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Contextual determinants of re-reporting for families receiving alternative response: A survival analysis in a Midwestern State

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Abstract

Differential response (DR) has been widely adopted in over 30 states to address shortcomings of the traditional approach to child maltreatment reports in complex family and case circumstances. However, despite continued evaluation efforts, evidence of the effectiveness of DR remains inconclusive. The current study aims to assess the impact of a DR program and potential predictors, including service match and number of family case workers, on maltreatment re-reports in a Midwestern state. The study utilized a randomized control trial and assigned eligible families to either the Alternative Response (AR) track or Traditional Response (TR) track. The enrollment was implemented in a phased rollout covering

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all counties in the state. Data were drawn from state child welfare administrative datasets and case worker surveys. The probability and time to re-reporting was calculated using survival analysis, while adjusting for case-level covariates. Prior ongoing case (HR = 3.24, $p < 0.001$), high risk level (HR = 1.43, $p < 0.05$), and having only one worker (HR = 1.92, $p < 0.001$) serve the case were strong predictors of re-reporting. The effect of service match within each level of prior ongoing case (No, Yes) was also a significant predictor of re-reporting ($p < 0.05$). AR had limited, but nonsignificant, impact on preventing re-reporting after adjusting for these factors, as there was no difference in terms of re-reporting between DR tracks. However, findings suggest that matching child welfare service with family needs is an important component of child welfare practice. Implications for DR policy and practice are discussed.

1. Introduction

One of the most pressing questions for child welfare reformers is how the child welfare system can better respond to low-risk, neglect-allegation families, rather than taking a one-size-fits-all approach. Differential response (DR) systems have emerged as a potentially viable alternative to traditional child protective services practice, in that an Alternative Response (AR) track is established to serve relatively low risk families without the need to determine if the abuse or neglect has occurred, while the traditional Investigative Response (IR) is reserved for families at high risk (Merkel-Holguin et al., 2006; Fluke et al., 2019; Hollinshead et al., 2015). The alternative track allows the worker to respond to child maltreatment reports in a less intrusive, and more family-centered manner, engaging families on a voluntary basis and connecting them to needed services in the absence of an investigation and substantiation determination (English et al., 2000). In addition to positive impacts on case practice, DR systems have also been demonstrated to result in positive worker satisfaction and increased cost-effectiveness (Kyte et al., 2013; Winokur et al., 2015). By 2019, at least 32 states had incorporated the DR framework in their child protection system (National Conference of State Legislatures, 2019). However, the protocol and implementation of DR varies by jurisdiction, including a range of eligibility requirements and response track configurations (Fluke et al., 2019; Fluke et al., 2016; Allan & Howard, 2013).

1.1. DR program in a Midwestern state

The Midwestern state where the present study was conducted historically has had one of the highest removal rates in the nation. Upon examination of data from the period between fiscal year 2005 and fiscal year 2011, the state determined that its highest removal rates occurred for children between the ages of 0–1 year and approximately 60–70% of those removals were due to allegations of neglect. A review of the state’s data by county further revealed a relationship between the rate of removals per 1,000 children and the county’s poverty level. The agency’s analyses suggested that providing families with interventions and resources to increase their protective factors, particularly in circumstances of neglect and family poverty, would lessen the need to remove children from their home and reduce the trauma children experience. The implementation of DR would allow for the state’s child welfare system to engage with families in a non-investigative and more collaborative way, based on the severity of allegations received at initial intake, and it was anticipated that the family-centered response would lead to improved outcomes for children and families participating in this approach. To accomplish these aims, the State’s Division of Children and Family Services (DCFS) established a DR program, consisting of a Traditional Response (TR), equivalent to what is referred to in other jurisdictions as an Investigation Response (IR), and the Alternative Response (AR), akin to the Alternative Response in other jurisdictions (Child Welfare Information Gateway, 2020).

Starting in October 2014 until the end of 2019, the DR program was implemented in a phased roll-out across the state. This state-specific DR model was developed to include the following guiding principles: (1) A comprehensive assessment of safety and risk would be conducted on all cases, regardless of track assignment; (2) AR cases would not include an investigation or a formal determination as to whether child abuse or neglect has occurred, and the subject of the report was not to be entered into the central registry; (3) Labels like “victim” and “perpetrator” would not be used in AR cases; rather, family members would be referred to as “children” and “caregivers” respectively; (4) Children in AR cases would be interviewed after contact was made with the parent (s), whenever possible; (5) AR caseworkers

would have weekly contact with families during the initial period of the case; (6) Families in AR would receive services and supports faster, due to earlier assessment of the family's needs/strengths and access to flexible funding sources; and (7) Because AR cases were by definition less severe, families would have limited to no law enforcement involvement, the children would remain in the home, and the courts would not be involved. If circumstances required these interventions, then the family would be transferred to the TR track.

