Examining the Role of Methamphetamine in Permanency: A Competing Risks Analysis of Reunification, Guardianship, and Adoption

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Parental methamphetamine use has drawn significant attention in recent years. Despite prior research that shows that parental substance abuse is a risk factor for lengthy foster care stay, little is known about the effect of specific types of substance use on permanency. This study sought to compare the impact of parental methamphetamine use to alcohol use, other drug use, and polysubstance use on the timing of 3 types of permanency: reunification, guardianship, and adoption. Using an entry cohort of 16,620 children who had entered foster care during a 5-year period, competing risks event history models were conducted for each permanency type. Findings showed that, after controlling for several case characteristics, parent illicit drug use significantly impacted the timing of the 3 types of permanency, but alcohol use did not. Methamphetamine, other drug, and polysubstance with methamphetamine use were associated with lower rates of reunification and higher rates of adoption. Guardianship was also predicted by other drug and polysubstance use without methamphetamine; however, methamphetamine use was not associated with guardianship. Notably, the methamphetamine groups comprised the youngest children and had the shortest median time to adoption. Results suggest that type of parental substance use is predictive of permanency exits and that parental illicit drug use may require tailored strategies for improving permanency outcomes. Further implications of the findings are discussed.

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Permanency is one of the central pillars of the U.S. child welfare system. Legal permanency is defined by a child exiting the foster care system to a permanent living arrangement through reunification, guardianship, or adoption. Despite clarity in this definition and mission, many children and families struggle to achieve timely permanency, which by statute must occur within 12 months of entry (Adoption and Safe Families Act [ASFA], 1997). The most vulnerable are particular subgroups of children who experience long stays prior to exiting to permanency and those who leave the foster care system without a permanent home. Numerous empirical studies have examined the path to permanency to identify those factors that facilitate or inhibit successful exits from foster care. Chief among the factors associated with children not achieving permanency is parental substance abuse (Courtney & Hook, 2012; McDonald, Poertner, & Jennings, 2007; Rosenberg & Robinson, 2004; Snowden, Leon, & Sieracki, 2008). Given the well-documented challenges for this subgroup, children in foster care because of parental substance abuse comprise an at-risk population that warrants careful study.

In recent years, parental substance abuse in the child welfare system has included a focus on methamphetamine use. While data suggests that the number of Americans initiating methamphetamine use every year has decreased since its height in 2004 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2013), methamphetamine abuse remains a relevant and pressing issue. Prevalence estimates of parental methamphetamine use among child-welfare-involved families vary markedly depending on locality (Young, 2006) and, similar to national usage patterns, show areas of concentrated impact. For example, Amatetti, Young, and Wurscher (2006) reported that over 50% of Oregon's foster care cases were because of parental methamphetamine abuse.

Beyond the limitations of epidemiological studies, the current body of knowledge on the impact of methamphetamine on child-welfare-involved families is incomplete. Prior qualitative research suggests that parental use of the drug places children at heightened safety risks and is detrimental to their physical and behavioral health and well-being (Haight et al., 2005; Haight, Ostler, Black, Sheridan, & Kingery, 2007; Hohman, Oliver, & Wright, 2004). Additionally, outcome studies found that methamphetamine-involved families were at increased likelihood of placement into foster care (Carlson, Williams, & Shafer, 2012) and decreased likelihood of reunification (Lloyd & Akin, 2014) compared to families with alcohol abuse or no substance abuse. Other studies,

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however, found no significant differences on child welfare indicators for methamphetamine-involved families (Green, Rockhill, & Furrer, 2007; Grella, Needell, Shi, & Hser, 2009).

In addition to research aimed at individual geographic sites and local programs, the role of methamphetamine use in child welfare outcomes has drawn attention at the federal level. A recent round of 5-year demonstration projects—funded by the Administration for Children and Families, through the Child and Family Services Improvement Act of 2006, the Promoting Safe and Stable Families Program, and Section 437 of the Social Security Act—focused on the development and implementation of innovative service delivery strategies aimed at the methamphetamine- and other substance-involved child welfare populations. Fifty-three sites were funded from the timeframe 2007 to 2012. This same program funded 17 additional grants for the time period 2012 to 2017; however, the program's emphasis on methamphetamine was removed as of 2012. The Substance Abuse and Mental Health Services Agency, through Section 509 of the Public Health Service Act of 2000, also has implemented targeted funding for expanding services to children and families affected by methamphetamine use and abuse. Both of these funding mechanisms are focused on improving service delivery to children and families with methamphetamine and other substance abuse problems within the child welfare context. As a necessary antecedent to designing service delivery strategies, the field must learn more about the service experience and permanency trajectory of these children and their families.

AOD and Permanency

Previous research into the relationship between parental substance use and child welfare underscores the importance of evaluating types of foster care exits. Testa and Smith's (2009) meta-analysis on the topic concluded that caseworkers report parental substance abuse in 11–14% of investigated cases, 18–24% of substantiated cases, and 50–79% of cases where the child is placed into foster care. Research suggests that children are less likely to reunify after foster care if alcohol and other drug (AOD) problems are present (Rosenberg & Robinson, 2004). Further deconstructing this relationship, Brook, McDonald, Gregoire, Press, and Hindman (2010) found that, even when controlling for factors such as family structure, economic situation, and removal reasons, parental (illicit) drug use or combined use of alcohol and illicit drugs significantly delayed reunification. Courtney and Hook (2012) similarly found that reunification is less likely with parental drug use but that parental alcohol use is not significantly related to reunification. Other studies evaluating reunification as a case outcome found that parental heroin use decreased the likelihood of reunification compared to other drugs of abuse (Boles, Young, Moore, & DiPirro-Beard, 2007; Choi & Ryan, 2007; Grella et al., 2009). In contrast to studies which have documented a relationship, earlier works by Benedict and White (1991); Glisson, Bailey, and Post (2000); and Potter and Klein-Rothschild (2002) showed mixed findings.

A few studies have observed the relationship between parental AOD use and other permanency outcomes. McDonald et al. (2007) found that guardianship rates were higher among children removed because of parental alcohol use. Another study found that neither parent alcohol use nor other drug use were related to guardianship (Courtney & Hook, 2012). Adoption findings are similarly mixed.

