



Leaving foster care—the influence of child and case characteristics on foster care exit rates

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Abstract

This longitudinal study examines characteristics associated with the timing of three potential foster care outcomes—reunification, adoption, and running away from care (i.e., AWOL). Cox regression modeling was used to identify child and case characteristics associated with each outcome for a statewide sample of children entering care in Rhode Island following implementation of the Adoption and Safe Families Act (ASFA). Results revealed strong differences in both the rates and patterns of exits from care across discharge categories. Risk for reunification began almost immediately upon entry to care and generally decreased over time (despite a sharp spike in rates at the 10- to 12-month period), while risk for adoption was initially low and began to escalate at about the 9-month mark. AWOL rates were lower than those of reunification and adoption, and remained relatively stable over time. A number of child and case characteristics were associated with likelihood of exiting foster care. In many cases, the characteristics operated differently depending on exit type, though in other instances there was consistency indicating that some risk factors are likely to be associated with delays in achieving permanency (e.g., removal due to sexual abuse, presence of child emotional/behavioral disorder). Implications of these findings for child welfare research and practice are discussed.

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1. Introduction

Nationally, over 500,000 children are served by state foster care agencies on an annual basis, with nearly 300,000 children entering and exiting care each year (U.S. Department of Health and Human Services, 2004). These children and their families face considerable adversity, and over the past two decades, federal legislation has sought to address this issue. The Adoption Assistance and Child Welfare Act of 1980 (PL96-282) and the Adoption and Safe Families Act of 1997 (ASFA; PL105-89) have encouraged permanency planning by state child welfare agencies and provided federal mandates to guide family reunification services. This legislative attention to children in foster care has also prompted considerable research on the factors associated with exiting care (e.g., Benedict, White, & Stallings, 1987; Courtney, Piliavin, & Wright, 1997; Gibson, Tracy, & DeBord, 1984; Kemp & Bodonyi, 2000; Seaberg & Tolley, 1986). Although this research has been invaluable in providing an empirical basis for state and federal child welfare planning efforts in relation to children in foster care, the existing literature has two important limitations: (1) an emphasis on first-time entry cohorts rather than inclusion of all children entering care during a particular time period; and, (2) a limited focus on foster care exits other than family reunification, such as adoption or running away from care (AWOL).

During the past decade, the analysis of foster care permanency outcomes has gone through a significant methodological shift during the past decade (Wells & Guo, 1999; Wulczyn, 1996). Much of the early research on permanency outcomes used analytic methods, such as cross-sectional samples or exit cohorts, that bias estimates of length of stay or ignore data from censored cases that do not experience the event in question (e.g., exiting foster care). More recent efforts to analyze foster care experiences for children have used survival analysis, specifically Cox proportional hazard models, to overcome such biases and incorporate critical risk and protective factors hypothesized to influence the likelihood of exiting care (Wulczyn, 1996). These recent studies have focused attention on the role of child characteristics and episode-level information, such as reason for placement or type of service setting, on foster care lengths of stay (Benedict et al., 1987; Courtney et al., 1997; Gibson et al., 1984; Kemp & Bodonyi, 2000; Seaberg & Tolley, 1986).

Researchers have also begun to recognize the methodological problems associated with models that do not differentiate type of foster care exit when examining risk and protective factors. An approach that takes such issues into account, advocated by Courtney and Wong (1996), involves use of competing risk models in which separate analyses are conducted for each type of exit (e.g., reunification with a parent or guardian, adoption, AWOL status). Several studies have addressed this issue by focusing primarily on family reunification, to the exclusion of other types of exits (e.g., Courtney, 1994; Goerge, 1990). In this paper we follow the approach of Courtney and Wong (1996) and present separate models for three critical types of exits from foster care separately—discharge to reunification (including discharge to relative or guardian), adoption, and children who are discharged as AWOL. These outcomes were selected because, from an ASFA perspective, exits to reunification and adoption represent critical permanency outcomes for children in foster care. The third type of foster care exit examined – those children who leave the system with no plan for permanency in place – was selected because research on this outcome is lacking.

A recent advance in the analysis of foster care exits is the development of strategies to incorporate information on sibling relationships that may bias results if ignored. Guo and Wells (2003) highlight the bias that can be introduced when existing relationships between children in care are ignored in models that predict exits from the system. Research indicates

that sibling pairs have highly similar placement experiences in foster care. For example, in one longitudinal study over 70% of sibling pairs were placed together initially and nearly 50% remained together throughout the study period (Staff & Fein, 1992). Guo and Wells (2003) offer one approach to incorporating sibling pair information into analyses to correct for autocorrelation errors that can emerge when all foster care cases in a given sample are treated as independent despite common entry and exit patterns within sibling groups. Lin and Wei (1989) provide an alternative approach to correct for intracorrelated data in Cox regression models that has also been used in a child welfare context to correct for sibling relationships (Marshall & English, 2000). These and other advances in data analytic capacity, coupled with the advent of sophisticated MIS systems within child welfare departments (Drake & Jonson-Reid, 1999; English, Branford, & Coghlan, 2000; Vogel, 1999), provide a strong foundation for states to understand better the complex influences of child and case characteristics on foster care experiences for children in state custody.

2. Predictors of foster care length of stay

2.1. *Child characteristics*

Child characteristics have been studied extensively with respect to length of stay and exits to permanency for foster care. Most studies include demographic characteristics such as age, gender, and race/ethnicity.

2.1.1. *Age*

Research on the association between child age at time of removal and likelihood of successful discharge are consistent in the finding that infants have a lower probability of exiting through reunification than older children, though they have a greater probability of adoption than other age groups (Courtney et al., 1997; Courtney & Wong, 1996; Goerge, 1990; Vogel, 1999). Such findings may relate in part to case worker concerns over the safety of infants relative to other age groups, availability of kinship care arrangements for infants (which may delay time to reunification), the greater interest in adopting younger children, or a combination of these and other effects. Likelihood of running away from placement increases substantially among adolescents (Courtney & Wong, 1996).

