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

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A R T I C L E   I N F O

Article history:
Received 14 July 2010
Received in revised form 1 July 2011
Accepted 5 July 2011
Available online 12 July 2011

Keywords:
Maternal substance abuse
Disrupted parenting
Child welfare
Family reunification
Cooccurring disorders

A B S T R A C T

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, multidisciplinary, and accessible services being available and tailored to the mothers’ needs (Choi & Ryan, 2007; Marsh, D’Aunno, & 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...
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 assessments data were discrepant or unclear. Authors TG and JH determined the correct categories.

Among study completers.

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
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).

### Table 1
Maternal demographic and psychosocial characteristics at program intake.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Index child always lived with mother n = 160</th>
<th>Not always living with mother</th>
<th>Index child never lived with mother n = 55</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, mean (SD)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.20 (6.68)</td>
<td>27.48 (6.28)</td>
<td>26.41 (6.41)</td>
<td>27.02 (6.31)</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Native American</td>
<td>33/160 21%</td>
<td>22/111 20%</td>
<td>27/132 20%</td>
</tr>
<tr>
<td>Black</td>
<td>21/160 13%</td>
<td>13/111 12%</td>
<td>19/132 14%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>11/160 7%</td>
<td>8/111 7%</td>
<td>11/132 8%</td>
</tr>
<tr>
<td>White</td>
<td>95/160 59%</td>
<td>66/111 60%</td>
<td>71/132 54%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>0/160 0%</td>
<td>2/111 2%</td>
<td>4/132 3%</td>
</tr>
<tr>
<td><strong>Currently married</strong></td>
<td>20/160 12%</td>
<td>16/111 14%</td>
<td>8/132 6%</td>
</tr>
<tr>
<td><strong>Education, mean (SD)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.41 (1.78)</td>
<td>10.79 (1.93)</td>
<td>10.64 (2.35)</td>
<td>10.35 (2.23)</td>
</tr>
<tr>
<td><strong>No high school diploma/GED</strong></td>
<td>63/160 39%</td>
<td>61/111 55%</td>
<td>75/132 57%</td>
</tr>
<tr>
<td><strong>% with deceased children</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/160 1%</td>
<td>5/111 4%</td>
<td>4/132 3%</td>
<td>6/55 11%</td>
</tr>
<tr>
<td><strong>During childhood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical abuse</td>
<td>85/159 54%</td>
<td>53/111 48%</td>
<td>66/129 52%</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>103/160 65%</td>
<td>59/111 55%</td>
<td>85/126 66%</td>
</tr>
<tr>
<td>Child welfare involved</td>
<td>45/159 28%</td>
<td>26/110 24%</td>
<td>50/129 39%</td>
</tr>
<tr>
<td>One or both parents abused alcohol/drugs</td>
<td>143/151 95%</td>
<td>92/104 88%</td>
<td>112/123 91%</td>
</tr>
<tr>
<td>Mother’s mother drank heavily during pregnancy with her</td>
<td>35/114 31%</td>
<td>12/71 17%</td>
<td>29/79 37%</td>
</tr>
<tr>
<td><strong>During adulthood</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical abuse by partner(s)</td>
<td>123/160 77%</td>
<td>91/111 82%</td>
<td>108/132 82%</td>
</tr>
<tr>
<td>Chronic medical condition</td>
<td>67/160 42%</td>
<td>43/110 39%</td>
<td>43/129 33%</td>
</tr>
<tr>
<td>Ever jailed</td>
<td>123/159 77%</td>
<td>90/111 81%</td>
<td>106/131 81%</td>
</tr>
<tr>
<td>Prior inpatient treatment**</td>
<td>121/160 76%</td>
<td>90/111 81%</td>
<td>118/131 90%</td>
</tr>
<tr>
<td><strong>% with deceased children</strong></td>
<td>1/160 1%</td>
<td>5/111 4%</td>
<td>4/132 3%</td>
</tr>
<tr>
<td>Psychiatric symptoms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reported psychiatric problems, past 30 days*</td>
<td>92/160 58%</td>
<td>74/111 67%</td>
<td>89/132 67%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>143/160 89%</td>
<td>105/111 95%</td>
<td>120/132 91%</td>
<td>54/55 98%</td>
</tr>
<tr>
<td>Depression, past 30 days**</td>
<td>60/160 38%</td>
<td>46/111 41%</td>
<td>58/130 45%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53/159 33%</td>
<td>38/111 34%</td>
<td>42/132 32%</td>
<td>21/55 40%</td>
</tr>
<tr>
<td>Anxiety, past 30 days**</td>
<td>120/159 76%</td>
<td>87/111 78%</td>
<td>108/132 76%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52/159 33%</td>
<td>37/111 33%</td>
<td>61/131 47%</td>
<td>26/55 47%</td>
</tr>
<tr>
<td>Hallucinations, past 30 days</td>
<td>7/159 4%</td>
<td>3/111 3%</td>
<td>9/130 7%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23/160 14%</td>
<td>8/111 7%</td>
<td>7/111 6%</td>
<td>8/55 15%</td>
</tr>
<tr>
<td>Trouble concentrating, past 30 days</td>
<td>57/160 35%</td>
<td>45/111 41%</td>
<td>54/130 42%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/160 8%</td>
<td>7/111 6%</td>
<td>6/132 5%</td>
<td>8/55 15%</td>
</tr>
<tr>
<td>Suicide thoughts, past 30 days</td>
<td>8/160 5%</td>
<td>4/111 4%</td>
<td>5/132 4%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/158 1%</td>
<td>1/111 1%</td>
<td>1/131 1%</td>
<td>0/54 0%</td>
</tr>
<tr>
<td>Substance abuse during index pregnancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol***</td>
<td>126/160 79%</td>
<td>68/111 61%</td>
<td>96/132 73%</td>
</tr>
<tr>
<td>Binge alcohol*</td>
<td>98/160 61%</td>
<td>46/111 41%</td>
<td>69/132 52%</td>
</tr>
<tr>
<td>Heroin</td>
<td>23/160 14%</td>
<td>15/111 14%</td>
<td>18/132 14%</td>
</tr>
<tr>
<td>Other opiates***</td>
<td>32/160 20%</td>
<td>10/109 9%</td>
<td>10/128 8%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>94/160 59%</td>
<td>64/111 58%</td>
<td>85/132 64%</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>66/157 42%</td>
<td>54/109 50%</td>
<td>53/132 40%</td>
</tr>
<tr>
<td>Marijuana</td>
<td>108/160 68%</td>
<td>76/111 68%</td>
<td>79/132 60%</td>
</tr>
<tr>
<td>Cigarettes</td>
<td>147/160 92%</td>
<td>101/111 91%</td>
<td>118/132 89%</td>
</tr>
<tr>
<td><strong>Lifetime</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68/160 42%</td>
<td>26/111 25%</td>
<td>47/132 34%</td>
<td>14/55 22%</td>
</tr>
</tbody>
</table>