Two studies showed no significant relationship between parent drug or parent alcohol use (Courtney & Hook, 2012; McDonald et al., 2007) and one study showed that adoption was less likely for children from families affected by parental alcohol or drug use (Snowden et al., 2008).

Factors other than parental substance use influence child welfare outcomes as well and have been investigated in numerous studies (Akin, 2011; Harris & Courtney, 2003; Koh & Testa, 2008; Leathers, Falconnier, & Spielfogel, 2010; McDonald et al., 2007). Connell and colleauges (2006) identified young children, African Americans, children with emotional disorders and disabilities, a history of prior removals, children removed because of their emotional or behavioral problems or sexual abuse, and those placed in kinship care were less likely to reunify. Adoption was most likely for infants and decreased with each successive age category. Rates of adoption were lower for children with emotional or behavioral disorders, removed because of sexual abuse compared to neglect, and placed in group homes compared to kinship care. Gender and race were not associated with adoption. Connell, Katz, Saunders, and Tebes (2006) did not investigate exits to guardianship. More recently, researchers found that infants, White children, disabled or seriously mentally ill children, children removed for reasons of neglect, and those placed in different foster homes than their siblings had lower likelihoods of reunification (Akin, 2011). In this study, adoption was also most common for infants, with likelihood decreasing incrementally for each older age group. Children with disabilities were more likely to exit to adoption, but those with mental health problems were less likely to exit to adoption. Other significant predictors of adoption included placement in family foster care, those with intact sibling placements, early placement stability, and lack of runaway events. Guardianship exit was more likely for children 10 and older, with lack of disability, lack of runaway events, and initial kinship placement (Akin, 2011).

Given that the role of substance abuse as an influential factor in child welfare outcomes is increasingly recognized, and that prior research has indicated that disparate outcomes may be influenced by different drugs of abuse, this research aimed to focus on the role of methamphetamine in permanency exits.

Methamphetamine and Child Welfare

Awareness of the role of methamphetamine has increased in the last 15 years, and although methamphetamine use appears to have stabilized recently, the number of people using methamphetamine remains high. In 2013, there were 595,000 past month methamphetamine users, compared to 353,000 in 2010 (Substance Abuse and Mental Health Services Administration [SAMHSA], Center for Behavioral Health Statistics Quality [CBHSQ], 2014). As noted, no reliable prevalence data exist regarding the number of children in the child welfare system impacted by parental methamphetamine use, but information on the rate of methamphetamine-using women of child-bearing age can serve as a reasonable proxy for understanding how frequently children are affected. The *2013 National Survey on Drug Use and Health* indicated that half of the 144,000 people who used methamphetamine for the first time in the year prior to the survey were women (SAMHSA, 2013). Additionally, data from the most recent Treatment Episode Data Set (TEDS) in 2011 indicated that women entered treatment for methamphetamine at roughly twice the rate as men (8.6% vs. 4.7%). This discrepancy was

greatest for women of child bearing age. In the 18–24 age group, 8.9% of women compared to 3.7% of men enter treatment for methamphetamine, and that figure peaks in the 25–34 age group with 11.9% of women compared to 6.5% of men (SAMHSA & CBHSQ, 2014). National estimates obscure much higher regional prevalence rates. For example, the same data set indicates that 26.6% of women in the Pacific region (which includes Alaska, California, Hawaii, Oregon, and Washington) entered treatment for methamphetamine compared to 17.8% of men in the same geographic area. Nicosia, Pacula, Kilmer, Lundberg, and Chiesa (2009) relied on a patchwork of data, including TEDS, and estimated that methamphetamine is the primary drug of abuse in 8.9% of foster care cases.

Child welfare researchers have identified six ways that children can be impacted by parental methamphetamine use: (a) parent uses or abuses methamphetamine; (b) parent is dependent on methamphetamine; (c) mother uses methamphetamine while pregnant; (d) parent "cooks" small quantities of methamphetamine; (e) parent is involved in trafficking methamphetamine; and (f) parent is involved in "super lab," where large quantities of methamphetamine are concocted (Young, 2006). Federal legislators, as well as many states, have enacted laws and statutes to protect children in the face of these threats. The Child Abuse Prevention and Treatment Act (CAPTA, 2010), for example, requires states to address prenatal substance exposure in their own child welfare laws. This legislative action followed findings from the Infant Development, Environment, and Lifestyle (IDEAL) study which examined mothers' methamphetamine use during pregnancy and found that the women who used methamphetamine were more likely than non-methamphetamine-using comparison mothers to experience greater legal difficulties and develop a substance use disorder (Derauf et al., 2007). The methamphetamine-exposed children were 3.5 times more likely to be small for gestational age, have lower birth weight (L. M. Smith et al., 2006) and increased psychological stress (L. M. Smith et al., 2008).

The Child Welfare Information Gateway (2012) reported that 12 states and the District of Columbia have passed statutes that incorporate prenatal exposure into their definition of child abuse. Partly because of the fact that there is no federal requirement to collect or report these data, the same brief indicated that the definition of child abuse has been expanded to include the following: in eight states and the District of Columbia, exposure to drug manufacturing; in seven states, storage of manufacturing chemicals where children are present; in seven states and Guam, sale or distribution of drugs to children; in seven states and the District of Columbia, use of a controlled substance that impairs a caregiver's ability to adequately care for the child; and in two states and the District of Columbia, sale or distribution of drugs (Child Welfare Information Gateway, 2012).

Developing a scholarly understanding of the impact of these policy changes is hindered for a couple of reasons. First, no data has been published indicating the number of children investigated by Child Protective Services (CPS) under these laws, partly because of the lack of federal reporting requirements. Second, prior research on the impact of parental methamphetamine use on child welfare outcomes is inconsistent.

Empirical Review

One of the earliest studies on the impact of methamphetamine on parenting investigated the experiences of pregnant or new mothers who used crack-cocaine, heroin, or methamphetamine (Irwin, 1995). The methamphetamine using group was the smallest ($n = 8$) and generally reported a lack of information on the impact of the drug on their unborn child, as well as where to go for treatment services if they wanted. In the years following that publication, the national awareness of methamphetamine rose dramatically, as did anecdotal information and media attention to methamphetamine, which included "broad claims about the unique and profound effects" of methamphetamine on children and families (B. D. Smith, 2008, p. 518). Social services research into the impact of methamphetamine on children and families followed thereafter. Our review of the literature uncovered 18 relevant articles: 4 qualitative studies and 14 quantitative studies (including 5 on family drug courts). Following is a summary of key findings.