2.1.2. *Gender*

Several studies failed to observe significant gender effects associated with exit rates when other demographic or episode characteristics are included as covariates (Benedict & White, 1991; Courtney, 1994; Goerge, 1990), though others have observed that girls have a higher rate of reunification than boys (Kemp & Bodonyi, 2000; Vogel, 1999). Interestingly, Courtney and Wong (1996) observed that girls were more likely to run away from placement than boys.

2.1.3. *Race/ethnicity*

Research has been fairly consistent in noting that African American children have a lower probability of reunification than Caucasian and Hispanic children (Courtney, 1997; Courtney et al., 1997; Courtney & Wong, 1996; Glisson, Bailey, & Post, 2000; McMurtry & Lie, 1992; Wells & Guo, 1999). Exceptions to such findings (e.g., Benedict et al., 1987; Vogel, 1999) have examined all exit types simultaneously (i.e., exits to reunification, adoption, and other types of exits), which may have masked racial/ethnic differences that exist for specific types of exits.

2.1.4. *Child mental and physical health*

Very few studies have examined the effects of mental health or physical disability status on rates of foster care exit. Landsverk, Davis, Ganger, and Newton (1996) observed that the presence of emotional and behavioral problems (as indicated by both administrative data sources and parental ratings) was associated with a 50% decrease in likelihood of reunification from both non-relative and kinship foster homes relative to children without such risk factors. The authors reported no significant association between physical disability and rates of reunification. Courtney and Wong (1996) observed that children with identified physical or mental disabilities were significantly less likely to be reunified or adopted than children without such conditions, though rates of AWOL were not affected.

2.2. *Episode characteristics*

In addition to child characteristics impacting on exits to permanency for children in care, a number of studies have examined the effects of episode characteristics (e.g., reason for removal from home, type of settings a child is placed in, etc.) on the likelihood a child will exit to permanency.

2.2.1. *Previous removal history*

Most studies of permanency outcomes for children in foster care restrict samples to those children entering care for the first time (e.g., Benedict & White, 1991; Courtney & Wong, 1996; Wells & Guo, 1999). To our knowledge, research has not specifically examined whether there is any impact on exit rates for children who have experienced more than one episode of foster care, despite research suggesting that significant portions of children will reenter care following a return home (Courtney, 1995; Frame, Berrick, & Brodowski, 2000; Wells & Guo, 1999). At a minimum, such research will help to generalize findings from previous research to the broad range of foster care children, many of whom are in care after having been returned home from a previous episode.

2.2.2. *Reason for removal*

Studies examining reason for removal have reported that children placed in care due to physical or sexual abuse experience faster rates of reunification than children removed due to parental neglect (Courtney et al., 1997; Harris & Courtney, 2003), though removal due to physical abuse may delay time to adoption (Courtney & Wong, 1996). Removal due to child behavior problems or delinquency appears to be associated with faster exits to reunification than neglect or abuse (Glisson et al., 2000; Wells & Guo, 1999).

2.2.3. *Placement type*

Studies examining the relationship of initial placement setting to exit rates generally report that kinship care delays time to reunification as compared to other settings (Courtney, 1994; Goerge, 1990) though this is not always the case (Courtney et al., 1997; Glisson et al., 2000). Research indicates that children are unlikely to remain in their initial foster placement during the course of an episode in care (Fernandez, 1999; Smith, Stormshak, Chamberlain, & Whaley, 2001; Usher, Randolph, & Gogan, 1999; Wulczyn, Kogan, & Harden, 2003), though few studies have modeled placement type as a time-varying factor. Those that have modeled placement type in this manner report that children placed in kinship and group home settings exit to reunification and adoption at a slower rate than children placed in non-relative foster homes (Courtney &

Wong, 1996; Harris & Courtney, 2003), though children in residential settings appear most at risk for running away (Courtney & Wong, 1996).

2.3. Hypotheses

The present study examines the influence of child and case characteristics on exits from foster care. To our knowledge, it is among the first such study of these outcomes for children entering care in a post-ASFA environment. One previous study examined foster care exits to reunification post-ASFA (Wells & Guo, 2004); however, this study focused on the effects of welfare reform for reunification rates and only examined cases over a 6-month period post-ASFA. A second study examined rates of reunification and termination of parental rights (TPR) using 1998 Adoption and Foster Care Analysis and Reporting System (AFCARS) data for a single state (Noonan & Burke, 2005), though cases were not necessarily discharged from care following TPR. Use of AFCARS data also limits the ability to follow placement setting trajectories throughout care that may influence exit outcomes. The present study incorporates methodological advances in survival analysis, such as inclusion of time varying covariates to account for placement movements while in care and statistical controls for potential sibling effects.

Based on the findings of previous research, we hypothesize that child and case characteristics will be significantly related to the likelihood that a given child will exit the foster care system successfully (i.e., through reunification with a parent or guardian or through adoption) or through an unplanned exit (i.e., running way from placement). Age of the child at time of removal is anticipated to be a strong predictor of reunification, AWOL status, and adoption (with older children more likely to exit care to reunification and AWOL and young children more likely to be adopted than older children). Children with an identified mental or physical disability are expected to have reduced rates of reunification and adoption. Hypotheses regarding gender and race are not made in light of equivocal findings with respect to these outcomes.