1.2. DR safety outcomes and influencing factors

There were both immediate and long-term outcomes hypothesized when the Midwestern state's DR program was designed, including systemic and family level impacts. The current study focuses on a subset of family and service utilization outcomes, namely, the extent to which the DR program decreased the number and proportion of repeat maltreatment allegations, which will be referred as re-reporting. Re-reporting and recurrence of substantiated cases have both been recognized as indicators for child safety. Previous literature presents a conflicting image in terms of the effectiveness of DR on improving re-report outcomes. Some researchers have found that the likelihood of recurrence or re-reporting does not significantly differ between AR and TR tracks (Conley & Duerr Berrick, 2010; Ruppel et al., 2011; Winokur et al., 2015; Shusterman et al., 2005), while others have found that AR significantly reduces the risk of re-reporting and increases the safety of children (Loman & Siegel, 2004; Lawrence et al., 2011). For example, a longitudinal study of North Carolina's DR system found a decline in substantiation rates with AR families compared to the control groups (Lawrence et al., 2011), while data from Ohio's DR program shows no differences in terms of the rate of screened-in re-reports and the time to re-report between AR and TR tracks (Murphy et al., 2013). The result seems to be inconclusive, with the conflicting results partially due to the variety of measurement definitions and program implementation protocols across states (Fuller, 2014).

Aside from the re-report outcomes, when compared to families served in the IR(TR) track, families in the AR track have been found to be more cooperative, respond with more positive emotions towards the intervention, report higher levels of satisfaction, utilize

more services, and show a higher level of engagement with the child welfare system (Loman & Siegel, 2004; Loman & Siegel, 2012; Loman et al., 2010; Merkel-Holguin et al., 2015; Hollinshead et al., 2015; Murphy et al., 2013). Mixed-method evaluations suggest that these changes in families' attitudes towards CPS are a consequence of more frequent and direct interactions with child welfare workers (Lawrence et al., 2011; Murphy et al., 2013), and also result from the nature of AR practice principles such as an avoidance of negative labels (Murphy et al., 2013).

To adequately measure any child welfare outcome, it is imperative to consider the impact of contextual factors such as case characteristics, service provision, and family engagement (Fluke et al., 2008; Kahn & Schwalbe, 2010). The contextual factors included in this study were informed by previous research, including youngest child's age (Winokur et al., 2015; Fuller & Zhang, 2017), prior CPS involvement (Loman & Siegel, 2015) and risk assessment level (Winokur et al., 2015). One of the most frequently included predictors of recidivism is family's risk level measured by CPS risk assessment tools. Risk assessment is a critical process for distinguishing families at various risk levels, so that limited resources may be targeted to families with the most serious needs (Camasso & Jagannathan, 2000; Leschied et al., 2003; D'andrade et al., 2008). Higher levels of assessed risk should lead to frequent caseworker visits and a higher level of service provision. In a DR system, family risk level is critical to the track assignment decision, and typically an AR track is reserved for low or moderate risk levels (Child Welfare Information Gateway, 2020). Nevertheless, the average family risk level in the AR track often inflates with an increase in the percentage of cases assigned to the AR track, which has been found in several states (Piper, 2017). The accuracy of risk assessment decisions calls into question the potential for incorrect assignment of TR/IR-eligible families into the AR track (Hughes et al., 2013).

Prior involvement with child welfare has also been identified as an indicator of elevated risk and is associated with re-reports and recurrence of substantiated cases (Jonson-Reid et al., 2003; Connell et al., 2007). The question of whether AR is appropriate for families that have previous contact with the CPS is still being debated. According to Loman and Siegel (2012), the AR track may not be the most efficient strategy to serve families that have had a chronic history of CPS

involvement. This might be related not just to the families' heightened risk, but also to their mistrust of CPS because of their history of interactions with the system (Loman et al., 2010; Piper, 2017).