Qualitative

Haight and colleagues (2005) published one of the first empirical articles on methamphetamine and child welfare. Their qualitative study interviewed 35 adult informants, including child welfare workers, foster parents, counselors, a district attorney, police officer, and principal, between April and September 2004 in the rural Midwest. Their analysis indicated that children of methamphetamine-using parents were exposed to environmental danger, chaos, neglect, abuse, loss, and isolation and were modeled antisocial behavior by their parents, including lying, stealing, drug use, and violence (Haight et al., 2005). In a follow-up to the study with adults, the same principal investigator interviewed 18 children and identified sadness, fear, and chaos as present in homes where parents use methamphetamine. These qualitative studies suggest that parental methamphetamine abuse is related to child maltreatment.

Cost

Only one report has attempted to quantify the economic burden of methamphetamine's role in the child welfare system. The cost evaluation by Nicosia and colleagues (2009) on the economic impact of methamphetamine use included a section on how children in child welfare are affected. Because of the lack of data, calculating this figure required the researchers to rely on a mixture of more recent as well as decades old datasets. The authors reported that methamphetamine was the primary drug in 8.94% of foster care cases, representing 18,545 children and costing an estimated $402.8 million per year (Nicosia et al., 2009).

Methamphetamine and Foster Care

One prior study attempting to quantitatively evaluate the relationship between methamphetamine and child maltreatment used the phenomenon of market "shocks" (times when the availability of methamphetamine decreased markedly for a short period of time) linked with AFCARS and TEDS data between 1995 and 1999 to address this question (Cunningham & Finlay, 2013). These authors found that a rise in methamphetamine caused a 1.54% increase in foster care cases, including a 1.03% rise in child neglect and a 1.49% rise in child abuse. A frequently cited study by Kyle and Hansell (2005), which reported descriptive statistics from telephone

interviews with child welfare officials in 303 counties in 13 states, found that 40% of respondents from all 13 states reported an increase in out-of-home placements because of methamphetamine in the past year (Kyle & Hansell, 2005). The extent to which these workers' perceptions matched data is unknown. More recently, Carlson et al. (2012) in their study of 2,465 families under CPS investigation in Arizona found that, compared to parents reporting use of other drugs (15.6%), the methamphetamine-using parents (23.5%) were significantly more likely to have their children placed in out-of-home care. Post hoc statistical tests revealed that the rate of out-of-home placement for the methamphetamine-using group was higher than the alcohol group (20.3%), but the difference was not statistically significant (Carlson et al., 2012).

Methamphetamine and Reunification

Only one study has explicitly evaluated the impact of parental methamphetamine use on foster care outcomes. Two of the three authors of this article compared five groups of children in foster care ($n = 16,220$) between 2007 and 2012 using Cox regression and found that the methamphetamine group was 22% less likely to reunify than children in care because of parental alcohol use only, parental use of other drugs, polysubstance use, or no alcohol or drug (AOD) use (Lloyd & Akin, 2014). This study also found that those in the methamphetamine group who reunified did so more quickly than the other drug and polysubstance groups, suggesting that case workers were making faster alternative permanency decisions for the methamphetamine group and were less likely to seek reunification as an outcome.

Other studies evaluating reunification after foster care have included parental methamphetamine use as a control variable and the findings have been mixed. Grella and colleauges (2009) in their study of 1,115 mothers participating in substance abuse treatment with children in foster care found that rates of reunification for methamphetamine users were no different from alcohol users. Green et al. (2007) in their study of 1,911 women with children in foster care in Oregon found that parental methamphetamine use was not significantly associated with increased length of stay in out-of-home care or with decreased likelihood of reunification. Boles and Young (2010), in their longitudinal outcome study of the Sacramento County family drug court, found that parents with methamphetamine or marijuana as their drug of choice had the highest reunification rates at all time-points (12, 18, 24, and 36 months) compared to all other parents. An earlier report from Boles and colleagues (2007) on the Sacramento County family drug court found no significant differences on reunification rates between methamphetamine and other drugs.

Other studies on methamphetamine and child welfare provide further information into this phenomenon. Messina and Jeter (2012) conducted a small study on the child welfare trajectory of children removed from home-based methamphetamine labs in California between 2001 and 2003. Their results indicated that 94% of CPS allegations (most often neglect) were substantiated. Of the 69 children whose cases received a disposition within the study timeframe, 56 (81%) were returned to the custody of either one or both parents (Messina & Jeter, 2012). Whether the parent who regained custody was a methamphetamine user was not reported, however, and so the impact of parental methamphetamine use on case outcomes in this study remains unknown.

Finally, Carlson et al.'s (2012) study compared parents of children in foster care who reported using methamphetamine versus other illicit drugs versus alcohol. They found that the parents who used methamphetamine had higher maltreatment risk scores compared to alcohol users, but were not different from other drug users. Additionally, parents with methamphetamine abuse had similar likelihood of maltreatment allegations and similar numbers of substantiated allegations compared to the other groups. Despite similar rates of maltreatment, children in the methamphetamine group were more likely to be placed in out-of-home care compared to other drugs.

The prior research into parental methamphetamine use and child welfare suggests that it is a complex problem. Incompatible findings from earlier studies highlight that (a) child welfare workers and community stakeholders experience methamphetamine as a threat to child and family well-being; (b) parental methamphetamine use is one of many factors that influence child welfare involvement; (c) given the perceived impact of methamphetamine on families, court personnel and case workers may respond differently to it than to other illicit substances; and (d) the effect of methamphetamine on child welfare trajectories may depend on type of jurisdictional entity (i.e., family drug court, dependency docket) servicing these families.