Case characteristics such as prior removal history, reason for removal, and foster care placement type are also hypothesized to impact foster care exits. A prior history of removals is expected to increase time to reunification, and removal due to neglect is also expected to delay time to reunification relative to physical abuse or child behavior problems. Furthermore, removals due to physical abuse or child behavior problems are expected to be associated with lower rates of adoption. No specific hypotheses are offered for removal for other reasons or for exits to AWOL given the limited focus on this outcome in the literature. Children placed in foster care with a relative are expected to have lower rates of exit to reunification and adoption than children placed in other settings. In addition, placements in a group home or shelter settings are expected to be associated with higher rates of exit to reunification and lower rates of exit to adoption. Finally, such placements are likely to experience dramatically higher rates of AWOL discharges.

3. Method

3.1. Site

This study is based on administrative data drawn from the Rhode Island Department of Children, Youth, and Families (DCYF). This state agency provides a wide range of foster care services, including family foster homes (both relative and non-relative households), group homes and residential/institutional settings (e.g., psychiatric hospitalization and assessment

settings), supervised apartments, and emergency shelter care. During the period of time under investigation, Rhode Island's foster care population remained relatively stable with entries to foster care ranging from approximately 1500 to 1800 children per year.

3.2. *Sample and data*

Data on all foster care placements in Rhode Island was extracted from the Rhode Island Children's Information System (RICHIST; the Management Information System for RI DCYF) to cover the period from January 1, 1998 and December 31, 2002. A foster care placement represents the period during which a child in state custody resided in a given foster care setting (e.g., a relative foster home, nonrelative foster home, or group home facility). Placements were grouped into episodes of care beginning with a new removal (i.e., entry to care) and continuing through to discharge (i.e., exit from care). Thus, a given episode in foster care would involve one or more placements in foster care settings beginning at removal and tracking the child through any transitional placements until either a discharge from care or the end of the data collection period. Although children may have experienced multiple episodes of foster care during the time period under investigation, for purposes of the present analyses, only the first episode of care beginning during the window of observation was selected, a common practice in analysis of child welfare data.

Placement data was extracted from RICHIST for a total of 6723 children. Approximately 2% of cases were excluded from the analyses due to data problems (e.g., placement data ending prior to the data collection window with no discharge indicated, new removals occurring without a discharge from a previous episode). An additional 10% of cases were excluded because their episodes involved removal and placement with Diagnostic Assessment Services (DAS)—an inpatient program providing psychological and psychiatric evaluation services. This program lasts for a period of up to two weeks, after which the child is returned home, with very little variability in outcome associated with such placements. The final sample consisted of 5909 children entering foster care over a five-year observational period. Demographic and case characteristics are provided in [Table 1](#).

Following the approach of [Courtney and Wong \(1996\)](#) three types of exits were examined in this study. [Table 2](#) shows the distribution of outcomes for the episodes under investigation. Discharges to family reunification or to the care of a relative or guardian were observed for over half of the sample. Exits to adoption or termination of parental rights accounted for 9% of cases, and discharges to AWOL status accounted for six percent of all cases. For children entering care between 1998 and 2002, nearly one-quarter of children remained in care at the close of the observational period.

3.3. *Data analysis*

The present study examines child, family, and case characteristics within a multivariate framework using competing risks Cox proportional hazards modeling ([Allison, 1995](#); [Crowder, 2001](#)). This analytic framework is useful for investigating likelihood of event occurrence and factors associated with increased (or decreased) risk in the presence of cases for which the event time is not known due to censoring (i.e., the event is not experienced during the observational period being investigated) and for which multiple outcomes are possible. An index event for each child entering foster care was selected using the first episode beginning during the observational period, and time to exit was defined as the amount of time in care prior to a

Table 1
Demographic and case characteristics of children in foster care (Jan 1, 1998–Dec. 31, 2002)

Variable		N	%
<i>Child characteristics</i>			
Gender	Male	3266	55.3
	Female	2635	44.6
	Missing	8	0.1
Race/ethnicity	African American	1034	17.5
	Asian/Pacific Islander	106	1.8
	Caucasian	3337	56.5
	Hispanic (Caucasian)	932	15.8
	Native American	94	1.6
	Two or more races	288	4.9
	Missing	118	2.0
Age ($X=9.4$, $s.d.=6.1$)	0–1	1158	19.6
	2–5	871	14.7
	6–10	990	16.8
	11–15	1940	32.8
	16–20	942	15.9
	Missing	8	0.1
	Child health	Child disability	1151
Child mental health diagnosis		626	10.6
<i>Case characteristics</i>			
Primary reason for removal	Sexual abuse	186	3.1
	Physical abuse	1264	21.4
	Neglect	1699	28.8
	Parental substance abuse	643	10.9
	Child behavior problems	1490	25.2
	Other	624	10.6
	Missing	3	0.1
Initial placement setting	Foster care (relative)	1310	22.2
	Foster care (non-relative)	2108	35.7
	Group home/residential facility	1013	17.1
	Emergency shelter	1478	25.0
Prior removals	None	4816	81.5
	1 prior	617	10.4
	2 or more priors	342	5.8
	Missing	134	2.3

recorded discharge. For censored cases in which a discharge from care did not occur, time was calculated based upon the end of the observational period. Because children experience a range of placement transitions while in care, placement setting was treated as a time-varying covariate using the counting method described by Allison (1995). This approach results in parameter estimates for setting effects that reflect risk for exiting care based on the child's foster care placement settings that occur throughout the episode.

Separate Cox regression models were constructed to examine the impact of hypothesized child, family, and case characteristics on the likelihood of exiting foster care to reunification, adoption, or AWOL status. For the reunification and adoption models, all children were entered into the risk set at the time of removal and entry to foster care. Because discharges to AWOL were not observed for young children in care, children were excluded from the AWOL model risk set until they turned six; this approach has been used previously by Courtney and Wong (1996).

