (68)
Serious anxiety	17 (55)	17 (55)	34 (55)
Hallucinations	4 (13)	4 (13)	8 (13)
Suicidal ideation	8 (26)	4 (13)	12 (19)
Total lifetime arrests, *M* (*SD*)	2.3 (4.1)	3.9 (12.5)	3.1 (9.3)

3.3. Response and attrition rates

During the study period, 69 mothers were enrolled in drug court, 62 of whom enrolled in the study and 7 declined, resulting in an 89% response rate. Attrition rates after randomization by assessment points were as follows: 3 months, 6%; 6 months, 6%; 9 months, 12%; 12 months, 8%; and 18 months, 8%. Attrition rates did not differ by treatment condition. There were no missing administrative record data on child welfare status at 18 months.

3.4. Adherence

Similar intervention adherence monitoring procedures were followed for both conditions throughout the study. Supervisors, who were experts in either ICMS or EMP, provided close supervision to all court case managers. Supervisors for each intervention reviewed all active cases during weekly group supervision lasting approximately 2.5 hours. To demonstrate that counselors adhered to the basic parameters of the intervention (i.e., session frequency and duration, participants), drug court specialists completed contact logs for every contact with clients. As shown in Table 2, mothers in both intervention groups received a similar amount of contact from their court counselors. ICMS mothers received an average of 37.26 hours of service ($SD = 19.15$, $Mdn = 42.45$), and mothers in the EMP condition received an average of 38.48 hours of

[2] We conducted a post hoc power analysis using Monte Carlo simulation methods and parameter estimates from this study. The results indicated that a sample size of 140 participants was sufficient to produce power of .80 assuming a moderate-sized treatment effect of $d = .50$.

Table 2
Total hours of intervention contact with mother alone, with family, and with extrafamilial domains by intervention condition

Variable	EMP	ICMS
Contact hours		
Mom		
M (*SD*)	25.62 (12.91)	25.3 (13.68)
Mdn	26.98	29.05
Family		
M (*SD*)	6.92 (9.46)**	3.83 (3.92)**
Mdn	3.08	2.08
Mom, extrafamilial		
M (*SD*)	5.95 (7.03)	8.23 (5.28)
Mdn	3	8
Total contacts		
M (*SD*)	38.48 (20.26)	37.26 (19.15)
Mdn	36.61	42.45

** $p < .01$.

service (*SD* = 20.26, *Mdn* = 36.62. The two groups differed with respect to the amount of family sessions received with mothers in the EMP receiving significantly more hours of family session than mothers in ICMS (6.92 vs. 3.83). This is consistent with the EMP model, which makes a concerted effort to include the family.

3.5. Child welfare status

Sixty-six percent of mothers had positive permanency outcomes, which we defined as sole custody, joint custody, or permanent guardianship with family members without termination of the mother's parental rights. As shown in Table 3, participants randomized to EMP were more likely than mothers in ICMS to have positive child welfare outcomes 18 months after enrollment in drug court. Specifically, 77% of EMP mothers versus 55% of ICMS mothers had positive child welfare outcomes, $\chi^2(1, N = 62) = 3.53$, $p = .060$.

3.6. Maternal substance use, psychosocial, and family functioning

Significant improvement from intake through the 3-month follow-up was demonstrated on maternal substance use and family functioning, and these initial improvements were maintained through the 18-month follow-up (see Tables 4 and 5). As shown in Table 5, mothers showed fairly steep declines in their self-reported alcohol and drug use, as well as their likelihood for testing positive for substance use on urine screens. These initial gains were maintained through 18 months, as demonstrated by nonsignificant growth in the remaining follow-up period.

Mothers also showed significant improvement in other domains of psychosocial functioning (mental health, medical problems, and employment). Between intake and 3 months, mothers showed fairly strong improvement on both the BSI GSI and the ASI psychiatric status. Further, on the BSI, the mothers continued to improve between 3 and 18 months. Mothers did not show similar improvement on the ASI; however, they maintained their initial improvements (mean slope = −0.01, *SE* = 0.01). Likewise, mothers showed improvement in their medical problems between intake and 3 months and marginally significant improvement between 3 and 18 months. With respect to employment, after showing an initial increase in employment problems, they showed significant improvement between 3 and 18 months.

Regarding family functioning and parenting practices, mothers significantly improved their family functioning between intake and 3 months[3] as well as decreasing their risk for child abuse. In the period between 3 and 18 months, mothers continued to improve their family functioning and potential for child abuse.