To develop a more complete understanding of how parental methamphetamine use impacts child welfare system experiences for families, further research into the relationship between methamphetamine and permanency is warranted. In addition to the aforementioned weaknesses in the literature, no prior research has addressed the impact of methamphetamine on the three different types of permanent exit from foster care (i.e., reunification, guardianship, and adoption). Given the importance of permanency for child development and well-being, as well as the policy-driven goals to shorten stays in out-of-home care, understanding the effect of parental methamphetamine use on exits from foster care, aside from reunification, is needed. This study sought to contribute to the literature by comparing the impact of parental methamphetamine use to alcohol use, other drug use, and polysubstance use on the timing of three foster care exit types: (a) reunification, (b) guardianship, and (c) adoption. Specifically, we aimed to examine methamphetamine use and whether it differed from other types of parent substance use in its association with three permanency outcomes.

Method

Sample

This study used child welfare administrative data from a Midwestern state. The sample comprised all children who entered foster care for a 5-year period, between April 2007 and March, 2012. For children with multiple foster care episodes, only their first episodes were included in the sample. The total sample was 16,620 children.

Measures

Dependent variable. Reunification, guardianship, and adoption were the three types of exits to permanency used as the

observed events of interest. The dataset provided the date of entry into foster care; the date of discharge from foster care, if it had occurred; and the reason for discharge, including the three types of permanency and four types of nonpermanent exit. These fields were required fields and they contained dates and discharge reasons based on legal proceedings. Discharge date was observed on April 1, 2012. Children who did not experience any one of the permanent exits were treated as censored cases (i.e., they either exited without a permanent living arrangement or they remained in foster care) at the end of the study's observation period. Among the entire sample, 62.5% of the children ($n = 10,139$) had exited to permanency and the remainder were censored (37.5%, $n = 6,079$).

Independent variables. The key independent variables were those that signified whether a family was affected by substance use. Data on the child's reason for removal indicated whether the child was placed into foster care because of parental alcohol use (yes = 1, no = 0), methamphetamine use (yes = 1, no = 0), or other drug use (yes = 1, no = 0). We also established a three-level categorical variable to represent polysubstance use and to distinguish between polysubstance with and without meth (*no polysubstance* = 0, *polysubstance with meth* = 1, *polysubstance without meth* = 2). Reason for the child's removal was recorded by caseworkers and was based on information from court records (e.g., petition to remove child from parent and into state custody, documentation of court-mandated drug testing) and investigation records, which document the risk and safety concerns that justify removal. Reason for removal was a required field in the dataset and had no missing values in the administrative dataset. Additionally, caseworkers could enter up to six removal reasons, reducing the chance that they had to exclude or choose between reasons. A prior statewide study that included case record reviews indicated that removal reason data were largely consistent with case record data that would also indicate parental substance use (McDonald & Brook, 2009). It should be noted that the study's purpose was not to estimate prevalence of parental substance use or abuse. These administrative data are likely a conservative estimate of substance use, abuse, and dependence. However, they are an accurate portrayal of how substance use was identified in relation to the reasons documented about caregiver problems and the child's entry into foster care. Even with potential limitations in underestimating parental substance use, these data are useful as real-world representation of the current foster care system and the documented reasons for a child's placement into state custody.

On a related point, state policy and procedures for mandated reporting guidelines, determination of maltreatment, and the basis for removal into foster care are relevant. The state in which the study occurred has policies and procedures to provide a comprehensive response to pre- and postnatal substance abuse by caregivers, as required by CAPTA. Mandated reporting guidelines (not statute) indicate that reporters may consider parental substance abuse in determining whether an adequate reason exists to suspect endangerment of a child's physical or emotional well-being. However, caregiver substance abuse is but one of many risk factors that comprise the assessment of an allegation of abuse and/or neglect. No state statutes mandate placement into foster care because of caregiver substance abuse. Another statute, however, allows criminal charges of aggravated endangerment of a child in the instance

of exposure to methamphetamine-related manufacturing activities. Importantly, even charges of aggravated child endangerment would not result in mandated foster care placement, as the decision to remove a child from the parent and place in the state's custody is highly dependent on overall risk factors and family circumstances.

Seven additional independent variables were included as covariates. Selection of covariates was determined by the literature and availability of variables within the administrative data set. Following are the variables' definitions. Age at foster care entry was used as a continuous variable indicating age in years. Race was coded as White (0), Black (1), or Other (2). The Other race category represented 1.3% of the sample and consisted of Asian, Hawaiian or Pacific Islander, and American Indian or Alaskan Native. Number of removal reasons was a continuous variable that ranged from 1 to 6. Child's gender, Latino, head of household gender, and child's disability were dichotomous variables that were coded as follows: child's gender (female = 1), Latino (yes = 1), head of household gender (female = 1), and child's disability (yes = 1). The disability variable indicates whether the child has any diagnosed disability, including a wide range of disabilities, such as intellectual, developmental, learning, emotional, medical, visual, hearing, and other physical disabilities. Non-AOD-related removal reasons were coded into six dichotomous variables (yes = 1) for abuse, abandonment, sexual abuse, neglect, parental incarceration, and housing.

Data Analysis

Data were analyzed with Stata 13. Competing risks event history models (Fine & Gray, 1999) were used to examine the effect of different types of parental AOD problems on the time to three distinct permanent exits from foster care: reunification, guardianship, and adoption. Event history analysis is well-suited to these data for two key reasons. First, unlike other statistical modeling, event history analysis accounts for both the type of outcome and the duration of time to that outcome (Box-Steffensmeier & Jones, 2007). Second, event history analysis allows observation of time to event when some subjects have not yet experienced the event (a.k.a., censoring; Allison, 2004). Furthermore, competing risks models, which are an extension of classical event history models, are most appropriate in studies where subjects may experience more than one type of event and the experience of one event excludes the experience of another event (Pintilie, 2007). For example, a child may exit to only one type of permanency—reunification, guardianship, or adoption—during a single episode of foster care. Competing risks models estimate the cumulative probability of an event from a specific cause over time, which is called the cumulative incidence function (CIF; Fine & Gray, 1999). The model is adjusted to account for subjects who experience a competing event, which includes the use of weighting and robust standard errors. Instead of hazard ratios that are provided by conventional Cox proportional hazard models, competing risks models produce subhazard ratios (SHR). SHRs are interpreted like hazard ratios; that is, a SHR significantly greater than 1 shows an increase in the probability of exiting to that type of permanency. A SHR significantly less than 1 means that there is a decrease in the probability of that outcome. A SHR equal to 1 indicates no difference in the probability of the outcome of interest. When the

covariate is a categorical variable, the SHR is the estimated hazard for a subgroup as compared to the reference group. For example, if a categorical covariate's SHR is 0.46, the estimated hazard for subjects in that subgroup is only 46% of the hazard for subjects in the reference group while controlling for other covariates. When the covariate is a continuous variable, a helpful statistic can be calculated by subtracting 1.0 from the SHR and multiplying by 100. The resulting value is the estimated percent change in the hazard for each one-unit increase in the covariate while controlling for other covariates (Allison, 2004, p. 117). For example, if a variable that represents age in years has a SHR of .78 [100 (.78–1) = 22], then it is interpreted as: for each 1-year increase in age, the hazard for the outcome decreases by an estimated 22%.