Table 2
Outcomes of foster care placement for sample episodes (Jan 1, 1998–Dec. 31, 2002)

Outcome		<i>N</i>	%
Discharge to family, relative or guardian	Family reunification	2896	49.0
	Relative	195	3.3
	Guardian	92	1.6
	Total	3183	53.9
Adopted	Adopted	388	6.6
	TPR	121	2.0
	Total	508	8.6
AWOL		326	5.6
Other discharge ^a		261	4.4
Missing discharge reason		186	3.1
Remained in care at end of observation period		1444	24.4
	Overall total	5909	100.0

^a Other discharge reasons included the following: Emancipation (106), Transfer to another agency (68), Transfer to a juvenile detention facility (64), Temporary Community Placement revoked (17), Death of child (5), and Subsidy ending (1).

Cox regression models provide unbiased estimates of the effect of a particular characteristic on the likelihood of event occurrence that can be expressed in the form of a risk ratio. Risk ratios correspond to the percentage change in the hazard rate of recurrence for a particular value of the variable (e.g., age of entry, gender, race/ethnicity) relative to the comparison category for that variable. A variance corrected approach was used to account for the possible correlation in episode outcomes for sibling groups removed within the same episode by adjusting the standard error through a ‘robust standard error’ estimation procedure (e.g., Lin & Wei, 1989).

3.3.1. Data preparation and coding

Prior to analyses, RICHIST data were used to create a number of variables used in the analyses. Demographic characteristics (e.g., age, gender, race) were captured directly from RICHIST, as were reason for removal and placement setting. RICHIST captures a total of 15 potential reasons for removal—these reasons were ranked in terms of severity, and children were assigned the highest level of removal reason indicated for the episode of care. Removal due to sexual abuse was indicated as the most severe reason, followed by physical abuse, neglect, parental substance use (alcohol or drug abuse), child behavior problems (including child behavior problems and alcohol or drug use), and “other reasons”. This last category includes such reasons for removal as abandonment, relinquishment, inadequate housing, parental incarceration, and parental death. RICHIST captures information on hundreds of potential placement settings across the state. These were further collapsed into four broad categories to reflect relative foster homes, non-relative foster homes, group homes (including group homes, residential facilities, supervised apartment settings, and institutional placements such as a psychiatric facility), and emergency shelter placements.

In addition to child and case characteristics drawn from the state’s RICHIST system, a number of covariates were created from state AFCARS submissions during the same time period. These included prior history of removals and child disability and mental health status. Child disability status was created as a composite variable to reflect whether a child had been diagnosed with a disability including mental retardation, visual or hearing impairment, or a physical disability. Mental health diagnosis was coded to reflect whether a child had been diagnosed with an emotional disturbance under the Diagnostic and Statistical Manual of Mental Disorders (DSM IV).

4. Results

Fig. 1 depicts the kernel-smoothed hazard functions resulting from the Cox regression models for exits to family, relative, or guardian; adoption; and AWOL status. Because cumulative hazard functions tend to be extremely erratic in continuous-time Cox regression models, the kernel-smoothed hazard function provides a means for aggregating estimates of hazard within a given timeframe (i.e., the bandwidth) to provide a more readily interpretable estimate of the pattern of risk for event occurrence over time (Singer & Willett, 2003). Based on a three-month bandwidth, the rates and patterns of discharges across the three types of exits from care significantly differ from one another. The reunification function indicates that children are at relatively high likelihood for reunification immediately following the initial entry into foster care, though the likelihood declines somewhat through the 10th month in placement. This decline is followed by a renewed increase in likelihood of reunification between the 10th and 12th months, after which the rates of reunification decrease significantly. The adoption function follows a distinctly different pattern that indicates a relatively low risk for occurrence during the first nine months in care followed by a significant increase in likelihood from the 9th through 18th months. The likelihood of adoption remains relatively stable after that point, overtaking that of reunification in about the 28th month of care. Finally, the pattern for exits to AWOL status suggests a relatively low likelihood for occurrence that appears fairly stable over time. The erratic behavior of the hazard functions occurring after and around month 40 is a result of the low number of children who remain in care for that length of time and should not be interpreted as meaningful (Allison, 1995; Singer & Willett, 2003).

Tables 3–5 show the results of the Cox regression models for exits to family, relative, or guardian; adoption; and AWOL status. The tables provide information on the overall model chi-square, as well as parameter estimates, standard error, risk ratio, and 95% confidence interval for the risk ratios. Risk ratios correspond to the percentage change in the hazard rate for a particular

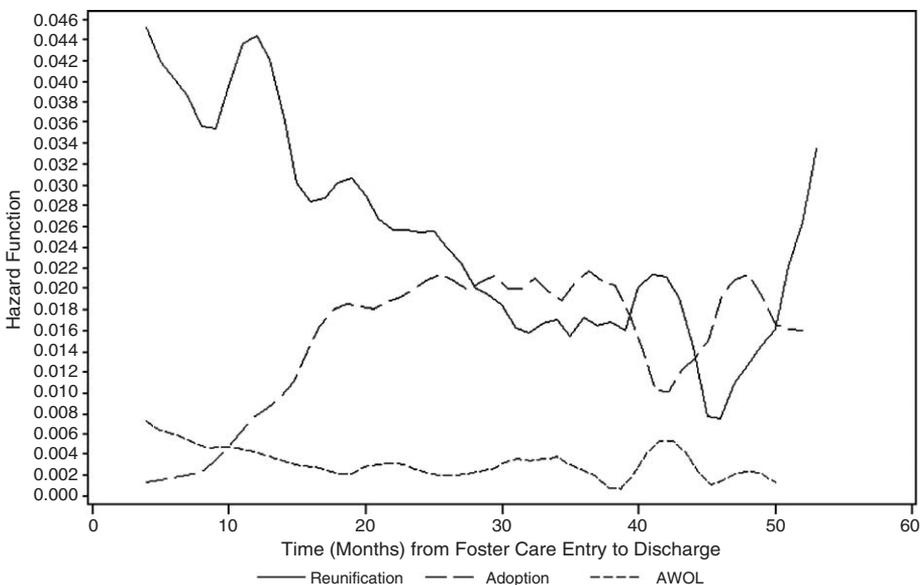


Fig. 1. Kernel-smoothed hazard function for reunification, adoption, and AWOL foster care exits (bandwidth=3 months).