In addition to risk level and prior involvement, service match and the characteristics of workers may be the other two strong yet understudied influencing factors (Armstrong et al., 2019; Ryan et al., 2006). A qualitative study with 747 female primary caregivers suggests that child-welfare-involved families' most prevalent basic service needs are food, transportation, and clothing (Marcenko et al., 2011). Services matched to family needs not only decrease the future service needs in targeted areas, but also relate to improvement in other areas, including safety (Simon & Brooks, 2019; Simon, 2020; Loman & Siegel, 2004). Fuller and Zhang (2017) examined this factor particularly in a DR setting and found families with a low to moderate number of service demands were more likely to have a maltreatment re-report than families with no service needs, especially if those needs were unfulfilled at the closure of the case. Unfortunately, due to reasons such as lack of service availability in the community, services arranged by caseworkers often do not completely align with the family's needs (Altman, 2008; King et al., 2014), and this mismatch is particularly heightened in the areas of substance abuse, domestic violence, housing, and income instability (Staudt & Cherry, 2009; Chambers & Potter, 2008). Some studies also found a strong link between provision of material services and reduced re-reporting or subsequent placement (Loman & Siegel, 2012; Ryan & Schuerman, 2004), while others found the opposite, that only domestic violence services were associated with a lower risk of re-reports (Fuller & Zhang, 2017). The mechanism of how CPS service provision impacts the family safety outcome remains inconclusive, especially in DR systems.

Similarly, high worker turnover rates have been a topic of concern for decades, potentially interfering with the timely delivery of services to families (Shapiro, 1976; Romero & Lassmann, 2017). As a result, some researchers have argued that children who have a succession of caseworkers are more likely to receive ineffective service delivery and experience negative subsequent child welfare outcomes, including longer stay in the foster care system (Ryan et al., 2006) and loss of trust and stability (Strolin-Goltzman et al., 2010). Others have suggested

that children who experience multiple case workers are more likely to achieve reunification, due to increased opportunities to reevaluate the case when a new worker is assigned (Goerge, 1994). There is, however, limited information on the impact of service match and multiple workers on the re-reporting outcome of AR-eligible cases. Additional research on these potential contextual factors and their implication for DR systems is warranted.

1.3. Research aims

This study aims to evaluate the impact of one state's DR program on the outcome of child safety, which was operationalized as accepted re-reports between 2014 and 2019, while adjusting for relevant contextual factors for AR-eligible families. The three main research questions focus on the effects of each of these on the outcome of re-reporting: (1) Does AR intervention reduce the risk of re-reporting when adjusting for family characteristics, including prior CPS involvement, age of the youngest child in the home, and risk assessment level?; (2) Does the level of match between family needs and services provided affect a family's risk of being re-reported?; and (3) Do intakes served by a single worker from opening to case closure have a lower risk of re-reporting, compared to cases served by multiple workers?

2. Methodology

2.1. DR program design

The target population of the DR program included families entering the child welfare system that were eligible for AR. Eligibility was determined when a report was made to the hotline and an intake was accepted for assessment. Exclusionary criteria were used at the hotline to determine AR eligibility. Intakes that met one or more exclusionary criteria were automatically assigned to TR. The exclusionary criteria were situations suggestive of higher risk, which generally fell into the categories of (1) the presence of controlled substances; (2) evidence of sexual/physical abuse, domestic violence, or serious neglect; or (3) current involvement with law enforcement or the child welfare