Results

Descriptive Analyses

Table 1 shows that slightly fewer than half of all children in this 5-year entry cohort exited to reunification and that these exits occurred with a median time of 308 days. A small percentage of children exited to guardianship with a median time of 364 days. About one in 10 children exited to adoption and the median time was 755 days.

Table 2 displays basic descriptive data for the total sample and each type of permanency exit. Overall, children in this sample were about evenly split between boys and girls, entered care at an average age of 8.2 years, and were predominantly White. On average, children had two unique reasons for removal, and among them the most common was neglect, which was recorded for half of the cohort. Approximately one third of the children were identified by the caseworker as having a disability. This rate of disability among the foster care population was not surprising because the variable comprised a wide range of disabilities, such as intellectual, developmental, learning, emotional, visual, hearing, medical, and other physical disabilities. Other studies have documented similar rates, showing that 25% to 35% of children in foster care have a disability (e.g., Bruhn, 2003; Lightfoot, Hill, & LaLiberte, 2011).

AOD Descriptive Analyses

Two-thirds of the children's records did not have parental alcohol and other drug problems as a reason for removal. In the overall sample, alcohol only was indicated for 3.9%, drug only for 18.4%, methamphetamine only for 3.0%, polysubstance with meth for 4.8%, and polysubstance without meth for 2.2% of the children.

Table 1. *Descriptive Data for Each Type of Permanency Exit*

Type of permanent exit	N	%	Median days to exit
Reunification	7310	45.1	308
Guardianship	952	5.9	364
Adoption	1,877	11.6	755
No permanent exit	10,139	62.5	NA
Total	16,220	100.0	569

Observing each AOD domain across the exit types reveals variations as described below.

While the percentage of alcohol only was 3.9% for the overall sample, it was highest among the group of children that exited to guardianship, followed closely by those that exited to reunification; and it was lowest for children that exited to adoption. Among children that did not exit or exited without permanency, alcohol only was 3.6%.

The percentage of drug only was close to the overall sample among those exiting to reunification and guardianship, but comprised a notably larger percentage among the children exiting to adoption. In contrast, drug only made up a smaller proportion of those children who experienced no permanent exit as compared to the overall sample, the children who reunified, and those who exited to guardianship.

Methamphetamine only was 3.0% in the overall sample. Across the exit types, it represented the smallest percentage for children that reunified, followed by those who exited to guardianship, and adoption. The highest percentage of methamphetamine only was observed among children who remained in care or exited without permanency.

Finally, the polysubstance with methamphetamine group made up 4.8% of the overall sample. This AOD domain was smallest among children who exited to guardianship and largest among those who were adopted. Polysubstance without methamphetamine represented the smallest percentage across all AOD types. Across exit types, the smallest percentage was observed for reunification, then adoption, and guardianship.

Figure 1 presents the median time to each type of permanency among those children who exited to one of the three permanency paths. In addition, this chart compares median time to reunification, guardianship, and adoption for each of the AOD groups.

Among the children who reunified, the quickest exits occurred for children in the no parental substance use group and the parental alcohol use group. Looking at the drug-related groups, more similarities than differences existed among these groups with median time to reunification ranging from 324 to 360. The shortest time to reunification was observed for the polysubstance with no methamphetamine group.

A different pattern appeared in the group of children who exited to guardianship. The drug only group experienced the shortest time to guardianship, followed by the no AOD group. The methamphetamine and polysubstance with methamphetamine groups had similar exit times to guardianship. The longest time to guardianship occurred for the alcohol only group.

Among children who exited to adoption, the alcohol only group was observed as experiencing the longest time to this type of permanency. In contrast, the shortest time to adoption was among children in the methamphetamine only group, followed by children in the polysubstance with meth group. In the case of adoption, the drug only and polysubstance with nomethamphetamine groups were 100 days longer than the two methamphetamine groups (i.e., meth only and polysubstance with meth) but had similar exit times to one another.

Competing Risks Regression Models

Table 3 displays three competing risks models that predict the timing of reunification, guardianship, and adoption. Each model

Table 2. *Sample Characteristics for the Overall Sample and Three Types of Permanency Exits*

| Independent variable	Sample		Reunification		Guardianship		Adoption	
	N	% or Mean	N	% or Mean	N	% or Mean	N	% or Mean
Total	16,220		7310		952		1,877	
Child's gender								
Female	8,276	51.0	3,804	52.0	502	52.7	912	48.6
Male	7,944	49.0	3,506	48.0	450	47.3	965	51.4
Child's age (mean)	16,220	8.2	7,310	8.4	952	9.9	1,877	3.4
Child's race								
White	13,184	81.3	6,080	83.2	794	83.4	1,453	77.4
African American	2,821	17.4	1,154	15.8	152	16.0	385	20.5
Other	215	1.3	76	1.0	6	0.6	39	2.1
Child's disability status								
Has disability	5,104	31.5	1,736	23.7	240	25.2	1,087	57.9
Removal reason								
Abuse	12,246	75.5	2,037	27.9	235	24.7	307	16.4
Abandonment	2,394	14.8	911	12.5	179	18.8	314	16.7
Sexual abuse	2,213	13.6	982	13.4	163	17.1	184	9.8
Neglect	8,242	50.8	3,576	48.9	491	51.6	1,134	60.4
Incarceration	2,870	17.7	1,301	17.8	212	22.3	326	17.4
Housing	2,854	17.6	1,247	17.1	174	18.3	336	17.9
No. removal reasons (mean)	16,220	1.98	7,310	1.93	952	2.03	1,877	1.89
Parental AOD								
Alcohol only	631	3.9	307	4.2	46	4.8	60	3.2
Drug only	2,982	18.4	1,248	17.1	177	18.6	528	28.1
Meth only	489	3.0	171	2.3	25	2.6	54	2.9
	1,143	7.0	463	6.3	71	7.5	162	8.6
Polysubstance with meth	780	4.8	321	4.4	36	3.8	111	5.9
Polysubstance without meth	363	2.2	142	1.9	111	3.7	51	2.7
No AOD	10,975	67.7	5,121	70.1	533	56.0	1,073	57.2

