



Maternal substance abuse and disrupted parenting: Distinguishing mothers who keep their children from those who do not

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ABSTRACT

Women with substance abuse disorders typically have psychosocial characteristics that put them at risk for disrupted parenting. Prior research indicates that comprehensive, accessible services tailored to the mothers' needs can contribute to family stability. This study further explores the complicated interplay of how maternal risk and protective characteristics and service elements are associated with reunification. The study contributes to existing literature by following mothers for three years; examining service needs as identified by the mother herself; using a summary proportion score to reflect the totality of services received to matched service needs identified; and using logistic regression to examine interactions of services received with critical maternal characteristics. The sample is comprised of 458 substance-abusing mothers enrolled during pregnancy or postpartum in the Washington State Parent–Child Assistance Program (PCAP), an evidence-based case management intervention. Participants' custody status was well distributed among four categories based on continuity of parenting. Findings indicate that at program exit 60% of the mothers were caring for their index child. These mothers had more treatment and mental health service needs met, had more time abstinent from alcohol and drugs, secure housing, higher income, and support for staying clean and sober. Among women with multiple psychiatric diagnoses, the odds of regaining custody were increased when they completed substance abuse treatment and also had a supportive partner. Mothers who lost and did not regain custody had more serious psychiatric problems and had fewer service needs met. We discuss implications of our findings for child welfare policy and practices.

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1. Introduction

A majority of cases investigated by the child welfare system are associated with maternal drug and alcohol abuse (National Center on Addiction and Substance Abuse, 1999; Ondersma, Simpson, Brestan, & Ward, 2000; U.S. Department of Health and Human Services (DHHS), 1999). Mothers who have substance abuse disorders typically have psychosocial characteristics that put them at risk for poor or disrupted parenting, including experiences of early childhood neglect and abuse (Lam, Wechsberg, & Zule, 2004; Minnes, Singer, Humphrey-Wall, & Satayathum, 2008; Wilsnack, Vogeltanz, Klassen, & Harris, 1997), and co-occurring psychological disorders (Choi & Ryan, 2007; Miles, Svikis, Kulstad, & Haug, 2001; Minnes et al., 2008). Co-occurring disorders are associated with increased substance abuse treatment dropout rates (Bernstein, 2000), particularly among women with more serious psychiatric problems (Haller & Miles, 2004), and treatment dropout strongly reduces the likelihood of family reunification (Rockhill, Green, & Furrer, 2007).

A significant body of research has examined the role of service delivery in family reunification among mothers who have substance abuse problems, and confirms the benefits of comprehensive, multi-disciplinary, and accessible services being available and tailored to the mothers' needs (Choi & Ryan, 2007; Marsh, D'Annunzio, & Smith, 2000; Newmann & Sallman, 2004; Suchman, Pajulo, Decoste, & Mayes, 2006). Investigators examining reunification outcomes have further reported on the value of longer treatment duration (Grella, Needell, Shi, & Hser, 2009), the importance of families achieving progress in the areas of mental health, housing, and domestic violence (Marsh, Ryan, Choi, & Testa, 2006), the benefits of family-related and employment/education services (Grella et al., 2009), and of mothers having their children with them in treatment (Stevens & Patton, 1998).

Delivering a spectrum of services to families affected by substance abuse requires genuine collaboration among child welfare and other service systems (Center for Substance Abuse Treatment (CSAT), 2009; McLellan, Lewis, O'Brien, & Kleber, 2000; National Center on Substance Abuse and Child Welfare, 2003). Even when service systems are well-coordinated, significant barriers are presented by the poor functioning of families who are unable to access and utilize services independently. Case management has been heralded as a

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pragmatic intervention strategy because its function is to connect such families with services by individualizing treatment plans, coordinating services, developing linkages, and monitoring progress (Case Management Society of America (CMSA), 2010). Yet randomized studies of the efficacy of case management among substance-abusing clients have yielded mixed results (McLellan et al., 1997; McLellan et al., 1998; Morgenstern et al., 2006; Ryan, Choi, Hong, Hernandez, & Larrison, 2008).

In Washington State, the Division of Behavioral Health and Recovery (DBHR) manages publicly-funded substance abuse treatment programs designated specifically for pregnant and postpartum women. In 1997 DBHR contracted with the University of Washington Parent–Child Assistance Program (PCAP), a three-year home-visitation case management intervention serving mothers who abuse alcohol and/or drugs during pregnancy and who are poorly connected to community services. The PCAP model is based on relational theory and self-efficacy constructs and emphasizes the importance of case managers building trusting, empathic relationships with their clients in order to better understand their frames of reference, and helping them develop service delivery plans that are meaningful, relevant, and achievable (Ernst, Grant, & Streissguth, 1999; Grant, Ernst, Pagalilauan, & Streissguth, 2003; Grant, Ernst, & Streissguth, 1999; Grant, Ernst, Streissguth, & Stark, 2005). The PCAP case managers (CM) are paraprofessionals who use explicit methods to help their clients identify personal goals and work with them to take incremental steps toward achieving those goals (Grant, Ernst, McAuliff, & Streissguth, 1997). They each work with a caseload of 16 families, conduct home visits approximately twice per month, connect women and their families with community services, and coordinate services among the service provider network. CMs are highly trained and closely supervised by experienced clinicians credentialed in the mental health, social work or chemical dependency fields.

In this study researchers used PCAP data to analyze risk and protective factors associated with maternal child custody at intervention exit. Our intention was to examine not only the effects of substance abuse and mental health disorders on reunification efforts, but to explore in more detail the complicated, realistic picture of how maternal characteristics, risk factors, and service elements combine to form either a framework for recovery or a context for failure. The study builds on prior family reunification research by examining: 1) how service receipt is affected by service needs being identified by the mother herself (rather than by case workers or information from agency databases); 2) how reunification outcomes are associated with a summary proportion score reflecting the totality of services received to matched service needs identified; and 3) interactions of services received with critical maternal characteristics. We hypothesized that even within the PCAP relational model, mothers presenting more troubled psychosocial profiles at program intake would not have care of their index child at program exit, and that mothers' problematic characteristics would be associated with fewer service needs addressed during the intervention. We discuss implications of our findings for child welfare policy and practices.

2. Methods

2.1. Participants

Women are eligible to participate in PCAP who: 1) are pregnant or up to 6 months postpartum; 2) self-report heavy alcohol and/or illicit drug use during the index pregnancy; and 3) are ineffectively (or not at all) engaged with community services. Participants are referred by community providers who are familiar with the PCAP intervention through brochures, presentations, and word of mouth (e.g., social workers, public health nurses). PCAP clinical supervisors review each referral for eligibility and contact women who meet the eligibility requirements.

A total of 739 mothers were enrolled in PCAP from January 1998 through December 2004 at five PCAP sites in Washington (King, Pierce, Yakima, Spokane, and Grant counties) and gave consent for data to be used for research purposes. Of these, 132 (18%) did not complete the program because they disengaged or disappeared ($n=45$), moved out of area ($n=37$), withdrew ($n=35$), died ($n=10$), or went into prison long-term ($n=5$). An additional 108 (14.6%) participated in PCAP but did not complete the exit interview (reasons include no shows, could not be located, were too busy, and did not want to end PCAP). A total of 499 (67.5%) participated in PCAP and completed valid intake and exit interviews. Among these, 41 are excluded from this analysis because they had a fetal alcohol spectrum disorder and were enrolled in a separate study ($n=22$), exited the program early (<30 months of PCAP involvement) ($n=11$), or because the index child died or was miscarried ($n=8$). Data from the remaining 458 participants are included in this analysis.

Institutional Review Board approval was obtained from the University of Washington; informed consent was obtained from participants, and a certificate of confidentiality was obtained from the U.S. Department of Health and Human Services.