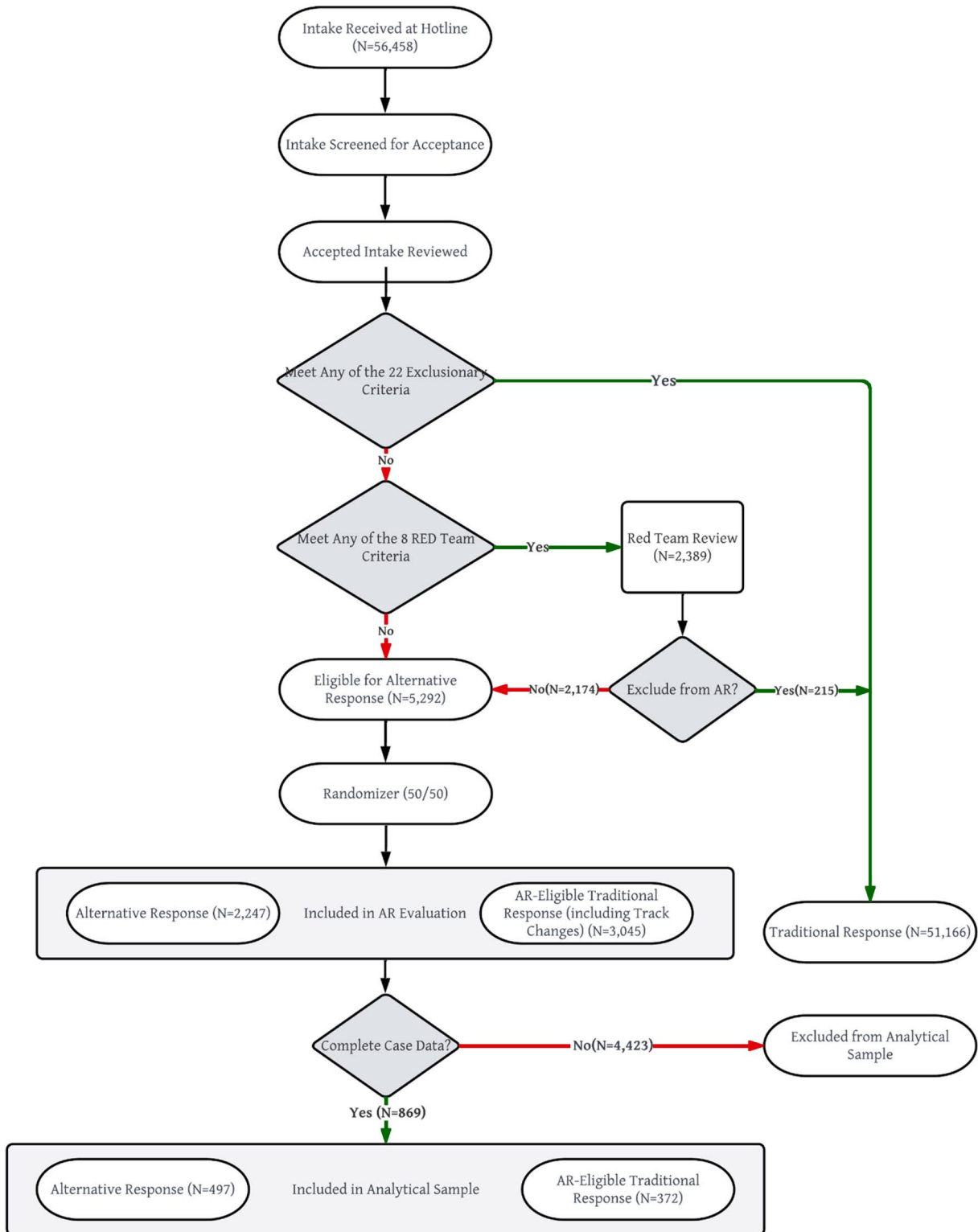
system. The family could also be excluded at the discretion of a RED team (in this jurisdiction referring to **Review, Evaluate, Decide**; typically comprised of child welfare managers, administrators, and the hotline manager). Additionally, once an intake was accepted and the worker began to partner with the family, if additional information was learned that indicated the child was at greater risk, the case could receive review and evaluation by a RED Team to determine AR-eligibility using RED Team Criteria. The initial implementation occurred in 5 out of 93 counties beginning October 2014. A gradual phased implementation occurred over the next several years, such that by end of the study period, all counties were included.

The DR program was evaluated through a randomized controlled trial (**Graph 1**). This means that after initial eligibility for AR was determined, cases were randomly assigned to either AR or TR, using a randomizer (50/50) that was programmed into the state's computerized case management system. All AR-eligible families were included in the evaluation. AR-eligible cases assigned to TR constituted the control group, allowing researchers to draw conclusions about the effect of AR on key child and family outcomes when compared to traditional case practice.

2.1.1. Datasets

Two datasets from the state's online case management data system, the Victims and the Initial Risk Assessment datasets, were used in the descriptive and survival analyses. Variables extracted from these two datasets are related to child demographics (i.e., age, race, and gender) and case characteristics (i.e., age of youngest child in home, intake risk level, and if prior ongoing case).

In addition, information on two variables (service-needs match and original worker) was collected as part of a larger end-of-case Worker Survey, which was reviewed and approved by the University of Nebraska-Lincoln IRB. Workers were asked to complete this online survey at the closure of every AR-eligible case, assigned to either AR or TR, and were encouraged to consult their notes to refresh their memory about the specific family, if needed. A survey link was emailed to the worker after case closure. Two weekly follow-up reminder emails were sent for missing or incomplete responses, resulting in an overall response rate of 59%.