Note. AOD = alcohol and other drugs.

included eight demographic and case characteristics as covariates. Across these covariates, our findings are generally in accord with the extant literature (Akin, 2011; Connell et al., 2006; Courtney, 1994; Courtney & Wong, 1996; B. D. Smith, 2003; Snowden et al., 2008; Wulczyn, 2003). Because the purpose of our study is to expand knowledge on methamphetamine's effect on different types of permanency exits, we focus the findings on the AOD variables.

The alcohol only group was not statistically significant in any of the three competing risks models. In contrast, both the drug only group and the polysubstance with no methamphetamine group were statistically significant across all three types of permanency exits. Moreover, the direction of the relationships were the same for both variables. That is, when compared to their reference groups the drug only and polysubstance with no methamphetamine groups exited to reunification at lower rates but experienced higher rates of guardianship and adoption. The variables for methamphetamine only and polysubstance with methamphetamine followed a similar pattern; however, unlike the drug only and polysubstance with no methamphetamine groups, the two methamphetamine-related groups were not significantly associated with guardianship. Children in the methamphetamine only and polysubstance with methamphetamine groups exited to reunification at a lower rate and to adoption at a higher rate, as compared to their reference groups.

Figures 2, 3, and 4 visually depict the methamphetamine only variable in each of the multivariate models. These charts show the influence of the methamphetamine only group on the children's time to exit to reunification, guardianship, and adoption while holding constant all other variables in each model. The graphed data are the estimated cumulative probability of exit to each type of permanency at a given time point, contrasting children in the methamphetamine only group (methamphetamine only = 1) to children that were not in the methamphetamine only group (methamphetamine only = 0). The horizontal axis is number of days in foster care. The chart can be read by observing a specific point in time—such as 365 days in care—and the corresponding cumulative probability for that time point. The slope of the line shows whether exits to that type of permanency are increasing or decreasing over time. Also useful is to compare different lines' slopes, which represent different subgroups of the independent variable.

Figure 2 indicates that the methamphetamine only group reunified at a lower rate, showing the methamphetamine group's line with a significantly smaller slope than the group that was not methamphetamine involved. In comparison, Figure 3 shows a different looking graph with less distinction between the lines and with the methamphetamine group exiting to guardianship at a higher rate than the nonmethamphetamine group. That is, in the guardianship graph, the methamphetamine group's line has a slightly steeper slope than the no methamphetamine group. Finally, Figure 4 plots the cumulative incidence function for adoption and, similar to the guardianship graph, indicates that the methamphetamine group exits to adoption at a higher rate. Additionally, Figure 4 shows a flat slope for both groups up until
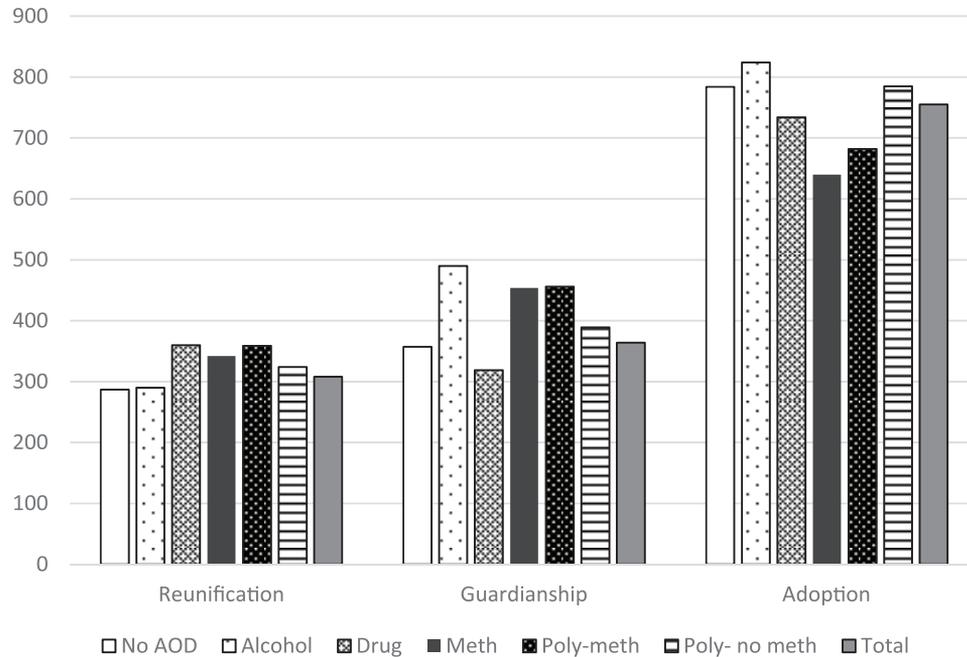
Figure 1. Median days to each type of permanent exit by AOD domain. AOD = alcohol and other drugs.

approximately the 650th day of foster care. In other words, it indicates that there was little difference in adoption rates between the methamphetamine and the no methamphetamine groups until children had been in foster care for approximately 20 months.

Discussion

The results presented confirm previous research on patterns of exit to different types of permanency. Like other studies, we found that reunification was the most common and timely type of permanency exit. The second most common type of permanency was adoption, but it occurred for a small proportion of the children and took more than twice as long as exits to reunification. Guardianship was the least common type of permanency, experienced by very few youth. Despite its lack of frequency, exits to guardianship were only slightly longer than those to reunification.