2.2. Measures

2.2.1. Addiction Severity Index

We used the Addiction Severity Index (ASI) 5th edition (McLellan et al., 1992) to interview clients at program intake and at exit (after 3 years). The ASI is a widely-used standardized interview instrument for which good reliability and validity have been demonstrated. It assesses seven potential problem areas: medical, employment and support, drug use, alcohol use, legal status, family/social status, and psychiatric status. In 1997, PCAP researchers developed supplemental questions for pregnant and postpartum women regarding childhood history of risk factors and maltreatment, alcohol and drug use during an index pregnancy, and service utilization. Intake interviewers were PCAP clinical supervisors with Master's level mental health, social work, or licensed chemical dependency credentials, all of whom had extensive experience working with ethnically diverse, substance-abusing women. Exit interviewers were trained research assistants who did not have contact with participants during the intervention. All interviewers used detailed instruction manuals and were trained to reliability standards to insure consistent interview procedures.

2.2.2. Confirmation of self-reported substance-abuse information

We verified clients' report of alcohol and drug use at program exit by using collateral report from clients' CMs, who throughout the program completed a biannual (every 6 months) checklist assessment of client and index child status. We compared client report (on the exit ASI) of past 30-day substance use to CM report of the client's past 30-day substance use/no use on the 36-month assessment. We classified client report of use as *verified* when: 1) both client and CM reported that client used; 2) both client and CM reported client did not use; 3) client reported use and CM reported no use or didn't know. Client report of use was verified in 94.2% of the cases. In the remaining 5.8% of the cases CM indicated use but client reported no use.

2.2.3. Service ratio

At exit, clients were asked to identify services needed and services received during the last year of PCAP from among the following: day care, family doctor, mental health service, alcohol/drug support group, domestic violence, public housing, legal services, emergency housing services, and public health nurse. Service ratios were calculated as services received divided by service needs identified (for individual service types, and also for the total number of services, i.e., a summary service ratio). We used client reports of services needed and received because case worker reports may misestimate clients' needs for services (Choi & Ryan, 2007).

2.3. Data analyses

We conducted an attrition analysis comparing intake data from women included in the study ($N = 458$) versus those excluded due to selection criteria and loss to follow-up ($N = 276$). We analyzed intake characteristics by group using independent samples t -tests and Chi-Square tests; Bonferroni correction was used to address the problem of multiple comparisons.

For the main study analyses we categorized cases into one of four groups, based on continuity of parenting (i.e., whether a child was removed) and whether or not the index child was in the care of the mother at exit as follows. Group 1: Index child *always* in the care of mother throughout the 3 years of PCAP ($n = 160$, 35%) (including children who were in the care of a relative/friend for a short time while mother was hospitalized or in treatment, but were otherwise in the mother's care); Group 2: Index child not always in the care of mother, but *in her care* at PCAP exit ($n = 111$, 24%); Group 3: Index child not always in the care of mother and *not* in her care at PCAP exit ($n = 132$, 29%); Group 4: Index child *never* in the care of mother during PCAP ($n = 55$, 12%).

We provisionally categorized cases by examining the number of months the mother and index child lived together during PCAP (according to maternal self-report on the exit ASI). We then compared this information with two data points on the CM biannual assessments: 1) who had physical custody of the child at the end of each 6-month period, and 2) number of months the child was with mother during each 6-month period. In twenty cases ASI and biannual assessment data were discrepant or unclear. Authors TG and JH examined written comments on both instruments to resolve discrepancies and determine the correct categories.

Our primary comparisons are between Groups 2 and 3 ("mother and child not always together, but *together* at exit" [Group 2, coded 0] versus "not always together, and *not* together at exit" [Group 3, coded 1]), and between Groups 1 and 4 ("*always* together" [Group 1, coded 0] versus "*never* together" [Group 4, coded 1]). Note that the indicator variables are coded to indicate the two *separation* outcomes, so positive regression coefficients and odds ratios greater than 1.0 indicate *risk*, and negative regression coefficients and odds ratios less than 1.0 indicate *protective* factors. Overall significance of associations of group membership with other variables of interest was determined by reference to Chi-square tests (and to adjusted standardized residuals for specific cells within cross-tabulations). Comparison of means for continuous variables was done using one-way ANOVAs. Given an overall significant result, pairwise *post-hoc* comparisons (t -tests) were used to indicate particular group differences. Alpha was set at $p < .05$ for all significance tests, and all tests were two-tailed. Multivariate analyses were conducted using logistic regression with the backward elimination method (selection being based on likelihood-ratio tests). Odds ratios and corresponding 95% confidence intervals were calculated.

Following initial model selection for each set of exit variables, a common set of intake maternal demographic variables was entered into the logistic regression procedures: age, race, level of education, marital status, and number of children. In Tables 3, 4, and 5, both the raw (unadjusted) and demographic-adjusted regression results are presented. Adjusted models include significant demographic variables that were selected by the secondary regression procedure. For the sake of consistency between additive models, the constant is included in all models. Further follow-up analyses were conducted to clarify particular results, as described below.

3. Results

3.1. Attrition analysis

Following Bonferroni correction, only 'Enrollment year 2004' was significantly associated with study loss to follow up (35.2%, vs. 13.5% among study completers).

3.2. Intake maternal demographic and psychosocial characteristics (Table 1)

At intake, mothers in all 4 groups were similar in age (approximately 27 years), marital status (most unmarried), and average number of children currently living with the mother (approximately .50, not including the index child); 48.9% were enrolled prenatally, and 51.1% postnatally. There were no statistically significant differences in mothers' childhood risk indicators, including: one or both parents abused alcohol/drugs (about 90%); physical abuse (about 50%); and sexual abuse (about 60%). Across groups, the women reported similar rates of adult history of physical abuse by a partner (about 80%), incarceration (about 80%), one or more chronic medical conditions (about 40%), and previous outpatient substance abuse treatment (60% to 72%).

In each of the four groups at least 90% of the women reported experiencing psychiatric symptomatology in their lifetimes; more than one-third reported making a suicide attempt. Approximately 70% reported one or more psychiatric symptoms in the 30 days immediately prior to intake.

3.2.1. Groups 1 vs. 4

Compared to those in Group 4 (never together), a higher proportion of mothers in Group 1 (always together) had a high school diploma or GED (62% vs. 39%, $p < .01$) and a lower proportion reported psychiatric problems in the 30 days prior to intake (58% vs. 78%, $p < .05$). Group 1 mothers had fewer children (mean of 2.6 vs. 3.5, $p < .001$) and a lower proportion had children who had died (1% vs. 11%, $p < .01$). A greater proportion of Group 1 mothers were weekly binge alcohol drinkers (≥ 5 drinks per occasion) during at least one trimester of the pregnancy (42% vs. 25%). In both groups, the illicit drugs most commonly used during pregnancy were marijuana and cocaine.

3.2.2. Groups 2 vs. 3

There were few differences at intake between mothers in Groups 2 and 3. A higher proportion of women in Group 3 (child not with mother at exit) reported that their own mother drank heavily during pregnancy with them (37% vs. 17%, $p < .05$); Group 3 had a greater number of prior inpatient substance abuse treatment episodes (mean of 3.8 vs. 2.9, $p < .05$). As with Groups 1 and 4, in Groups 2 and 3 the illicit drugs most commonly used during pregnancy were marijuana and cocaine.

3.3. Services received during the intervention, bivariate results (Table 2)

3.3.1. Time with case managers

Across all four groups, case managers spent an average of approximately 1 hour of face-to-face time with each client per week over the 3-year intervention, and an additional 40 minutes weekly working with the client's family or service providers.

3.3.2. Service ratios and service types

Overall, 53.9% of participants had a summary service ratio equal to 1.0 (that is, for every service need expressed, the mother received services). Bivariate results demonstrated that women in Groups 1 and 2 (all caring for the index child at exit) had significantly higher summary service ratios compared to Groups 3 and 4 (0.85 and 0.91 vs. 0.73 and 0.73 respectively, $p < .001$).