Graph 1. AR Evaluation Recruitment Procedure.

To assess the impact of missing data, we conducted statistical analyses comparing demographics (e.g., child age, child gender, child race, youngest child age in the household, number of children in household, number of adults in household, etc.) and case characteristics (e.g., prior investigation, risk assessment level, safety assessment, etc.) of the analytical sample and the original sample of AR-eligible families. The two samples did not differ statistically in terms of those major demographic and case characteristics.

2.2. Measures

2.2.1. Dependent variables

In this survival analysis model, the “event” is defined as when a family is reported back to the state’s child welfare system (re-referral). If a family had a second intake recorded after their initial intake within the study period, a new intake number was given under the same family ID and the event occurrence was coded, regardless of the identity of the children. The survival time (Mean = 260.84 days, range from 0 to 1708 days) was measured as the count of days between the initial and the second intakes of the same family within the study period. Those families that did not have a recurring referral by the end of 2019 are right censored in the analysis.

2.2.2. Independent variables

Track Assignment. Track assignment (AR track vs TR track) was first recorded when the family case was enrolled in the study. There was a possibility that a family case could change tracks from AR to TR after the initial assignment if the assessment indicated an increased risk level. The assistance code, which indicated the track a family eventually was assigned, instead of the initial track assignment, was used to account for these track changes. A total 402 track changes from AR to TR were made during the study period, and only 7 track changes were made within the analytical sample.

Covariates. Based upon the previous literature, we identified four key case-level covariates in addition to the track assignment. These covariates included service-need match, prior ongoing case, risk level, and original worker. The *service match* variable was meant to capture the worker’s perception of their ability to match services tailored to

the family's needs. This item, included on the worker's end-of-case survey, asked "overall, how well were you able to match the services provided (or that you provided information about) to the needs of the family?" Responses were measured on a 4-point Likert scale, which was coded as 1 (=Not at All), 2 (=Not Very Well), 3 (=Somewhat Well), and 4 (=Very Well).

The *prior ongoing case* variable indicated whether the family had a previous substantiated case with the state's child welfare system before the study period. Intakes that involved families with a prior opened case were coded as 1, otherwise coded as 0. The *risk level* was extracted from either the initial risk assessment (for TR families) or the initial prevention assessment (for AR families) that was completed by case workers. These assessments used the same measurement and were required by policy to be completed within 60 days, using the Structured Decision Making model (SDM) for both AR and TR groups. There are four risk levels: 1 (=Low risk), 2 (=Moderate risk), 3 (=High risk), and 4 (=Very high risk). Lastly, the number of child welfare workers involved with a particular intake was indicated by the *original worker* variable in the end-of-case survey. If the worker who filled out the end-of-case survey was the original worker assigned to the case, the item is coded as 1; if the worker was not the original worker of the case, the response was coded as 0.

2.3. Data analysis

Descriptive and bivariate analyses were first performed to characterize the profiles of families enrolled in this study and to investigate the variance of the covariates. The predictors were analyzed using a right-censored survival model. Survival analysis is a commonly used statistical method for analyzing the expected duration of time until one event occurs (Singer & Willett, 1993). There are three major censoring methods used for survival analysis: right-censoring, left-censoring, and interval censoring. We used right censoring method to censor the families whose second report happens after the end of the study period (Wienke, 2011), which is the most appropriate censoring method based on the nature of our data. In addition, the model included a comparison between service match within each level of prior ongoing case (No, Yes). The analysis used only cases with complete

data ($N = 869$). Though the analytical sample is relatively small, we compared the case characteristics (e.g., case risk level, types of allegations, etc.) and victim demographics (e.g., age of the child, sex of the child, number of children in the household, number of adults in the household, etc.) of the analytical sample and the original sample and no significant differences were evident. Intragroup correlation was allowed by using the clustering adjustment option, since the intakes were nested across 86 counties in the state that had AR-eligible intakes. Post estimation analyses were performed to test the goodness of fit of the final model. The survival model and post-estimation analyses were performed using Stata MP17 (StataCorp, 2021).

3. Results

3.1. Descriptive analysis

A range of demographic covariates were examined to profile the families enrolled in this RCT study and no statistical differences were found between families in AR and TR tracks. **Table 1** presents the mean and standard deviation of a selected range of family demographics and case characteristics in the two assigned tracks. Most intakes involved White children, which constituted 64.33% of the total analytical sample. This was followed by Black or African American children (10.47%) and children of multi-race (5.64%). There was a total of 92 (~10.58%) intakes where the child's race was unknown or other. The average age of the children involved was 8.55 ($SD = 4.94$) and children assigned to the AR track were 3.5 months older on average than the children in the TR track. More than 64.67% of the reports were assessed as below high risk, which is not surprising given the exclusionary criteria the state established for AR.