Using competing risks event history models, we examined the differential effects of parental substance use on each type of permanency while controlling for a range of variables known to influence foster care exits. More specifically, these findings contribute to the literature about the impact of parental AOD problems, including methamphetamine use, on distinct types of permanency. Overall, we found that the alcohol only group showed no significant association with time to any type of permanency, while all three of the groups defined around illicit drug use were related to time to permanency. Similar patterns were observed for the methamphetamine only, drug only, and polysubstance groups with one exception. All these drug subgroups were associated with lower rates of reunification and higher rates of adoption. Whereas the drug only group and the polysubstance with no methamphetamine groups were significant predictors of higher rates of guardianship, the methamphetamine only and the polysubstance with

methamphetamine groups were not related to rates of exit to guardianship.

It is noteworthy that the number of children in the methamphetamine only and the polysubstance with methamphetamine groups who experienced guardianship was small (methamphetamine only, $n = 25$; polysubstance with methamphetamine, $n = 36$), and the variance in the guardianship event history model was larger than what was observed in the other permanency models (e.g., in the reunification model the methamphetamine only and polysubstance methamphetamine groups' robust standard errors (SE) = .06 and .07, respectively; in the guardianship group the robust SE = .27 and .39, respectively). It is also notable that the two methamphetamine-related groups were observed as having the shortest median time to adoption (methamphetamine only = 640 days; polysubstance with methamphetamine = 682 days). These data may suggest that courts and caseworkers are less hesitant to terminate parental rights of parents who are methamphetamine involved. Importantly, children from the methamphetamine-involved groups comprised the youngest children (at entry their average age was 5.3 years compared to 8.4 years). The younger age of these children may be a contributing factor to the court's and caseworker's decisions to terminate parental rights. Younger children are at heightened risk and perhaps caseworkers and court personnel are more likely to move quickly to adoption as an alternative. Future research should be aimed at understanding more about the role of caseworker and court perceptions of methamphetamine use and the role this perception plays in decisions to reunify or seek other forms of permanency.

Overall, our findings show that, after controlling for several important characteristics, parental illicit drug use significantly impacts the timing of the three types of permanency. The study's findings suggest that jurisdictions that aim to reduce foster care

Table 3. *Children's Competing Risks of Permanency Exits*

	Reunification (Wald χ^2 = 1,252.83, df = 18, p < .0001)			Guardianship (Wald χ^2 = 305.86, df = 18, p < .0001)			Adoption (Wald χ^2 = 2465.60, df = 18, p < .0001)		
	SHR	Robust *SE*	Sig	SHR	Robust *SE*	Sig	SHR	Robust *SE*	Sig
Child's race									
(White)									
African American	0.81	0.03	***	0.83	0.07	*	0.99	0.06	
Other	0.81	0.10		0.50	0.21		1.37	0.25	
Child's ethnicity									
(Not Latino)									
Latino	1.07	0.38		0.44	0.01	***	0.94	0.07	
Child's age at entry (years)	1.03	0.00	***	1.08	0.01	***	0.80	0.01	***
Child's gender									
(Female)									
Male	1.00	0.02		1.03	0.07		0.93	0.04	
Child's disability status									
(No disability)									
Has disability	0.46	0.13	***	0.60	0.05	***	3.99	0.18	***
Head of household's gender									
(Male)									
Female	1.00	0.41		0.76	0.07	**	0.98	0.08	
No. removal reasons	0.97	0.01	*	0.92	0.04	*	0.85	0.03	***
Removal reasons									
(Not physical abuse)									
Physical abuse	1.37	0.04	***	0.88	0.09		0.57	0.04	***
(Not abandonment)									
Abandonment	0.66	0.03	***	1.32	0.17	*	1.93	0.15	***
(Not sexual abuse)									
Sexual abuse	1.01	0.05		1.05	0.14		0.86	0.09	
(Not neglect)									
Neglect	0.98	0.03		1.24	0.09	**	1.26	0.08	***
(Not incarceration)									
Incarceration	1.12	0.04	**	1.44	0.16	***	1.03	0.07	
(Not housing)									
Housing	1.04	0.04		0.78	0.11		1.33	0.08	
Parental AOD									
(Not alcohol only)									
Alcohol only	0.99	0.06		1.24	0.19		1.22	0.16	
(Not drug only)									
Drug only	0.85	0.03	***	1.31	0.12	**	1.43	0.09	***
(Not meth only)									
Meth only	0.77	0.06	***	1.28	0.27		1.38	0.20	*
(Not polysubstance)									
Polysubstance with meth	0.87	0.05	*	1.17	0.22		1.41	0.17	**
Polysubstance without meth	0.80	0.07	*	2.06	0.39	***	1.41	0.22	*
BIC (null model)		133,261.90			177,769.09			33,210.08	
BIC (full model)		132,123.30			17,669.12			30,855.43	
No. of observations		16,218			16,218			16,218	
No. of subjects		16,218			16,218			16,218	
No. failed		7,310			952			1,877	
No. competing		2,829			9,187			8,262	
No. censored		6,079			6,079			6,079	

Note. Reference category in parentheses for categorical variables. SHR = subhazard ratio; *SE* = standard error; AOD = alcohol and other drugs.
* $p < .05.$ ** $p \leq .01.$ *** $p \leq .001.$

length of stay and improve permanency must continue to consider the role of parental substance abuse; however, they would be well advised to learn more about the disaggregation of types of substance abuse, paying particular attention to those cases with illicit drug involvement. This research, paired with earlier research,

implies that a "one size fits all" strategy obscures important distinctions. While the addiction treatment community generally treats most forms of substance abuse similarly, our research indicates that this approach is not justifiable in the context of child welfare. Risks to children and pathways to permanency are different
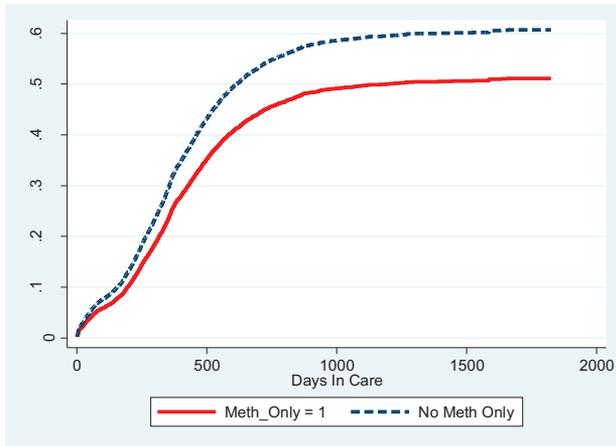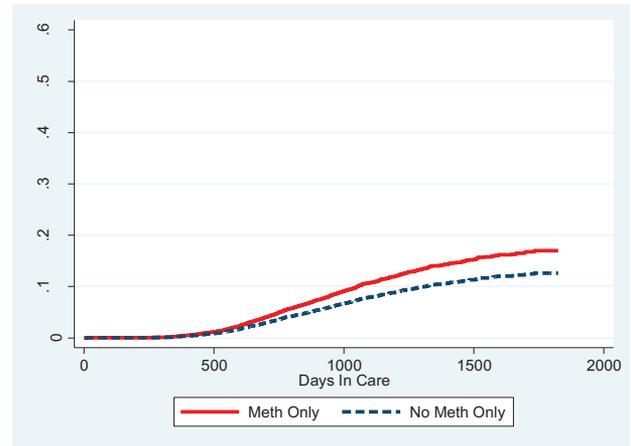
Figure 2. Cumulative incidence of reunification by methamphetamine only group. See the online article for the color version of this figure.