With regard to individual service types, women in Groups 1 and 2 had significantly higher service ratios (i.e., higher proportions receiving services) for family health care, public housing, and public health nurse services. Significantly higher proportions of women in Groups 2 and 3 received inpatient substance abuse treatment. Those in Group 2 had the highest rate of outpatient treatment completion of the four groups (79%, 94%, 84%, and 73%, respectively, $p < .01$) and alcohol/drug support

Table 1
Maternal demographic and psychosocial characteristics at program intake.

Variables	Index child always lived with mother n = 160		Not always living with mother					
			With mother at exit n = 111		Not with mother at exit n = 132		Index child never lived with mother n = 55	
Age, mean (SD)	27.20	(6.68)	27.48	(6.28)	26.41	(6.41)	27.02	(6.31)
Race								
Native American	33/160	21%	22/111	20%	27/132	20%	16/55	29%
Black	21/160	13%	13/111	12%	19/132	14%	12/55	22%
Hispanic	11/160	7%	8/111	7%	11/132	8%	6/55	11%
White	95/160	59%	66/111	60%	71/132	54%	21/55	38%
Asian/Pacific Islander	0/160	0%	2/111	2%	4/132	3%	0/55	0%
Currently married	20/160	12%	16/111	14%	8/132	6%	5/55	9%
Education, mean (SD)***	11.41 [†]	(1.78)	10.79 [†]	(1.93)	10.64 [†]	(2.35)	10.35 [†]	(2.23)
No high school diploma/GED***	63/160	39% [†]	61/111	55%	75/132	57%	34/55	62%
# living children including index child	1–7		1–8		1–8		1–11	
Mean (SD)****	2.58 [†]	(1.45)	3.14 [†]	(1.69)	3.25 [†]	(1.63)	3.46 [†]	(1.83)
# children living with mother ^a	0–4		0–4		0–5		0–4	
Mean (SD)	0.56	(0.94)	0.51	(0.91)	0.45	(1.00)	0.54	(1.06)
% with deceased children***	1/160	1% [†]	5/111	4%	4/132	3%	6/55	11% [†]
During childhood								
Physical abuse	85/159	54%	53/111	48%	66/129	52%	24/54	44%
Sexual abuse	103/158	65%	59/108	55%	85/128	66%	30/54	56%
Child welfare involved	45/159	28%	26/110	24%	50/129	39%	14/54	26%
One or both parents abused alcohol/drugs	143/151	95%	92/104	88%	112/123	91%	45/48	94%
Mother's mother drank heavily during pregnancy with her***	35/114	31%	12/71	17% [†]	29/79	37%	13/31	42%
During adulthood								
Physical abuse by partner(s)	123/160	77%	91/111	82%	108/132	82%	42/55	76%
Chronic medical condition	67/160	42%	43/110	39%	43/129	33%	22/54	41%
Ever jailed	123/159	77%	90/111	81%	106/131	81%	46/55	84%
Prior inpatient treatment**	121/160	76% [†]	90/111	81%	118/131	90% [†]	44/55	80%
# times**	2.81 [†]	(2.91)	2.94 [†]	(2.81)	3.80 [†]	(2.76)	3.18	(2.93)
Prior outpatient treatment	116/160	72%	77/111	69%	84/132	64%	33/55	60%
# times	2.40	(2.86)	2.41	(2.85)	2.63	(3.11)	2.09	(2.93)
Psychiatric symptoms								
Reported psychiatric problems, past 30 days**	92/160	58% [†]	74/111	67%	89/132	67%	43/55	78% [†]
Lifetime	143/160	89%	105/111	95%	120/132	91%	54/55	98%
Depression, past 30 days**	60/160	38%	46/111	41%	58/130	45%	33/55	60% [†]
Lifetime	120/159	76%	87/111	78%	100/132	76%	46/55	84%
Anxiety, past 30 days**	52/159	33%	37/111	33%	61/131	47% [†]	26/55	47%
Lifetime	98/159	62%	70/111	63%	85/132	64%	36/55	66%
Hallucinations, past 30 days	7/159	4%	3/111	3%	9/130	7%	7/55	13%
Lifetime**	23/160	14%	8/111	7% [†]	15/132	11%	13/55	24% [†]
Trouble concentrating, past 30 days	53/159	33%	45/111	41%	54/130	42%	25/55	45%
Lifetime	75/160	47%	54/111	49%	71/132	54%	28/55	53%
Suicide thoughts, past 30 days	12/160	8%	7/111	6%	6/132	5%	8/55	15%
Lifetime	86/160	54%	54/111	49%	72/132	55%	31/55	56%
Suicide attempts, past 30 days	2/158	1%	1/111	1%	1/131	1%	0/54	0%
Lifetime	54/160	34%	37/111	33%	52/132	39%	28/55	51%
Substance abuse during index pregnancy								
Alcohol***	126/160	79% [†]	68/111	61% [†]	96/132	73%	44/55	80%
Binge alcohol ^b **	98/160	61% [†]	46/111	41% [†]	69/132	52%	26/55	47%
Heroin	23/160	14%	15/111	14%	18/132	14%	13/55	24%
Other opiates***	32/160	20% [†]	10/109	9%	10/128	8% [†]	5/53	9%
Cocaine	94/160	59%	64/111	58%	85/132	64%	38/55	69%
Methamphetamines	66/157	42%	54/109	50%	53/132	40%	20/54	37%
Marijuana	108/160	68%	76/111	68%	79/132	60%	30/55	55%
Cigarettes	147/160	92%	101/111	91%	118/132	89%	48/55	87%
Used binge alcohol weekly ^{b,**}	68/160	42% [†]	28/111	25% [†]	47/132	36%	14/55	25%

[†]Percentages that are significantly higher than would be expected are in **bold font** marked by a [†] symbol; those lower than expected are in **bold font** marked by a [‡] symbol.

^a Not including index child.

^b During either: 1) month prior/1st trimester, or 2) 2nd/3rd trimester.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

services received (75%, 93% 78%, and 77%, $p < .05$). As well, a significantly higher proportion of Group 2 women received mental health services (65%, 84%, 63%, and 67% respectively, $p < .05$). Yet the data indicate that women in Groups 3 and 4 may have had more serious mental health issues: at exit, higher proportions of women in Groups 3 and 4 were receiving psychiatric pensions (6%, 5%, 17%, and 15%, $p < .01$), and those

in Group 3 had the highest proportion of multiple psychiatric diagnoses (11%, 21%, 27%, and 22%, $p < .01$).

3.3.3. Self-reported alcohol/drug abstinence at intervention exit

Higher proportions of women in Groups 1 and 2 (compared to those in Groups 3 and 4) reported being abstinent from alcohol and

Table 2
Community services received during program, by parenting status.