* 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.

** Not including index child.

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

† 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, \( p < 0.01 \)); for at least 1 year (37%, 53%, 17%, and 18%, \( p < 0.01 \)); and for at least 2 years (29%, 34%, 7%, and 15%, \( p < 0.001 \)) (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 (\( B = -0.17, p < 0.001 \)), and these predictors: being married (\( B = 0.11, p < 0.05 \)), using any alcohol during the index pregnancy (\( B = 0.06, p < 0.10 \)), greater case management time (total) received per week (\( B = 0.035, p < 0.05 \)), and fewer service needs identified (\( B = -0.03, p < 0.001 \)), in addition to the constant term (\( B = 0.837 \)). The full model explained about a fifth of the summary
Association between parenting status and alcohol/drug abstinence at program exit: Groups 1 vs. 4 and Groups 2 vs. 3.

### Table 3

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unadjusted Coefficient</th>
<th>SE</th>
<th>Odds ratio</th>
<th>95.0% C.I.</th>
</tr>
</thead>
</table>
| Group 1 (child always lived with mother, n=160, coded ‘0’) vs. Group 4 (child never lived with mother, n=55, coded ‘1’)
| Intercept |\( -1.465^{***} \) | 0.405 | 0.243 | 0.125–0.476 |
| Hallucinations, lifetime | 1.123*** | 0.414 | 3.081 | 1.368–6.939 |
| Depression, lifetime | 0.859*** | 0.467 | 2.360 | 0.945–5.893 |
| Group 2 (child with mother at exit, n=111, coded ‘0’) vs. Group 3 (child not with mother at exit, n=132, coded ‘1’)
| Intercept | \(-0.992 \) | 0.16 | 0.394 | 0.224–0.702 |
| Depression, past 30 days | 1.067*** | 0.287 | 2.91 | 1.66–5.10 |

a Unadjusted Nagelkerke R² = .085; Adjusted R² = .243. Covariates in the model: Not Caucasian (B = 0.589⁎⁎⁎), level of education (B = −0.304⁎⁎⁎), and number of live children (B = 0.347⁎⁎⁎).

b Unadjusted Nagelkerke R² = .084; Adjusted Nagelkerke R² = .142. Covariates in the model: married (B = 0.107⁎⁎⁎); enrolled in 2002–2004 (B = −0.742⁎⁎⁎).

### 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.

### 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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unadjusted Coefficient</th>
<th>SE</th>
<th>Odds ratio</th>
<th>95.0% C.I.</th>
</tr>
</thead>
</table>
| Group 1 (child always lived with mother, n=160, coded ‘0’) vs. Group 4 (child never lived with mother, n=55, coded ‘1’)
| Intercept |\(-0.758^{***} \) | 0.181 | 0.496 | 0.298–0.828 |
| Ever abstinent, >2 years | \(-1.099^{***} \) | 0.385 | 0.333 | 0.157–0.709 |
| Group 2 (child with mother at exit, n=111, coded ‘0’) vs. Group 3 (child not with mother at exit, n=132, coded ‘1’)
| Intercept | \(-0.749^{***} \) | 0.168 | 0.496 | 0.298–0.828 |
| Current abstinence, >1 year | \(-1.736^{***} \) | 0.310 | 0.176 | 0.098–0.318 |

a Unadjusted Nagelkerke R² = .062; Adjusted R² = .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 R² = .206; Adjusted R² = .251. Covariates in the model: mother’s age (B = −0.044⁎), married (B = −1.126⁎⁎), number of live children (B = 0.222⁎⁎).
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 = 7.18, CI = 2.78–18.53, p < .001); and ever being jailed during the program (OR = 7.78, CI = 2.99–21.55, p < .01). 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 in 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 prematurely (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 than 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, Grello 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 maternal 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 uninterested in utilizing services or following through with treatment plans which 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, Comby, 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 (Krysis & 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, Yoo, & 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 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.

Acknowledgments

We extend special thanks to the Parent–Child Assistance Program case managers and clinical supervisors, and to the women enrolled in the program for their valuable contributions to this work. This work was supported by the State of Washington Department of Social and Health Services (DSHS) contracts #0565-74678 and #0765-20733.

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