Table 3
Cox regression model for discharge to reunification with family, relative, or guardian

Variable	<i>B</i>	Std. error	Risk Ratio	95% CI	
				Lower	Upper
Age at entry to care:					
0–1 ^a	–	–	–	–	–
2–5	0.15	0.07	1.16*	1.02	1.33
6–10	0.22	0.07	1.25**	1.08	1.44
11–15	0.15	0.07	1.17*	1.01	1.34
16–21	0.02	0.08	1.02	0.86	1.20
Gender:					
Female ^a	–	–	–	–	–
Male	0.01	0.04	1.01	0.93	1.09
Race/ethnicity:					
Caucasian ^a	–	–	–	–	–
African American	–0.13	0.06	0.87*	0.77	0.99
Hispanic	0.08	0.07	1.09	0.95	1.24
Native American	–0.02	0.19	0.98	0.67	1.44
Asian	0.18	0.14	1.20	0.92	1.57
Two or more races	–0.21	0.12	0.81	0.64	1.02
Child health ^b :					
Child disability	–0.44	0.06	0.64**	0.58	0.72
Child mental health diagnosis	–0.47	0.08	0.62**	0.54	0.72
Prior removals:					
None ^a	–	–	–	–	–
1 prior	–0.14	0.07	0.87	0.76	1.00
2 or more prior	–0.54	0.12	0.58**	0.46	0.74
Reason for removal:					
Neglect ^a	–	–	–	–	–
Physical abuse	0.13	0.08	1.14	0.98	1.32
Sexual abuse	–0.61	0.16	0.54**	0.40	0.75
Parental substance use	0.01	0.08	1.01	0.85	1.19
Child problem behavior	0.43	0.08	1.54**	1.32	1.79
Other	–0.01	0.10	0.99	0.81	1.21
Service setting (time varying):					
Foster care (relative) ^a	–	–	–	–	–
Foster care (non-relative)	0.15	0.06	1.16*	1.03	1.31
Group home/residential facility	–0.10	0.07	0.91	0.79	1.04
Shelter	0.69	0.08	2.00**	1.72	2.32
Event and censored values:					
Event: 2921					
Censored: 12,949					
Total: 15,870					
% Censored: 81.6%					

Test of null hypothesis (all parameters=0)

	Without covariates	With covariates	Model chi-square	<i>df</i>	<i>p</i>
–2 log <i>L</i>	46,126.9	45,615.1	398.3	22	<.0001

* $p < .05$; ** $p < .01$.

^a Reference category for contrasts. ^b Reference category for Child/Family Risk Factors is “not present.”

Table 4
Cox regression model for discharge to adoption or termination of parental rights

Variable	<i>B</i>	Std. error	Risk Ratio	95% CI	
				Lower	Upper
Age at entry to care:					
0–1 ^a	–	–	–	–	–
2–5	–0.44	0.13	0.64**	0.50	0.82
6–10	–0.69	0.15	0.50**	0.37	0.68
11–15	–2.23	0.29	0.11**	0.06	0.19
16–21	–3.41	1.44	0.03*	0.00	0.56
Gender:					
Female ^a	–	–	–	–	–
Male	–0.03	0.09	0.97	0.81	1.16
Race/ethnicity:					
Caucasian ^a	–	–	–	–	–
African American	–0.16	0.15	0.85	0.63	1.15
Hispanic	–0.25	0.19	0.78	0.54	1.13
Native American	–0.12	0.49	0.89	0.34	2.31
Asian	–0.30	0.93	0.74	0.12	4.61
Two or more races	–0.23	0.26	0.79	0.48	1.31
Child health ^b :					
Child disability	–0.27	0.15	0.76	0.57	1.02
Child mental health diagnosis	–0.80	0.32	0.45**	0.24	0.83
Prior removals:					
None ^a	–	–	–	–	–
1 prior	0.26	0.19	1.30	0.90	1.88
2 or more prior	0.56	0.29	1.74	0.99	3.08
Reason for removal:					
Neglect ^a	–	–	–	–	–
Physical abuse	–0.19	0.17	0.83	0.59	1.16
Sexual abuse	–0.96	0.31	0.38**	0.21	0.70
Parental substance use	0.12	0.14	1.13	0.85	1.50
Child problem behavior	–0.34	0.38	0.72	0.34	1.51
Other	–0.53	0.19	0.59**	0.40	0.86
Service setting (time varying):					
Foster care (relative) ^a	–	–	–	–	–
Foster care (non-relative)	0.00	0.12	1.00	0.79	1.27
Group home/residential facility	–2.65	0.67	0.07**	0.02	0.26
Shelter	–12.93	41,670.00	0.00	0.00	
Event and censored values:					
Event: 478					
Censored: 15,392					
Total: 15,870					
% Censored: 97.0%					

Test of null hypothesis (all parameters=0)

	Without covariates	With covariates	Model chi-square	<i>df</i>	<i>p</i>
–2 log <i>L</i>	6515.0	5859.1	182.4	22	<.0001

* $p < .05$; ** $p < .01$.

^a Reference category for contrasts. ^b Reference category for Child/Family Risk Factors is “not present.”