Variables	Not always living with mother							
	Index child always lived with mother n = 160		With mother at exit n = 111		Not with mother at exit n = 132		Index child never lived with mother n = 55	
PCAP case management time, hours/week								
Face to face time with mother, mean (SD)	1.01	(0.61)	1.05	(0.55)	0.96	(0.60)	0.91	(0.81)
Total time spent on case, mean (SD)	1.58	(0.76)	1.71	(0.77)	1.67	(0.90)	1.59	(0.93)
Services received, any time during program								
Inpatient substance abuse treatment ^{a,****}	80/160	50% [↓]	78/111	70% [↑]	99/132	75% [↑]	29/55	53%
Attempted, never completed ^{****}	3/160	2% [↓]	11/111	10%	12/132	9%	15/55	27% [↑]
Outpatient substance abuse treatment ^{a,****}	126/160	79%	104/111	94% [↑]	111/132	84%	40/55	73% [↓]
Attempted, never completed ^{****}	8/160	5%	5/111	5%	11/132	8%	10/55	18% [↑]
Psychiatric evaluation ^{****}	68/158	43% [↓]	74/111	67% [↑]	86/130	66% [↑]	34/54	63%
Diagnosed ^{**}	51/158	32% [↓]	48/111	43%	66/130	51% [↑]	19/54	35%
Multiple diagnoses ^{****}	18/158	11% [↓]	23/111	21%	35/130	27% [↑]	12/54	22%
Receives psychiatric pension ^{****}	10/160	6% [↓]	6/111	5%	22/131	17% [↑]	8/54	15%
Service received, final year								
Childcare/daycare								
Expressed need ^{****}	114/160	71% [↑]	82/111	74% [↑]	29/132	22% [↓]	4/55	7% [↓]
Service received	107/114	94%	78/82	95%	27/29	93%	4/4	100%
Family healthcare provider								
Expressed need ^{****}	153/160	96%	107/111	96%	118/132	89%	46/55	84% [↓]
Service received ^{****}	151/153	99% [↑]	107/107	100% [↑]	97/118	82% [↓]	37/46	81% [↓]
Mental healthcare provider								
Expressed need ^{****}	84/160	53% [↓]	58/111	52%	95/132	72% [↑]	33/55	60%
Service received ^{**}	55/84	65%	49/58	84% [↑]	60/95	63%	22/33	67%
Alcohol/drug support group								
Expressed need ^{****}	88/160	55% [↓]	86/111	77% [↑]	97/132	73%	35/55	64%
Service received ^{**}	66/88	75%	80/86	93% [↑]	76/97	78%	27/35	77%
Domestic violence service								
Expressed need ^{****}	27/160	17% [↓]	23/111	21%	43/132	33% [↑]	8/55	15%
Service received	15/27	56%	14/23	61%	19/43	44%	3/8	38%
Public housing services								
Expressed need	87/160	54%	59/111	53%	72/132	55%	23/55	42%
Service received ^{****}	71/87	82% [↑]	48/59	81% [↑]	30/72	42% [↓]	5/23	22% [↓]
Legal service (criminal)								
Expressed need ^{****}	42/160	26% [↓]	39/111	35%	80/132	61% [↑]	27/55	49%
Service received	32/42	76%	36/39	92%	72/80	90%	24/27	89%
Emergency housing service								
Expressed need ^{****}	22/160	14% [↓]	16/111	14%	41/132	31% [↑]	14/55	25%
Service received ^{****}	19/22	86% [↑]	14/16	88% [↑]	17/41	41% [↓]	9/14	64%
Public health nurse								
Expressed need	32/160	20%	22/111	20%	30/132	23%	15/55	27%
Service received ^{**}	26/32	81%	21/22	95% [↑]	21/30	70%	9/15	60%
Total # service needs, mean (SD) ^{b,***}	4.06 [↓]	(1.57)	4.43 [↑]	(1.67)	4.58 [↑]	(1.87)	3.73 [↓]	(1.67)
Total # services received, mean (SD) ^{c,****}	3.39	(1.50)	4.03 [↑]	(1.67)	3.17	(1.65)	2.55 [↓]	(1.36)
Summary service ratio ^{d,e,****}	0.85	(0.22)	0.91 [↑]	(0.15)	0.73 [↓]	(0.29)	0.73 [↓]	(0.29)

[†] Percentages that are significantly higher than would be expected are in **bold font** marked by a [↑] symbol; those lower than expected are in **bold font** marked by a [↓] symbol.

^a Treatment completed or in progress at exit.

^b There are significant differences between Groups 1 and 3, and between Groups 2 and 4.

^c Every pairwise comparison is significant except for that between Groups 1 and 3.

^d Ratio of # of services received/# service needs: 1 = all needs met (includes those who reported no needs, thus no unmet needs).

^e Every pairwise comparison is significant except for that between Groups 3 and 4.

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

illegal drugs at exit, irrespective of the period of abstinence examined: for at least 6 months (40%, 64%, 23% and 31% respectively, $p < .001$); for at least 1 year (37%, 53%, 17%, and 18%, $p < .001$); and for at least 2 years (29%, 34%, 7%, and 15%, $p < .001$) (data not shown on table). Among all groups, women in Group 2 had the highest rates of abstinence for all time periods. To better understand factors associated with Group 2 mothers reuniting with the index child while Group 3 mothers were unsuccessful, we extended the service ratio analysis by doing a multivariate prediction of the summary service ratio (total number of services received divided by total number of service needs identified), using ordinary linear regression with backward elimination. In addition, we used logistic regression interaction models in the context of logistic regression to predict the

odds of Group 2 membership, given specific types of services received and maternal characteristics. Results of these analyses are reported below (but are not shown in tables).

3.3.4. Multivariable prediction of summary service ratio

Higher summary service ratios were associated with Group 2 membership ($B = -0.17$, $p < .001$), and these predictors: being married ($B = 0.11$, $p < .05$), using any alcohol during the index pregnancy ($B = 0.06$, $p < .10$), greater case management time (total) received per week ($B = 0.035$, $p < .05$), and fewer service needs identified ($B = -0.03$, $p < .001$), in addition to the constant term ($B = 0.837$). The full model explained about a fifth of the summary

Table 3

Association between parenting status and psychiatric symptoms at program exit: Groups 1 vs. 4 and Groups 2 vs. 3.

Variables	Unadjusted				Adjusted			
	Coefficient	SE	Odds ratio	95.0% C.I.	Coefficient	SE	Odds ratio	95.0% C.I.
Group 1 (child always lived with mother, n = 160, coded '0') vs. Group 4 (child never lived with mother, n = 55, coded '1') ^a								
Intercept	-1.465 ^{****}	0.405			0.628	1.109		
Hallucinations, lifetime	1.125 ^{***}	0.414	3.081	1.368–6.939	0.786 [*]	0.468	2.194	0.877–5.489
Depression, lifetime	0.859 [*]	0.467	2.360	0.945–5.893	0.864 [*]	0.494	2.372	0.901–6.245
Anxiety, lifetime	-0.784 ^{**}	0.361	0.456	0.225–0.926	-0.879 ^{**}	0.394	0.415	0.192–0.899
Group 2 (child with mother at exit, n = 111, coded '0') vs. Group 3 (child not with mother at exit, n = 132, coded '1') ^b								
Intercept	-0.192	0.16			0.243	0.212		
Depression, past 30 days	1.067 ^{****}	0.287	2.91	1.66–5.10	1.016 ^{***}	0.294	2.76	1.55–4.92

^a Unadjusted Nagelkerke $R^2 = .085$; Adjusted $R^2 = .243$. Covariates in the model: Not Caucasian ($B = 0.589^*$), level of education ($B = -0.304^{***}$), and number of live children ($B = .347^{***}$).

^b Unadjusted Nagelkerke $R^2 = .084$; Adjusted Nagelkerke $R^2 = .142$. Covariates in the model: married ($B = -1.107^{**}$); enrolled in 2002–2004 ($B = -0.742^{***}$).

* $p < .1$.

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

service ratio variance (R-square = .213, adjusted R-square = .193; $F = 10.67$, $p < .001$).

3.3.5. Interactions: Service types received and maternal characteristics

Interaction models resulted only for inpatient substance abuse treatment and for public housing services. For women who completed inpatient treatment, the odds of being in Group 2 were increased given that she was of White race ($OR = 7.86$, $CI = 2.13–28.93$, $p < .005$), had less education ($OR = 0.35$, $CI = 0.13–0.94$, $p < .05$), and had a supportive partner for staying clean and sober ($OR = 2.96$, $CI = 0.85–10.31$, marginal). For women who received public housing services, the odds of being in Group 2 were increased if she had fewer children ($OR = 0.47$, $CI = 0.23–0.95$, $p < .05$) and if she had a mental health diagnosis ($OR = 5.00$, $CI = 0.85–29.49$, marginal).