When we compare the two intervention conditions, we found no statistically significant intervention effects; however, several outcomes favoring EMP showed effect sizes of $d = 0.5$ or greater. Please note that the effect sizes reported here are for the first 3 months of the follow-up period. In each case, these initial treatment differences were maintained through 18 months. As compared to women receiving ICMS, women receiving EMP were more likely to decrease their alcohol use ($d = 1.45$), experience improvement in their mental health (as measured by the BSI, $d = 0.50$), improve their overall family functioning ($d = 0.63$), and decrease their risk for child abuse ($d = 0.51$). Differences between the two interventions were negligible for drug use with mothers in both groups showing significant improvement over time. Regarding medical problems, although both treatments showed approximately equivalent change between intake and 3 months, those receiving EMP showed greater improvements between 3 and 18 months than those receiving ICMS.

3.7. Therapeutic alliance, motivation to change, and satisfaction with services

With respect to process variables of therapeutic alliance, motivation to change, and satisfaction with services

Table 3
Frequency and percentage of EMP and ICMS child welfare dispositions at 18 months after enrollment in drug court

Disposition	EMP	ICMS	Overall
TPR, placed in foster care	4 (13)	9 (29)	13 (21)
TPR, placed with relatives	3 (10)	5 (16)	8 (13)
No TPR, placed with relatives	6 (19)	3 (10)	9 (14)
Joint custody	2 (6)	2 (6)	4 (6)
Sole custody	16 (52)	12 (39)	28 (46)

Note. Values are expressed as number (percentage). TPR = terminated parental rights.

[3] Note that given the way the ASI items are worded, decreases in the ASI Family/Social Status reflect improvements in family functioning.

Table 4
Observed sample means and standard deviations for secondary outcome variables

Outcome measure	Intake	3 month	6 month	9 month	12 month	18 month
ASI Alcohol Scale, *M* (*SD*)						
EMP	0.21 (0.26)	0.02 (0.07)	0.02 (0.08)	0.03 (0.11)	0.03 (0.09)	0.00 (0.01)
ICMS	0.11 (0.16)	0.02 (0.08)	0.03 (0.12)	0.02 (0.04)	0.01 (0.02)	0.02 (0.05)
ASI Drug Scale, *M* (*SD*)						
EMP	0.14 (0.14)	0.02 (0.04)	0.04 (0.09)	0.02 (0.06)	0.04 (0.07)	0.02 (0.07)
ICMS	0.13 (0.14)	0.03 (0.06)	0.02 (0.08)	0.02 (0.08)	0.02 (0.06)	0.03 (0.05)
ASI Family/Social Scale, *M* (*SD*)						
EMP	0.29 (0.27)	0.05 (0.10)	0.05 (0.09)	0.05 (0.08)	0.07 (0.11)	0.02 (0.06)
ICMS	0.22 (0.25)	0.09 (0.16)	0.06 (0.11)	0.05 (0.07)	0.03 (0.08)	0.03 (0.06)
ASI Medical Scale, *M* (*SD*)						
EMP	0.15 (0.29)	0.09 (0.25)	0.14 (0.27)	0.04 (0.13)	0.03 (0.09)	0.02 (0.11)
ICMS	0.21 (0.34)	0.10 (0.27)	0.06 (0.23)	0.05 (0.21)	0.06 (0.19)	0.11 (0.25)
ASI Employment Scale, *M* (*SD*)						
EMP	0.75 (0.28)	0.82 (0.24)	0.80 (0.19)	0.65 (0.31)	0.62 (0.32)	0.65 (0.31)
ICMS	0.77 (0.25)	0.82 (0.25)	0.77 (0.26)	0.61 (0.33)	0.62 (0.26)	0.63 (0.32)
ASI Mental Health Scale, *M* (*SD*)						
EMP	0.31 (0.27)	0.11 (0.20)	0.09 (0.13)	0.06 (0.09)	0.09 (0.12)	0.06 (0.11)
ICMS	0.27 (0.21)	0.12 (0.18)	0.12 (0.17)	0.04 (0.22)	0.11 (0.14)	0.09 (0.21)
B-CAP Risk Scale, *M* (*SD*)						
EMP	12.42 (5.77)	8.14 (4.98)	7.90 (5.74)	6.46 (4.79)	7.31 (6.43)	4.81 (3.85)
ICMS	11.03 (5.40)	9.12 (5.83)	7.36 (5.77)	6.48 (5.23)	7.52 (5.19)	4.83 (3.84)
BSI GSI, *M* (*SD*)						
EMP	0.91 (0.92)	0.30 (0.42)	0.32 (0.60)	0.08 (0.15)	0.24 (0.52)	0.16 (0.35)
ICMS	0.74 (0.68)	0.53 (0.60)	0.25 (0.43)	0.20 (0.30)	0.28 (0.32)	0.17 (0.36)
CTS Physical Violence, *M* (*SD*)						
EMP	2.28 (11.13)	3.93 (20.79)	1.07 (4.84)	1.14 (5.33)	0.00 (0.00)	0.00 (0.00)
ICMS	3.57 (19.54)	1.41 (5.92)	0.15 (0.78)	0.00 (0.00)	0.07 (0.38)	0.14 (0.76)
Positive urine screen, *n* (%)						
EMP	12 (38.7)	5 (16.1)	4 (12.9)	1 (3.2)	8 (25.8)	2 (6.5)
ICMS	10 (32.3)	2 (6.5)	5 (16.1)	6 (19.4)	7 (22.6)	5 (16.1)