Table 5
Cox regression model for discharge to AWOL status

Variable	<i>B</i>	Std. error	Risk Ratio	95% CI	
				Lower	Upper
Age at entry to care:					
6–10	–15.99	0.16	0.00**	0.00	0.00
11–15	–0.82	0.13	0.44**	0.34	0.57
16–21 ^a	–	–	–	–	–
Gender:					
Female ^a	–	–	–	–	–
Male	–0.30	0.13	0.74*	0.57	0.96
Race/ethnicity:					
Caucasian ^a	–	–	–	–	–
African American	0.39	0.16	1.47*	1.07	2.03
Hispanic	0.49	0.18	1.64**	1.16	2.32
Native American	1.48	0.42	4.40**	1.95	9.96
Asian	0.89	0.33	2.43**	1.29	4.61
Two or more races	0.35	0.35	1.42	0.72	2.80
Child health ^b :					
Child disability	–0.52	0.18	0.60**	0.42	0.84
Child mental health diagnosis	–0.01	0.19	0.99	0.69	1.43
Prior removals:					
None ^a	–	–	–	–	–
1 prior	–0.04	0.19	0.96	0.66	1.39
2 or more prior	0.40	0.18	1.50*	1.05	2.12
Reason for removal:					
Neglect ^a	–	–	–	–	–
Physical abuse	0.35	0.27	1.42	0.84	2.41
Sexual abuse	–0.26	0.47	0.77	0.31	1.92
Parental substance use	0.66	0.36	1.93	0.96	3.88
Child problem behavior	0.50	0.26	1.65	0.99	2.77
Other	–0.74	0.60	0.48	0.15	1.56
Service setting (time varying):					
Foster care (relative) ^a	–	–	–	–	–
Foster care (non-relative)	0.62	0.37	1.85	0.90	3.80
Group home/residential facility	0.84	0.34	2.32*	1.20	4.49
Shelter	2.19	0.33	8.94**	4.68	17.08
Event and censored values:					
Event: 269					
Censored: 11,804					
Total: 12,073					
% Censored: 97.8%					

Test of null hypothesis (all parameters=0)

	Without covariates	With covariates	Model chi-square	<i>df</i>	<i>p</i>
–2 log <i>L</i>	4078.6	3615.2	31,464.6	20	<.0001

* $p < .05$; ** $p < .01$.

^a Reference category for contrasts. ^b Reference category for Child/Family Risk Factors is “not present.”

value of the variable (e.g., age of entry, gender, race/ethnicity) relative to the comparison category for that variable. A risk ratio significantly less than one indicates a decrease in the probability of exiting to a particular outcome (e.g., exit to reunification, exit to adoption) for that value, and a risk ratio significantly greater than one indicates an increase in likelihood for that

particular outcome. A risk ratio equal to one indicates no difference between a particular value and the comparison category in terms of probability of exit on that outcome.

4.1. Factors associated with reunification

The inclusion of covariates significantly improved model fit over that of the baseline hazard model (chi-square=398.3 (22), $p < .001$). When all other variables were held constant, a number of significant relationships emerged between child and case-level characteristics and probability of exiting to a family member, relative, or guardian. With respect to child characteristics, age played a significant role, with the likelihood of reunification lowest for infants. Children who entered care between the ages of 2 and 15 years were significantly more likely to exit to reunification than younger children (Risk Ratio_{2–5 years} = 1.16, $p = .02$; Risk Ratio_{6–10 years} = 1.25, $p < .01$; Risk Ratio_{11–15 years} = 1.17, $p = .03$). Rates of reunification were lower for African American children (Risk Ratio = 0.87, $p = .03$) compared to Caucasian children, and a trend-level decrease in rates of reunification also was observed for bi- or multi-racial (Risk Ratio = 0.81, $p = .07$). Both emotional/behavioral disorders (Risk Ratio = 0.62, $p < .001$) and child disability status (Risk Ratio = 0.64, $p < .001$) were associated with lower likelihood of reunification. Gender was unrelated to rates of reunification.

Case-level data played a significant role in the probability of a child returning home from foster care placement. A history of two or more prior removals was associated with significantly lower rates of reunification than children with no prior removals (Risk Ratio = 0.58, $p < .001$); one prior removal had a similar trend-level effect (Risk Ratio = 0.87, $p = .056$). Compared to children removed due to neglect, those removed as a result of child behavior problems experienced a higher likelihood of reunification (Risk Ratio = 1.54, $p < .001$) and children removed due to sexual abuse experienced lower rates of reunification (Risk Ratio = 0.54, $p < .001$). Finally, children placed in a non-relative foster care home experienced significantly higher rates of reunification than children in relative foster homes (Risk Ratio = 1.16, $p = .02$). The effect for emergency shelter placements was even greater (Risk Ratio = 2.00, $p < .001$), though group home placements did not differ significantly from those of relative foster home placements.

4.2. Factors associated with adoption

The inclusion of covariates in the adoption model also significantly improved model fit over that of the baseline hazard model (chi-square=182.4 (22), $p < .001$). When all other variables were held constant, a number of significant relationships emerged between child and case-level characteristics and probability of exiting to an adoptive household or by termination of parental rights. Age was the over-riding child characteristic associated with probability of adoption. As hypothesized, the likelihood of adoption was strongest for infants and decreased significantly for each successive age category (Risk Ratio_{2–5 years} = 0.64, $p < .001$; Risk Ratio_{6–10 years} = 0.50, $p < .001$; Risk Ratio_{11–15 years} = 0.11, $p < .001$; Risk Ratio_{16–20 years} = 0.03, $p = .02$). Children with a diagnosed emotional or behavioral disorder were significantly less likely to be adopted (Risk Ratio = 0.45, $p = .01$), though disability status was associated with only a trend-level decrease in rates of adoption (Risk Ratio = 0.76, $p = .07$). Gender and race were unrelated to rates of adoption.