3.4. Status of the index child (Data not shown on table)

During PCAP, children in Group 2 spent an average of about 27 months with the mother and all were in her care at exit. Children in Group 3 spent about 12.4 months with the mother and none were with her at exit; 48% were with relatives (including the father), 20% were adopted, and 30% were in foster care. Based on our assumption that the mothers in these two groups actually had an opportunity to regain custody, the study reunification rate is 46%. Group 4 children were never with their mother; at exit 53% were adopted, 11% were in foster care, and about one-third were with the father or other

relatives. There were no significant differences by race with regard to status of the child at intervention exit.

Below in Sections 3.5 through 3.7 we report significant regression results comparing Groups 1 vs. 4 and Groups 2 vs. 3, adjusted for covariates.

3.5. Association between parenting status and psychiatric symptoms reported at intervention exit (Table 3)

Groups 1 (coded 0) vs. 4 (coded 1): Experiencing serious anxiety in one's lifetime reduced the odds of being in Group 4 ($OR = 0.42$, $CI = 0.19–0.90$, $p < .05$), while report of serious depression in one's lifetime was marginally associated with being in Group 4 ($OR = 2.37$, $CI = 0.90–6.25$, $p < .10$). Groups 2 (0) vs. 3 (1): Past 30-day depression was associated with being in Group 3 ($OR = 2.76$, $CI = 1.55–4.92$, $p < .001$). A subgroup interaction analysis of Group 2 vs. 3 found that among women with one or more psychiatric diagnoses, the odds of being in Group 2 were significantly increased if she had completed inpatient substance abuse treatment in combination with having a partner who supported her sobriety ($OR = 13.21$, $CI = 1.93–90.40$).

3.6. Association between parenting status and abstinence from alcohol/drugs at intervention exit (Table 4)

Groups 1 (0) vs. 4 (1): The odds of being in Group 1 were improved if a mother was abstinent for at least 2 years during the program ($OR = 0.35$, $CI = 0.16–0.77$, $p < .01$). Groups 2 (0) vs. 3 (1): The odds of

Table 4

Association between parenting status and alcohol/drug abstinence at program exit: Groups 1 vs. 4 and Groups 2 vs. 3.

Variables	Unadjusted				Adjusted			
	Coefficient	SE	Odds ratio	95.0% C.I.	Coefficient	SE	Odds ratio	95.0% C.I.
Group 1 (child always lived with mother, n = 160, coded '0') vs. Group 4 (child never lived with mother, n = 55, coded '1') ^a								
Intercept	-0.758 ^{****}	0.181			0.967	1.042		
Ever abstinent, > 2 years	-1.099 ^{****}	0.385	0.333	0.157–0.709	-1.057 ^{****}	0.408	0.348	0.156–0.773
Group 2 (child with mother at exit, n = 111, coded '0') vs. Group 3 (child not with mother at exit, n = 132, coded '1') ^b								
Intercept	0.749 ^{****}	0.168			1.389 ^{**}	0.628		
Current abstinence, > 1 year	-1.736 ^{****}	0.301	0.176	0.098–0.318	-1.829 ^{****}	0.316	0.161	0.086–0.298

^a Unadjusted Nagelkerke $R^2 = .062$; Adjusted $R^2 = .235$. Covariates in the model: Not Caucasian ($B = 0.776^*$), level of education ($B = -0.290^{***}$), and number of live children ($B = 0.345^{***}$).

^b Unadjusted Nagelkerke $R^2 = .206$; Adjusted $R^2 = .251$. Covariates in the model: mother's age ($B = -0.044^*$), married ($B = -1.126^{**}$), number of live children ($B = 0.222^{**}$).

** $p < .05$.

*** $p < .01$.

**** $p < .001$.

Table 5
Association between parenting status and maternal stability indicators at program exit: Groups 1 vs. 4 and Groups 2 vs. 3.

Variables	Unadjusted				Adjusted			
	Coefficient	SE	Odds ratio	95.0% C.I.	Coefficient	SE	Odds ratio	95.0% C.I.
Group 1 (child always lived with mother, n = 160, coded '0') vs. Group 4 (child never lived with mother, n = 55, coded '1') ^a								
Intercept	-0.422	0.621			1.768	1.621		
Permanent/stable housing	-2.026****	0.515	0.132	0.048–0.362	-2.063****	0.563	0.127	0.042–0.383
Currently pregnant	1.576**	0.721	4.837	1.178–19.864	1.735**	0.741	5.671	1.326–24.244
At low risk for exposed birth ^c	0.845*	0.492	2.328	0.887–6.111	0.965*	0.536	2.624	0.917–7.507
SSI main source of income	1.126*	0.604	3.084	0.944–10.068	0.786	0.664	2.195	0.597–8.073
Total monthly income	-1.534****	0.511	0.216	0.079–0.587	-1.956****	0.581	0.141	0.045–0.442
Worked as prostitute during program	1.942***	0.688	6.970	1.811–26.832	2.043***	0.742	7.711	1.800–33.042
Ever jailed during program	1.946****	0.441	7.001	2.950–16.614	1.971****	0.484	7.176	2.779–18.532
Group 2 (child with mother at exit, n = 111, coded '0') vs. Group 3 (child not with mother at exit, n = 132, coded '1') ^b								
Intercept	2.514****	0.591			2.697****	0.617		
Permanent/stable housing	-0.690*	0.372	0.502	0.242–1.040	-0.709*	0.384	0.492	0.232–1.044
At low risk for exposed birth ^c	-1.244***	0.405	0.288	0.130–0.638	-1.256***	0.416	0.285	0.126–0.644
Total monthly income	-0.726***	0.224	0.484	0.312–0.751	-0.773****	0.227	0.462	0.296–0.721
Worked as prostitute during program	1.041**	0.505	2.833	1.054–7.616	1.095**	0.519	2.989	1.082–8.259
Ever jailed during program	0.737**	0.338	2.090	1.078–4.052	0.798**	0.348	2.220	1.123–4.390
Recovery support (person or system)	-0.849**	0.387	0.428	0.200–0.914	-0.772*	0.400	0.462	0.211–1.012
Clean/sober support system	-1.034**	0.410	0.355	0.159–0.793	-1.207***	0.422	0.299	0.131–0.684

^a Unadjusted Nagelkerke $R^2 = .520$; Adjusted $R^2 = .594$. Covariates in the model: Not Caucasian ($B = 1.025^{**}$), level of education ($B = -0.325^{**}$), and number of live children ($B = 0.378^{**}$).

^b Unadjusted Nagelkerke $R^2 = .411$; Adjusted $R^2 = .446$. Covariate in the model: married ($B = -1.588^{***}$).

^c Being at reduced risk for having another alcohol/drug exposed birth because of being clean and sober for >6 months and/or using a reliable family planning method (including regular use of oral contraceptives).

* $p < .1$.
** $p < .05$.
*** $p < .01$.
**** $p < .001$.

being in Group 2 were improved if the mother had been abstinent at program exit for at least 1 year (OR = 0.16, CI = 0.09–0.30, $p < .01$).

3.7. Association between parenting status and maternal stability indicators at intervention exit (Table 5)

Groups 1(0) vs. 4(1): Being in Group 1 was associated with having permanent/stable housing (OR = 0.13, CI = 0.04–0.38, $p < .001$) and greater monthly (legal) income (OR = 0.14, CI = 0.05–0.44, $p < .001$). Risk indicators for being in Group 4 included being pregnant at intervention exit (OR = 5.68, CI = 1.33–24.24, $p < .05$); having worked as a prostitute during the program (OR = 7.71, CI = 1.80–33.04, $p < .01$) and ever being jailed during the program (OR = 7.18, CI = 2.78–18.53, $p < .001$). Groups 2 (0) vs. 3 (1): Group 2 membership was associated with having greater monthly (legal) income (OR = 0.46, CI = 0.30–0.72, $p < .001$) and being at low risk for having a future alcohol/drug exposed birth (i.e., being clean and sober and/or using reliable family planning) (OR = 0.29, CI = 0.13–0.64, $p < .01$). Group 3 risk indicators included having worked as a prostitute during the program (OR = 2.99, CI = 1.08–8.26, $p < .05$); and ever being jailed during the program (OR = 2.22, CI = 1.12–4.40, $p < .05$). We note that while having a greater monthly income was associated with being in Groups 1 and 2, the mean income in every group was near the federal poverty level, ranging from \$676 to \$1045 per month.