received, mothers receiving EMP reported higher alliances with their drug court specialists at the 3-month follow-up: tasks, $t(55) = 2.37$, $p = .021$; bonds, $t(55) = 2.29$, $p = .026$; goals, $t(55) = 2.14$, $p = .037$. There were no differences between conditions on motivation to change or satisfaction with services.

Table 5
Tests of slope main effects and growth factor by treatment interactions for outcome variables

	Growth factor mean, intake to 3 months				Growth factor mean, 3 to 18 months		Treatment differences, intake to 3 months				Treatment differences, 3 to 18 months	
	Intercept		Slope		Slope		Intercept		Slope		Slope	
Outcome measure	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*	Estimate	*SE*
ASI alcohol	0.16***	0.03	−0.14***	0.03	<0.01	<0.01	−0.10	0.05	0.09	0.05	0.01	<0.01
ASI drug	0.13***	0.02	−0.11***	0.02	<0.01	<0.01	−0.01	0.04	0.01	0.04	<0.01	0.01
ASI family/social	0.25***	0.03	−0.18***	0.03	−0.01	< 0.01	−0.08	0.07	0.08	0.07	<0.01	0.01
ASI medical	0.18***	0.04	−0.09*	0.04	−0.01	0.01	0.06	0.08	−0.10	0.09	0.02	0.01*
ASI employment	0.76***	0.03	0.05*	0.02	−0.05***	0.01	0.02	0.07	−0.03	0.05	<0.01	<0.01
ASI mental health	0.29***	0.03	−0.18***	0.03	−0.01	0.01	−0.03	0.06	0.05	0.07	<0.01	0.01
B-CAP risk	11.77***	0.71	−3.20***	0.65	−0.84***	0.19	−1.32	1.40	1.77	1.23	−0.17	0.39
BSI GSI	0.83***	0.10	−0.51***	0.10	−0.04**	0.02	−0.17	0.20	0.34	0.19	−0.04	0.03
CTS NVD	3.93***	0.97	−0.62	1.30	1.70**	0.51	−1.27	1.96	3.31	2.52	−1.21	0.87
Urinalysis	N/A	N/A	−1.54**	0.48	−0.51	0.47	−0.32	0.59	−0.20	0.90	0.40	0.55

Note. CTS NVD = Conflict Tactics Scale Nonviolent Discipline.

* $p < .05$.
** $p < .01$.
*** $p < .001$.

3.8. Drug court graduation in relation to substance use

We then examined associations between change in outcome variables and graduation status. As expected, mothers who successfully graduated from drug court showed steeper declines in substance use from 3 to 18 months than those who did not graduate (mean slope = −0.01, $SE = 0.01$, pseudo $z = -2.08$, $p = .04$). Overall, 61% of the mothers graduated from drug court: 67% of EMP and 53% of ICMS mothers. This difference was not statistically significant.