Case-level data played a significant role in the probability of exiting to adoption. Compared to children removed for neglect, children removed due to sexual abuse continued to experience

lower rates of adoption (Risk Ratio=0.38, $p=.001$), as was also the case for children removed for other reasons (e.g., housing instability, parental failure to cope, abandonment or relinquishment; Risk Ratio=0.59, $p<.01$). Removals resulting from physical abuse, child behavior problems, or parental substance abuse did not differ from neglect with respect to adoption rates. Likelihood of adoption was highest for children placed in a foster care home (either with a relative or non-relative). Children in group home placements (Risk Ratio=0.07, $p<.001$) were significantly less likely to be adopted than those in a relative foster care placement. The risk ratio for shelter placements was also very low (Risk Ratio=0.00), though the standard error for this factor was extremely large. As no adoptions were observed directly from shelter placements in the sample, this standard error may result from the small sample of shelter youth available for adoption after accounting for those exiting by other means (i.e., reunification and AWOL status). A history of prior removals was not associated with rates of adoption, though a trend-level increase in rates of adoption was observed for youth with two or more prior removals (Risk Ratio=1.74, $p=.055$).

4.3. Factors associated with AWOL discharge

The inclusion of covariates in the AWOL model significantly improved model fit over that of the baseline hazard model (chi-square=31,464 (20), $p<.001$). When all other variables were held constant, a number of significant relationships emerged between child and case-level characteristics and the probability that a child would discharge foster care to AWOL status. Age, as with adoption, played a critically significant role in likelihood of AWOL occurrence. Because AWOL discharges were virtually absent for children 10 years of age or younger at the time of entry to foster care, older adolescents were used as the reference category for the AWOL discharge model and children younger than 6 were excluded from the risk set. Compared to adolescents entering care between the ages of 16 and 21, children between the ages of 11 and 15 had significantly lower rates of AWOL discharges (Risk Ratio=0.44, $p<.001$). Rates of AWOL discharge for younger children were at or near zero relative to older adolescents (Risk Ratio=0.00, $p<.001$). Gender also played a significant role in rate of AWOL exits, with males significantly less likely to runaway from placement than females (Risk Ratio=0.74, $p=.02$). Compared to Caucasian children, rates of AWOL exits were significantly higher for children identified as African American (Risk Ratio=.47, $p=.02$), Hispanic (Risk Ratio=1.54, $p<.01$), Native American (Risk Ratio=4.40, $p<.001$), and Asian/Pacific Islander (Risk Ratio=2.43, $p<.01$). Finally, children with an identified disability were less likely to be discharged as AWOL than children without a disability (Risk Ratio=0.60, $p<.01$), though diagnosis of a mental or emotional/behavioral disorder was not associated with rates of AWOL.

Case-level data also predicted rates of AWOL discharges from foster care, particularly with respect to current placement setting. A history of two or more prior removals was associated with significantly higher rates of AWOL than children with no prior removals (Risk Ratio=1.50, $p=.02$), though one prior removal did not have an effect on AWOL rates. Compared to children in relative foster home placements, rates of AWOL exits were highest for children in group home settings (Risk Ratio=2.32, $p=.01$) and emergency shelter settings (Risk Ratio=8.94, $p<.001$); a trend-level increase in rates of AWOL for children in non-relative foster homes was also observed (Risk Ratio=1.85, $p=.09$). No significant effects were observed for reason for removal, though trend-level increases in risk for AWOL were observed for children removed for parental substance abuse (Risk Ratio=1.93, $p=.06$) and child behavior problems (Risk Ratio=1.65, $p=.057$).

5. Discussion

Results of these analyses were generally consistent with study hypotheses and the existing literature regarding influences on rates and types of foster care exits. These results demonstrate the significant relationship of child and case characteristics to rates of exits to reunification, adoption, or AWOL status. As in previous research, the rate and pattern of exits differed significantly for children discharged to reunification, as compared to adoption or AWOL status. Reunification discharges began almost immediately upon entry to the foster care system and declined slightly during the first 10 months in care, followed by a significant spike in occurrence between the 10th and 12th months in care after which likelihood began to decrease. Adoption patterns, on the other hand, indicated a significant lag in occurrence until about the ninth month in care, after which time the rates climbed dramatically through the 18th month in care. At that point, risk for adoption remained fairly constant and eventually surpassed that of reunification. Lastly, rates of AWOL remained relatively low and stable throughout the foster care episode.

These patterns of risk (particularly for reunification and adoption) are especially interesting in light of ASFA permanency planning requirements. There is a tremendous push to expedite reunifications during the first 12 to 15 months, after which time alternative means of seeking permanency (e.g., adoption, termination of parental rights, emancipation) begin to take precedence. In addition, the lag in rates of adoption during the first 9 months may also be a result of the amount of time necessary to pursue legal processes that free a child for adoption (e.g., termination of parental rights), as well as the tendency to pursue alternative permanency avenues (e.g., reunification or guardianship) before proceeding to adoption. Delays based on this latter point occur despite ASFA provisions for concurrent permanency planning in which reunification is pursued even while a case worker is initiating the process of termination of parental rights.

Similar to findings by Courtney and Wong (1996), results from this study confirm that predictors of exit timing vary dramatically based upon the particular type of exit being examined. Several risk and protective factors associated with successful exits from foster care were identified. Child characteristics associated with increased rates of reunification included older age (2 to 15 years). Presence of serious emotional disorder or disability each delayed time to reunification; African American children also were delayed in their rates of reunification relative to Caucasian children. Case characteristics positively associated with rates of reunification were removal resulting from child behavior problems, and placement in non-relative foster home or emergency shelter. Removal due to sexual abuse and a history of multiple foster care placements delayed time to reunification.

Rates of exit to adoption revealed a somewhat different pattern from those observed in reunification. In contrast to the findings for reunification, infants were most likely to be adopted, and the rate decreased with each successive age category. No differences in rates of exit to adoption were observed for gender or race/ethnicity, though children with an identified emotional/behavior disorder were significantly less likely to be adopted—a pattern similar to that observed for reunification. Setting was the overarching case characteristic associated with likelihood of adoption—rates of adoption from emergency shelter or group home settings were lower than those in foster home settings. As observed in the reunification model, children removed as a result of sexual abuse were significantly less likely to be adopted than children removed as a result of neglect.