3.8. Family planning and subsequent deliveries (data not shown on table)

Bivariate analysis shows that at program exit, most of the non-pregnant women in all four groups were regularly using a family planning method (69%, 70%, 69%, and 65%, respectively). Fewer women in Groups 1 and 2 were pregnant at exit compared to Groups 3 and 4 (6%, 4%, 14%, and 11%, $p < .05$). Fewer women in Group 1 had a subsequent delivery after the index child and during the program (18%, 25%, 30%, 35%, respectively, $p < .05$); Group 4 mothers had the highest percentage of two subsequent births (0%, 1%, 2%, 11%, $p < .001$).

4. Discussion

This study contributes to the existing literature by examining the complex interplay of maternal characteristics, risk and protective factors, and service elements associated with disrupted or reunified parenting. Participants were a large group of post-partum women enrolled in a longitudinal public health intervention, who were all at risk for disrupted parenting due to substance abuse, childhood histories of maltreatment, and serious psychosocial problems. At exit 60% were caring for their index child, and our findings indicate that their success required a convergence of individual and social factors. In general, these women had more treatment and mental health service needs met during the program, and had stabilized their lives as evidenced by having more time abstinent from alcohol and drugs, secure housing, higher income, and support for staying clean and sober. Among women who had multiple psychiatric diagnoses, the odds of regaining child custody were increased when they completed inpatient substance abuse treatment services and also had a supportive partner.

4.1. Differentiating the study groups

The intake characteristics of mothers in Groups 1 and 4 help to explain their unchanging parenting status (always with vs. never with). At intake, Group 4 mothers had obvious risks for poor parenting (recent depression and history of hallucinations, one or more deceased children, and IV heroin use during pregnancy). The accumulation of these risks likely contributed to child welfare's decision to remove the child from care at birth or shortly after; over half of these children eventually were adopted. Group 1 mothers had several characteristics typically associated with a better parenting prognosis: fewer immediate 30-day prior psychiatric problems, more education, fewer children, and fewer previous children who had died. In addition, a significantly greater proportion of Group 1 mothers were enrolled in the intervention prenatally (59.4% vs. 45.5%, $p < .05$), suggesting that they may have had more contact with referral sources, and were motivated to accept intervention efforts during the

pregnancy. Ideally, PCAP intervention should begin prenatally in order to reduce fetal exposure to alcohol and drugs in utero. However, for many women who have serious substance abuse disorders it is not until the actual birth that the child becomes a reality, whereupon the mother responds to offers of intervention because of the potential for child welfare ramifications.

Mothers in Group 1 did not experience disrupted parenting, yet they reported the highest rates of weekly pregnancy binge drinking, as well as non-prescribed opiate/painkiller use. We note also that a smaller proportion of Group 1 mothers were clean and sober at PCAP exit compared to those in Group 2. While this seems paradoxical at first glance, mothers in Group 2 had experienced the loss and subsequent return of their child, and were presumably motivated to sustain their abstinence because of recent or ongoing child welfare monitoring. Our data suggest that alcohol may not carry the same weight with child welfare services as does a mother's illegal drug use. Alcohol is legal and its use is more prevalent than illicit drug use among pregnant women (Centers for Disease Control and Prevention, 2002; Office of Applied Studies, 2004), yet its abuse can impair functioning and judgment in ways that compromise parenting ability and put a child at risk for maltreatment.

Women in Group 3 had the chance to regain custody of their children, but were not able to do so, and at program exit they were far less likely to achieve stability, including having more trouble with the law. Although they had the benefit of long-term case management and similar high rates of inpatient and outpatient substance abuse treatments compared to Group 2 mothers, two factors in particular may have contributed to Group 3 mothers losing custody: 1) having more serious psychiatric problems, and 2) having fewer of their service needs met. Group 3 women were more likely to have received multiple psychiatric diagnoses and to have a pension based on their psychiatric status, yet compared to Group 2, a significantly smaller proportion actually received ongoing care for their mental health problems. Indeed, our regression analysis indicates that Group 3 women were characterized by reporting serious depression at program exit, a condition that obviously had not been adequately addressed during the intervention. Group 3 women more frequently expressed the need for legal, emergency housing, and domestic violence services, signaling that they had very difficult life circumstances. Their untreated mental health problems may have limited their ability to access mental health services, anticipate and resolve serious problems, and utilize available community services to build a stable home environment and maintain child custody.

4.2. Family reunification and service delivery

Numerous studies illustrate complex relationships among maternal substance abuse and psychiatric problems, service delivery, and loss of child custody. Similar to our findings, Grella et al. (2009) found that among substance-abusing mothers receiving treatment, poor psychiatric and employment status reduced their likelihood of reunification. Our study interaction models additionally found that for mothers who completed inpatient treatment the odds of reunification were increased if they also had a partner who was supportive of them staying clean and sober.

In a study of 354 substance-abusing mothers and their 602 children who had up to 1.25 years to achieve reunification, Choi and Ryan (2007) found that matched services in mental health, housing, family counseling and substance abuse treatment significantly improved the likelihood of family reunification, yet they also reported a relatively low percentage of families receiving these matched services (e.g., mental health 36.6%, housing 22%, family counseling 18.3%, and substance abuse treatment 35.9%). The researchers suggest that the study was limited by service needs being defined from the caseworker's (not the mother's) perspective. At enrollment all children had been removed from the home, which may have

influenced study findings of a low overall family reunification rate (12.1%).

Littell and Schuerman (2002) studied matched service delivery among subgroups of clients receiving intensive 90-day family preservation services. About 80% of families with cocaine problems received substance abuse treatment; half of families with housing problems received housing assistance; and the extent to which parents with mental illness received counseling services depended upon the service type (psychiatric services 15.7%; individual counseling 74.3%). None of these services affected the likelihood of out-of-home placement.

By way of comparison with these studies, the present study found similar or relatively higher percentages of matched services received, and significant associations of reunification with mental health, housing, outpatient treatment, family health care, and public health nurse services. This may be due to PCAP's longer (3-year) case management, to service needs being expressed by the mother herself, and to the fact that most mothers began the PCAP intervention with the child in her care. Some mothers who begin an intervention having already had a child removed may feel hopeless about their ability to regain custody and unconvinced that utilizing services or following through with treatment plans will make a difference.

Marsh et al. (2006) tested a recovery coach model (intensive case management) among 724 substance-abusing families, and concluded that receiving matched services in itself is not enough. Better child reunification outcomes were found among the families who made measurable progress in addressing their housing, mental health, and domestic violence problems. While our study did not examine service data in this way, we did demonstrate that among women in Groups 2 and 3 who received and completed substance abuse treatment services, it was those who stayed alcohol- and drug-free who were more likely to have custody of the index child at program exit.

Among the mothers in our study who had the index child removed from their care (Groups 2 and 3), approximately 46% regained care and had been parenting the child for an average of 27 months when they completed the three-year intervention. A recent Washington State study found a 32% reunification rate four years after 444 infants entered care at less than 1 year old (Brennan, Wilson, George, & McLaughlin, 2009), and, as noted above, Choi and Ryan (2007) found a 12% reunification rate. Our findings are promising, but generalizability is limited because we do not know the reunification status of the 30% of participants who were lost to follow-up. Although intake characteristics of completers and non-completers were similar, we might expect somewhat lower reunification rates among the PCAP non-completers because a higher proportion had been in the foster care system as children (35.1% vs. 27.4% among completers) and at enrollment were not living with any of their older children (78.5% vs. 71.0%).