4. Discussion

The results of this pilot study suggest that EMP shows promise in the family drug court context. EMP delivered in the drug court context increased the likelihood of positive outcomes in comparison to intensive case management. In all domains of functioning, families assigned to EMP showed improvement that was equal to or better than families assigned to ICMS. In particular, the results suggest that the Engaging Moms in Family Drug Court intervention has significant promise with respect to child welfare outcomes, alcohol use, family functioning, risk for child abuse, and the mother's mental and physical health status. Although this study does not allow a clear explanation for why, for example, mothers who received EMP had better child welfare outcomes than mothers who received ICMS, the data do suggest some possibilities. One could argue that the primary difference between the two models concerns therapeutic alliance and family involvement. Mothers participating in EMP reported significantly greater alliance with their drug court counselor than did mothers in ICMS, and this was true on all three subscales of a therapeutic alliance (task, bonds, and goals). Next, EMP had almost twice as many family sessions as did ICMS, and thus, it would not be unreasonable to speculate that involving the mother's family (i.e., parents, siblings, spouse/partner) facilitates success in family drug court. Although EMP involves more than developing a strong therapeutic alliance and involving the mother's family, these are essential components of the EMP. Developing a strong therapeutic alliance with the mother involves providing emotional support; highlighting her strengths and competencies; showing respect, empathy, and compassion; and generally empowering the mother, and as a result sets the foundation for subsequent work. Involvement of the mother's family, especially her family of origin, is obviously a key component of the family-based EMP. With respect to the family, the EMP first locates and reaches out to all family members who are important to the mother and may be able to help her recovery. We facilitate the family's involvement in the mother's life. Then, the counselor conducts a series of specialized sessions designed to help the mother and family address and then move beyond any past hurts and betrayals that are often a part of the addict's family life. Finally, in a very practical way, we encourage the family to provide both emotional and, if possible, practical social support to the mother and her children. It is not unreasonable to speculate that this kind of support can be the difference between reunification and termination of parental rights. Sometimes, when a mother cannot be reunified with her children, if the family is involved in a positive way with the mother and her children, termination of parental rights can still be avoided. Many times the family takes over custody of the children without termination of the mother's rights. This allows the mother to be involved with her children and family although she may not be able to be the custodial parent. In the EMP, then, (a) we get the mother's family involved in her life, (b) we encourage the family to provide both practical and emotional support to the mother and her children, and (c) if the mother is not able to be reunified with her children, we encourage mother and family to come to an agreement whereby a family member is the primary parent but the mother is still involved with her children and family in a positive way. This is a key aspect of the EMP and might be a reason for its success in preventing termination of parental rights and maintaining family integrity.

Although the results of this pilot study are encouraging, there are important limitations. The primary limitation is that it has a small sample size that limits statistical power for testing intervention group differences and increases the unreliability of any estimates of within-group or between-group effects due to error variance. It is possible that different results would be obtained with a larger sample. Although the reported effect sizes were in the medium to strong range, we were not able to adequately test for the statistical significance of intervention effects. An increased sample size may have uncovered more reliable and stable effects in the targeted domains. Second, there was no comparison of mothers in a non-drug court setting. Although the time effects are strong and significant, without an appropriate comparison, the results cannot address whether drug court outcomes are better than non-drug court (i.e., ordinary dependency court) outcomes with drug-abusing mothers.

Despite these limitations, this study also has some significant strengths. First, we were able to implement a fully randomized clinical trial in a family drug court setting. To our knowledge, this is the first study of its kind. Second, study methods are state of the science. This study was an intent-to-treat longitudinal design with a high participant response rate (89%), a judge who was blind to study hypotheses and design, very little missing data, and sophisticated statistical methods. Finally, the medium to large effect sizes suggest that statistically significant results may be found with a larger, sufficiently powered, sample size.

The problem of child maltreatment and maternal substance abuse is undoubtedly a public health concern of the utmost significance (Magura & Laudet, 1996). Federal and state child welfare laws, most notably the federal

Adoption and Safe Families Act (ASFA) of 1997, have resulted in dramatic changes in how dependency courts operate. Courts are no longer charged only with determining the validity of child abuse and neglect reports and then deciding whether to place the child in foster care. They must now also take a more active role in developing service plans for families and ensuring that each child is placed in a permanent and stable home (Hardin, 1996; Harrell & Goodman, 1999). The demands placed on child welfare systems and family courts resulting from the ASFA, combined with the growing number of substance-abusing parents involved in family court proceedings, have strained these systems' abilities to successfully resolve cases in the expeditious manner required by law.

Judicial and child welfare systems throughout the nation have turned to cooperative and nonadversarial drug courts as a setting where parents can acquire the tools needed to turn their lives around and become productive, drug-free members of society (Tauber & Snavely, 1999). However, the lack of scientifically rigorous investigations of family drug courts severely limits public policy. Too many questions remain regarding the effectiveness, essential features, and influence of family drug courts on drug and non-drug outcomes. Although family drug courts have an increasingly important role to play in promoting healthy families, few well-specified intervention programs aimed at drug-abusing mothers suitable for use in drug courts are available. There can be no doubt that further investigation into the processes and outcomes of DDC is warranted, especially work that includes the state-of-the-art methods incorporated in this study plus a larger sample size, more comprehensive assessment of intervention fidelity, an investigation into the mechanisms of change, and perhaps even a benefit–cost analysis. Nevertheless, this pilot study adds to the field by suggesting that family drug courts, and perhaps especially ones that employ systematic family-based interventions such as the EMP, may be a viable approach to effectively addressing the problem of maternal substance abuse and child maltreatment. This study represents one step in the development of successful family drug court models, models that may have a significant impact on the health of the mother, the child, and the larger social problems associated with maternal drug addiction (Boles et al., 2007; Green et al., 2007; Haack et al., 2004).

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