Lastly, a number of child and case characteristics emerged that were associated with rates of exit to AWOL status. Consistent with the limited previous research on such exits, rates of AWOL

exits increased with age and were higher for girls than for boys. In addition, rates of AWOL exits were highest among children with minority racial/ethnic backgrounds (ranging from approximately 2 to 5 times more likely). As in the previous models, children with an identified disability were less likely to be discharged as AWOL. Placement setting was a critical factor in rates of AWOL exits; compared to children in relative foster care homes, children in group home settings were more than twice as likely, and children in emergency shelters were nearly 9 times more likely to exit foster care with an AWOL discharge.

This study has a number of implications with respect to child welfare research and practice. Study findings support the need for continued research on the particular mechanisms by which identified child and case characteristics influence the timing of exits, as well as the particular routes by which foster care children exit the system. In many respects, the similar patterns of findings for some factors are as important to understand as differences. For example, it is not surprising that age plays a critical role in each exit, and the pattern observed was predicted (i.e., younger children more likely to be adopted, older children more likely to reunify, older adolescents more likely to go AWOL). Effects associated with race/ethnicity are a bit more complicated to disentangle. The finding that such characteristics were not associated with rates of adoption, after controlling for other characteristics, is encouraging; while the decrease in rates of reunification for African American and multi-racial children (though consistent with previous research) suggests a continued need to investigate what factors are contributing to this pattern. In addition, the elevated rate of AWOL exits across all minority groups relative to Caucasian children was not anticipated and bears further study. Although rates of AWOL were extremely low and occurred primarily among older children in non-foster home settings (i.e., group home or emergency shelter settings), the findings with respect to race and ethnicity suggest the importance of finding culturally suitable placement settings for children at risk for running away from placement.

The largely consistent findings with respect to disability status and emotional/behavioral disorder diagnoses suggest that children with such risk factors are more challenging to move to permanency and may require longer lengths of stay prior to exiting care. Such a pattern suggests a need to emphasize finding stable placements for such children, so that their problems are not compounded by frequent placement transitions while in care.

On a related note, the finding that children who have been sexually abused are likely to experience lower rate of exits to adoption *and* reunification suggests that such cases are also more challenging to place through either of the preferred permanency routes and are likely to remain in long-term foster care placements than children removed for other reasons. Child welfare systems need to develop more effective strategies for addressing the needs of children who have been sexually abused, either to reduce their risk for long term foster care placements or to ensure placement stability in cases for which a long term placement is needed.

These results point to a number of potential strategies for improving child welfare efforts to move children into permanency. First, a number of studies have suggested that an emphasis on family-centered practice can reduce time to reunification (Dawson & Berry, 2002; Petras, Massat, & Essex, 2002)—this approach has been emphasized in Rhode Island since the implementation of ASFA in 1997. In addition, current research has emphasized the importance of concurrent planning to ensure permanency if reunification efforts fail. This approach may be especially important for high-risk cases and younger children, as these populations are less likely to be reunified after removal from the home (Barth, 1997; Martin, Barbee, Antle, & Sar, 2002). Financial incentives may also need to be put in place to support the adoption of older children. A study by Barth (1997) indicates that the cost of adopting an older child is far more than the

financial supports provided, and that such incentives may help to counter caseworker and court practices that discourage adoption arrangements for older children. Such incentives may also need to be coupled with caseworker training in permanency planning related specifically to the adoption of older children or those children unlikely to be reunified (Martin et al., 2002).

One potential limitation of the present study was the reliance on administrative data (including Federal AFCARS submissions) as the primary data source. As several investigators have noted (e.g., Drake & Jonson-Reid, 1999; English et al., 2000; Vogel, 1999), administrative data elements are frequently limited in scope (i.e., containing a restricted set of elements), emphasize categorical data and dichotomous elements rather than more detailed indicators of particular phenomena, and may contain inaccurate or incomplete data. In the present study, care was taken to ensure that data was as complete as possible and that a range of data elements representing hypothesized risk and protective factors associated with exiting care were included in the models. An advantage of administrative data is the ability to follow large numbers of children entering a system over time, to track their movements while in care, and to identify critical factors associated with outcomes for children. These strengths account for the rise in popularity of administrative data as a child welfare research tool. We would like to see a greater emphasis on pairing administrative data with survey research efforts to provide a more contextualized understanding of the underlying mechanisms associated with exits from care.

A related issue with respect to data is the potential presence of multicollinearity among model covariates. In particular, age and placement setting tend to be correlated in child welfare populations. Infants and young children are more likely to be placed in foster homes, while adolescents are more likely to be placed in residential settings and emergency shelters. The challenge in separating out child from placement effects in foster care research is an issue that requires further methodological attention in the field.

A final potential limitation may be present in terms of generalizability of findings to other states and locales. Despite its small geographic size, Rhode Island does encompass a range of urban, suburban, and rural environments with marked ethnic and racial diversity. The similarity between our findings and those of other studies drawing upon data from other child welfare systems is encouraging. In addition, the analysis of these outcomes in a post-ASFA environment represents an important contribution of this study to that literature.

Finally, the present study supports the need for additional research that identifies the reasons or mechanisms underlying various exits from child welfare services. As state agencies focus foster care services to ensure quicker and more appropriate exits to reunification and adoption in a post-ASFA environment, it is critical that they identify not only the factors associated with various exits, but also the reasons why those factors influence exits. Advancing such knowledge will promote the development of child welfare services that are empirically supported, so as to move the field more toward evidence-based child welfare practice (Chaffin & Friedrich, 2004).

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