In comparison with our 30% attrition rate, Gomby, Culross, and Behrman (1999) reviewed six home visiting programs and reported attrition rates ranging from 20% to 67%; Katz et al. (2001) reported 41% attrition in a research study including lay home visitation. There is not a consensus about acceptable attrition rates, however most researchers seek to achieve 70% to 80% retention (Krysiak & Finn, 2010).

4.3. Strengths and limitations

The study contributes to reunification research by incorporating these design elements: the community sample was large and well-characterized at program intake and exit; self-reported substance abuse at program exit was verified by collateral report; participants were followed for three years; the cases were reasonably well distributed among four custody status categories at program exit; service needs were identified by the mother herself; and families received a relatively high rate of community services.

We note the following limitations. Study intake and exit data were obtained from maternal interviews, and therefore are subject to self-report biases (Rothman, 1986), nevertheless our finding a high degree of client and CM agreement on client substance abuse at program exit suggests that this self-report data was valid. In some of the models there are very large confidence intervals associated with our estimates of the parameters, typically related to rare events. Our interpretation is that when our results indicate a significant association (or effect), the information on which the analysis is based does not support a precise estimate of the size of the parameter (the odds ratio, for instance). We analyzed services needed and received during the last year of PCAP, not throughout the program, and we did not collect information about some other factors known to influence the likelihood of reunification, including maternal strengths (Marcenko, Kemp, & Larson, 2000; Wulczyn, 2004), ambivalence about return of the child (Littell & Schuerman, 1995), child behavioral and emotional functioning (Landsverk, Davis, Ganger, & Newton, 1996), number and timing of foster care placements (Wulczyn, 2004), and amount of contact with child welfare workers (Littell & Schuerman, 1995). Because of their substance abuse, all study participants were vulnerable to impaired neurocognitive functioning. We did not assess neurocognitive functioning and thus are unable to examine its effect on participants' ability to utilize services or on parenting outcomes.

4.4. Policy and practice implications

Improving the lives of high-risk substance-abusing families and increasing family reunification requires that service delivery issues be recognized and addressed at many levels. First, an array of services relevant to the family's needs must be available, and should be of sufficient duration and intensity to assure that the family actually benefits and shows progress. This is far from a given in the neighborhoods where most of these families live, particularly under the present circumstances of severe budget cutbacks in social services. Next, even when services are available, families typically are unable to understand and navigate multiple systems and to coordinate their care without the help of a case manager; this is particularly true when a parent suffers with a mental health or cognitive disorder. Finally, whether the case manager is a paraprofessional, a public health nurse, a recovery coach, or a family preservation services worker, families are unlikely to make progress if they do not develop a positive and genuinely trusting relationship with the worker (Domian, Baggett, Carta, Mitchell, & Larson, 2010; Jack, Dicenso, & Lohfeld, 2005; Kitzman, Cole, Yoos, & Olds, 1997). Core components and practices of the PCAP relational model incorporate these elements and may account in part for the promising reunification findings reported herein.

Even under the best of circumstances, public policies may hamper or preclude parents from receiving services they must complete in order for their children to be returned. For example, for mothers in the child welfare system, securing low income housing can become a daunting catch-22; parents must have housing in place in order to regain care of their children, yet subsidized family housing often is unavailable to them until their child/ren are living with them. In practice, promoting healthy reunification requires that policymakers pay close attention to how families fare in community services, and advocate for timely adjustments that will promote their success.

When a child is removed from care for any reason there is an increase of risk that the mother will have another substance-exposed birth (Ryan et al., 2008). Our study data support this: a significantly lower proportion of women in Group 1 had a subsequent delivery during the three-year program. The implication for child welfare services is clear — removing a child from a mother's care is likely to result in a "replacement" baby who may also be removed. Child welfare policy makers might prevent this by considering placement

alternatives that allow for the woman to remain connected to her identity as a mother, such as kinship or family care with appropriate contingencies; open adoption; or transitional group home or treatment settings where the mother can practice parenting skills in a supervised environment. We recommend that child welfare case workers directly address family planning with parents, either within the context of focusing their resources on caring for the children they already have, or delaying a next pregnancy until a time when they are better prepared to care for another child.

Economic constraints faced by social services agencies contribute to high caseloads that limit the ability to provide more individualized interventions. Yet demonstrated clinical practices that result in family reunification may be cost-effective. For example, in our study, 58 of the 160 mothers in Group 1 (36%) were not caring for/living with any of their older children. Given PCAP's individualized services and support they were able to parent the index child throughout the 3-year intervention. Had the 58 index children been placed in foster care for 3 years (as their older siblings were), costs to the state would have been approximately \$2,088,000 (foster care costs are a minimum of \$1000 per month in Washington State). The PCAP 3-year intervention costs about \$15,000 per client (\$870,000 for these 58 mothers); taking this into account, 3-year foster care cost savings alone to the state were about \$1.22 million for this subgroup of families served by PCAP.

The social and economic costs of maternal substance abuse are high, and the toll on disrupted families is profound. Yet PCAP outcomes reported in this study demonstrate that there is hope for mothers to achieve recovery and remain with their children; the majority of mothers whose information was analyzed retained custody of their children or regained it prior to exit from the program. Understanding the elements involved in their success should serve as encouragement to social service providers who are concerned with the well-being of affected families.

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References

- Bernstein, D. P. (2000). Childhood trauma and drug addiction: Assessment, diagnosis, and treatment. *Alcoholism Treatment Quarterly*, 18(3), 19–30.
- Brennan, K., Wilson, D., George, T., & McLaughlin, O. (2009). *Washington state court appointed special advocate program evaluation report. Brief report to programs*. Seattle, WA: University of Washington School of Social Work; Washington State Center for Court Research.
- Case Management Society of America (CMSA) (2010). *Standards of practice for case management*. Little Rock, AK. Retrieved from <http://www.cmsa.org/portals/0/pdf/memberonly/StandardsOfPractice.pdf> (Last Accessed: June 21, 2011).
- Center for Substance Abuse Treatment (CSAT) (2009). Substance abuse treatment: Addressing the specific needs of women. *Treatment Improvement Protocol (TIP) series 51. HHS publication no. (SMA) 09-4426*. Rockville, MD: Substance Abuse and Mental Health Services Administration Retrieved from <http://www.kap.samhsa.gov/products/manuals/tips/pdf/TIP51.pdf>.
- Centers for Disease Control and Prevention (2002). Alcohol use among women of childbearing age—United States, 1991–99. *Morbidity and Mortality Weekly Report (MMWR)*, 51(13), 273–276.
- Choi, S., & Ryan, J. (2007). Co-occurring problems for substance abusing mothers in child welfare: Matching services to improve family reunification. *Children and Youth Services Review*, 29(11), 1395–1410.
- Domian, E. W., Baggett, K. M., Carta, J. J., Mitchell, S., & Larson, E. (2010). Factors influencing mothers' abilities to engage in a comprehensive parenting intervention program. *Public Health Nursing*, 27(5), 399–407.
- Ernst, C. C., Grant, T. M., & Streissguth, A. P. (1999). Intervention with high-risk alcohol and drug-abusing mothers: II. 3-Year findings from the Seattle model of paraprofessional advocacy. *Journal of Community Psychology*, 27(1), 19–38.
- Gomby, D. S., Culross, P. L., & Behrman, R. E. (1999). Home visiting: Recent program evaluation —analysis and recommendations. *The Future of Children*, 9(1), 4–26 195–223.