and should be addressed within the context of the entire constellation of risks and protective factors. Necessary practices include AOD universal screening, early identification, assistance with accessing treatment, and comprehensive child welfare service delivery. In locations where removal rates because of substance abuse are particularly high, family treatment courts may be especially beneficial.

A relevant policy issue centers around the omission of a federal requirement for child welfare agencies to collect and report on the occurrence of parental substance abuse. Thirty-one states voluntarily provide information about caregiver alcohol abuse and 34 provide information on caregiver drug abuse (USDHHS, ACF, & Children's Bureau, 2013). The means by which states determine caregiver substance abuse varies and few states, to our knowledge, routinely use standardized AOD screening or assessment tools. These procedures may soon improve with the Children's Bureau's recent promotion and encouragement of universal, valid, and reliable screening and assessment (e.g., U.S. Department of Health & Human Services, 2013; Children's Bureau, 2012). For now, the
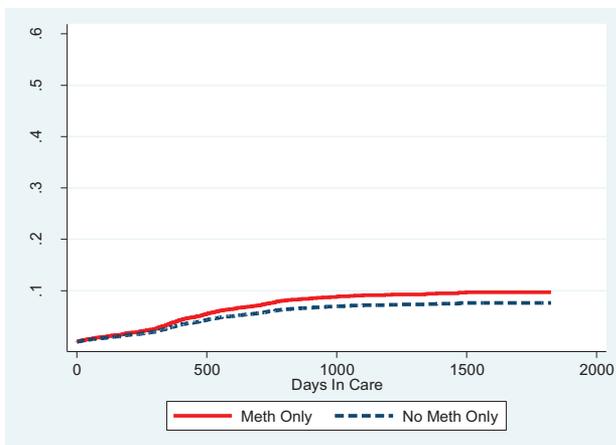
Figure 3. Cumulative incidence of guardianship by methamphetamine only group. See the online article for the color version of this figure.

Figure 4. Cumulative incidence of adoption by methamphetamine only group. See the online article for the color version of this figure.

reliability of child welfare's substance abuse data remains problematic. States' information systems that provide fields to document the different types of substance abuse as a reason for removal are a partial solution.

Currently, wide variation exists in the prevalence estimates of children with a caregiver affected by drug abuse, ranging from 3% in Arkansas to 63% in New Mexico. More consistency in data collection and reporting is needed to enable researchers and policymakers to fully understand the problem and tailor solutions to the actual needs of children and families. Our findings indicate that parental substance use is a key risk factor among children in foster care and that it exerts varying influence on their experiences and permanency outcomes. National child welfare reporting policies should be revisited with attention to mandating a universal definition of caregiver substance use and further differentiation of drugs of abuse.

Limitations

Several study limitations should be considered. First, the study was based on child welfare administrative data. While administrative data possess several important advantages, they are constrained by their lack of clinical indicators, absence of many potentially useful parent- and family-level variables, and possible data entry errors. Another limitation is the study's definition of permanency as an exit to reunification, guardianship, or adoption. A more conservative operationalization of permanency could require that children remain stable in their permanent family for some specified minimum amount of time (e.g., reunified for ≥ 12 months). Our study only observed whether children discharged from state custody and the reason for their discharge. Future studies may find that different factors contribute to stable permanency. Third, this study may have omitted relevant variables for explaining time to permanency. For example, we had no measure of the severity or longevity of parental substance abuse or some other potentially significant family characteristics such as socioeconomic status and whether one or two caregivers were affected by substance abuse. Fourth, more granular information on parental substance abuse, such as drug of choice or patterns of use, could be

useful for a deeper understanding of how parental substance use affects permanency. Finally, we examined the differential effects of AOD on three exits to permanency in one Midwestern state; the generalizability to other jurisdictions is uncertain.

Conclusion

This study, despite limitations, expands current knowledge by exploring differences in permanency exits based on parent's substance of abuse. This offers much needed insight into the permanency pathways for children in foster care who are affected by parental substance abuse, and provides more information about several types of substance involvement—alcohol, methamphetamine, and other drugs. Much of the existing literature on substance abuse and child welfare has focused on entry into the child welfare system because of the presence of parental substance abuse, yet relatively little has focused on understanding more about the service experiences or exit trajectories of these vulnerable children and families.

The findings from this research add to the arguments that call into question the practice of treating substance abuse, regardless of type, as a single risk factor in terms of child maltreatment (Brook et al., 2010). The approach of treating all substances as equally threatening to child safety rests on the assumption that the risks associated with certain substances are indistinguishable. Collectively, this study's data indicate that type of substance is predictive of the timing of permanency exits, and future research should be aimed at further disentanglement of the problem. Furthermore, the use of a competing risks approach extends earlier work on the topic and provides a more robust understanding of type of parental substance abuse and the influence of type on time to permanency exits.

This study also allowed for closer examination of the role of methamphetamine. Just as child welfare workers need accurate information about characteristics of methamphetamine use that pose risks for child safety, they also need more information on how methamphetamine commonly influences the permanency pathway and child welfare service experience. Understanding the experiences of clients in terms of treatment, recovery, and community resources is a critical component of targeted services.

Keywords: child welfare; foster care; parental substance abuse; permanency

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