- Grant, T. M., Ernst, C. C., McAuliff, S., & Streissguth, A. P. (1997). The difference game: Facilitating change in high-risk clients. *Families in Society: The Journal of Contemporary Human Services*, 78(4), 429–432.
- Grant, T., Ernst, C. C., Pagalilauan, G., & Streissguth, A. P. (2003). Post-program follow-up effects of paraprofessional intervention with high-risk women who abused alcohol and drugs during pregnancy. *Journal of Community Psychology*, 31(3), 211–222.
- Grant, T., Ernst, C., Streissguth, A., & Stark, K. (2005). Preventing alcohol and drug exposed births in Washington state: Intervention findings from three Parent–Child Assistance Program sites. *The American Journal of Drug and Alcohol Abuse*, 31(3), 471–490.
- Grant, T. M., Ernst, C. C., & Streissguth, A. P. (1999). Intervention with high-risk alcohol and drug-abusing mothers: I. Administrative strategies of the Seattle model of paraprofessional advocacy. *Journal of Community Psychology*, 27(1), 1–18.
- Grella, C. E., Needell, B., Shi, Y., & Hser, Y. I. (2009). Do drug treatment services predict reunification outcomes of mothers and their children in child welfare? *Journal of Substance Abuse Treatment*, 36(3), 278–293.
- Haller, D. L., & Miles, D. R. (2004). Psychopathology is associated with completion of residential treatment in drug dependent women. *Journal of Addictive Diseases*, 23(1), 17–28.
- Jack, S. M., Dicenso, A., & Lohfeld, L. (2005). A theory of maternal engagement with public health nurses and family visitors. *Journal of Advanced Nursing*, 49(2), 182–190.
- Katz, K. D., El-Mohandes, A., Johnson, D. M., Jarrett, M., Rose, A., & Cober, M. (2001). Retention of low income mothers in a parenting intervention study. *Journal of Community Health*, 26(3), 203–217.
- Kitzman, H. J., Cole, R., Yoos, H. L., & Olds, D. (1997). Challenges experienced by home visitors: A qualitative study of program implementation. *Journal of Community Psychology*, 25(1), 95–109.
- Krysiak, J. L., & Finn, J. (2010). *Research for effective social work practice* (2nd ed.). New York/London: Routledge (p. 151).
- Lam, W. K., Wechsberg, W., & Zule, W. (2004). African–American women who use crack cocaine: A comparison of mothers who live with and have been separated from their children. *Child Abuse & Neglect*, 28(11), 1229–1247.
- Landsverk, J., Davis, I., Ganger, W., & Newton, R. (1996). Impact of child psychosocial functioning on reunification from out-of-home placement. *Children and Youth Services Review*, 18(4/5), 447–462.
- Littell, J. H., & Schuerman, J. R. (1995). *A synthesis of research on family preservation and family reunification programs*. Washington, D.C.: Office of the Assistant Secretary for Planning and Evaluation, Department of Health and Human Services Retrieved from: <http://aspe.hhs.gov/hsp/cyp/flpitrev.htm>.
- Littell, J. H., & Schuerman, J. R. (2002). What works best for whom? A closer look at intensive family preservation services. *Children and Youth Services Review*, 24(9/10), 673–699.
- Marcenko, M. O., Kemp, S. P., & Larson, N. C. (2000). Childhood experiences of abuse, later substance use, and parenting outcomes among low-income mothers. *The American Journal of Orthopsychiatry*, 70(3), 316–326.
- Marsh, J. C., D'Aunno, T. A., & Smith, B. D. (2000). Increasing access and providing social services to improve drug abuse treatment for women with children. *Addiction*, 95(8), 1237–1247.
- Marsh, J. C., Ryan, J., Choi, S., & Testa, M. (2006). Integrated service for families with multiple problems: Obstacles to family reunification. *Children and Youth Services Review*, 28(9), 1074–1087.
- McLellan, A. T., Grissom, G. R., Zanis, D., Randall, M., Brill, P., & O'Brien, C. P. (1997). Problem-service 'matching' in addiction treatment. *Archives of General Psychiatry*, 54(8), 730–735.
- McLellan, A. T., Hagan, T. A., Levine, M., Gould, F., Meyers, K., Bencivengo, M., et al. (1998). Supplemental social services improve outcomes in public addiction treatment. *Addiction*, 93(10), 1489–1499.
- McLellan, A. T., Kushner, H., Metzger, D., Peters, R., Smith, I., Grissom, G., et al. (1992). The fifth edition of the addiction severity index. *Journal of Substance Abuse Treatment*, 9(3), 199–213.
- McLellan, A. T., Lewis, D. C., O'Brien, C. P., & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. *Journal of the American Medical Association*, 284(13), 1689–1695.
- Miles, D. R., Svikis, D. S., Kulstad, J. L., & Haug, N. A. (2001). Psychopathology in pregnant drug-dependent women with and without comorbid alcohol dependence. *Alcoholism, Clinical and Experimental Research*, 25(7), 1012–1017.
- Minnes, S., Singer, L. T., Humphrey-Wall, R., & Satayathum, S. (2008). Psychosocial and behavioral factors related to the post-partum placements of infants born to cocaine-using women. *Child Abuse & Neglect*, 32(3), 353–366.
- Morgenstern, J., Blanchard, K. A., McCrady, B. S., McVeigh, K. H., Morgan, T. J., & Pandina, R. J. (2006). Effectiveness of intensive case management for substance-dependent women receiving Temporary Assistance for Needy Families. *American Journal of Public Health*, 96(11), 2016–2023.
- National Center on Addiction and Substance Abuse (1999). *No safe haven: Children of substance-abusing parents*. New York: The National Center on Addiction and Substance Abuse (CASA) at Columbia University Retrieved from: http://www.casacolumbia.org/templates/Publications_Reports.aspx#r46.
- National Center on Substance Abuse and Child Welfare (2003). *Framework and policy tools for improving linkages between alcohol and drug services, child welfare services and dependency courts*. Washington, D.C.: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration.
- Newmann, J. P., & Sallman, J. (2004). Women, trauma histories, and co-occurring disorders: Assessing the scope of the problem. *The Social Service Review*, 78(3), 466–499.
- Office of Applied Studies (2004). *National survey on drug use and health (NSDUH) report. Pregnancy and substance use* Retrieved from: <http://www.oas.samhsa.gov/2k3/pregnancy/pregnancy.htm>.
- Ondersma, S. J., Simpson, S. M., Brestan, E. V., & Ward, M. (2000). Prenatal drug exposure and social policy: The search for an appropriate response. *Child Maltreatment*, 5(2), 93–108.
- Rockhill, A., Green, B. L., & Furrer, C. (2007). Is the adoption and safe families act influencing child welfare outcomes for families with substance abuse issues? *Child Maltreatment*, 12(1), 7–19.
- Rothman, K. J. (1986). *Modern epidemiology*. Boston/Toronto: Little Brown and Company.
- Ryan, J. P., Choi, S., Hong, J. S., Hernandez, P., & Larrison, C. R. (2008). Recovery coaches and substance exposed births: An experiment in child welfare. *Child Abuse & Neglect*, 32(11), 1072–1079.
- Stevens, S. J., & Patton, T. (1998). Residential treatment for drug addicted women and their children: Effective treatment strategies. *Drugs & Society*, 13(1/2), 235–249.
- Suchman, N., Pajulo, M., Decoste, C., & Mayes, L. (2006). Parenting interventions for drug-dependent mothers and their young children: The case for an attachment-based approach. *Family Relations*, 55(2), 211–226.
- U.S. Department of Health and Human Services (DHHS) (1999). *Blending perspective and building common ground. A report to congress on substance abuse and child protection*. Washington, DC: U.S. Government Printing Office.
- Wilsnack, S. C., Vogelant, N. D., Klassen, A. D., & Harris, T. R. (1997). Childhood sexual abuse and women's substance abuse: National survey findings. *Journal of Studies on Alcohol*, 58(3), 264–271.
- Wulczyn, F. (2004). Family reunification. *The Future of Children*, 14(1), 94–113.