3.2. Survival analysis result

We first fitted a Cox proportional hazards model with adjusted clustering, and then compared the post-estimation statistics with models that included the interaction term between prior ongoing case and the service match variables. There is a significant improvement

Table 1 Descriptive statistics (N = 869).

	AR		TR	
	N	%	N	%
	Mean	(SD)	Mean	(SD)
Child Age	8.67	(5.0)	8.38	(4.79)
Child Gender				
Female	240	48.29	196	52.69
Male	257	51.71	176	47.31
Race				
American Indian or Alaska Native	6	1.21	11	2.96
Asian	4	0.80	5	1.34
Black or African American	50	10.06	41	11.02
White	319	64.19	240	64.52
Multi-Race	28	5.63	21	5.65
Other or Unknown	53	10.67	39	10.48
Age of the Youngest Child in Home				
Under 2	401	80.68	290	77.96
2 or Older	96	19.32	82	22.04
Risk Level				
Low	106	21.33	44	11.83
Moderate	176	35.41	236	63.44
High	170	34.21	86	23.12
Very High	45	9.05	6	1.61
If Prior Ongoing Case				
No	449	90.34	325	87.37
Yes	48	9.66	47	12.63
Original Worker				
No	33	6.64	7	1.88
Yes	464	93.36	365	98.12
Service Match				
Not at all	25	5.03	12	3.23
Not very well	47	9.46	32	8.60
Somewhat well	253	50.91	246	66.13
Very well	172	34.61	82	22.04

in the model judging from the Bayesian Information Criterion (BIC). **Table 2** presents the final clustered Cox model including the examination of service in each level of prior ongoing case. Consistent with our expectation, families with a substantiated child maltreatment case prior to the report are 3.2 times more likely to receive a re-report to the system (Haz. Ratio = 3.24, $p < 0.001$). Compared with intakes assessed as “high” risk, intakes assessed as “very high” risk were 1.4 times more likely to be re-referred within the study period (Haz.

Table 2 Results of Survival Analysis with Service Match in Prior Ongoing Case (N = 869).

	Haz. Ratio	Std. Err.	p-value	[95% conf. interval]
If Prior Ongoing Case				
No	(Reference)			
Yes	3.24	0.94	0.00	(1.84, 5.71)
If Original Worker				
No	(Reference)			
Yes	1.92	0.27	0.00	(1.46, 2.52)
Risk Level				
Low	1.24	0.34	0.43	(0.73, 2.12)
Moderate	1.00	0.11	0.97	(0.80, 1.25)
High	(Reference)			
Very High	1.43	0.21	0.02	(1.07, 1.92)
Track Assignment				
TR Track	(Reference)			
AR Track	0.92	0.12	0.53	(0.72, 1.18)
Nested Effect of Service Match in Prior Ongoing Case				
(Not very well vs Not at all) No	0.53	0.21	0.11	(0.24, 1.15)
(Somewhat well vs Not at all) No	0.43	0.15	0.02	(0.21, 0.86)
(Very Well vs Not at all) No	0.38	0.13	0.01	(0.19, 0.75)
(Not very well vs Not at all) Yes	1.19	0.27	0.46	(0.76, 1.86)
(Somewhat well vs Not at all) Yes	0.13	0.05	0.00	(0.06, 0.29)
(Very Well vs Not at all) Yes	0.10	0.03	0.00	(0.06, 0.18)
Chi-Square				
(Overall)	145.42		0.00	

Ratio = 1.43, $p < 0.03$). However, intakes assessed as “low” or “moderate” risk were not different in terms of recurrence when compared with the reference group (high risk). Interestingly, cases in which the original worker served the family until case closure were 1.92 times more likely to be reported back to the system, compared with cases that had been assigned to multiple workers. No statistical difference regarding the outcome of re-referral was identified between the AR and TR tracks, after adjusting for service match, prior ongoing case, risk level, and original worker.

The results also showed an effect of better service match significantly reducing the family’s risk of receiving a re-referral, and the nested effect of service match in prior ongoing case was also prominent (**Fig. 1**). Being provided with somewhat-matched service or

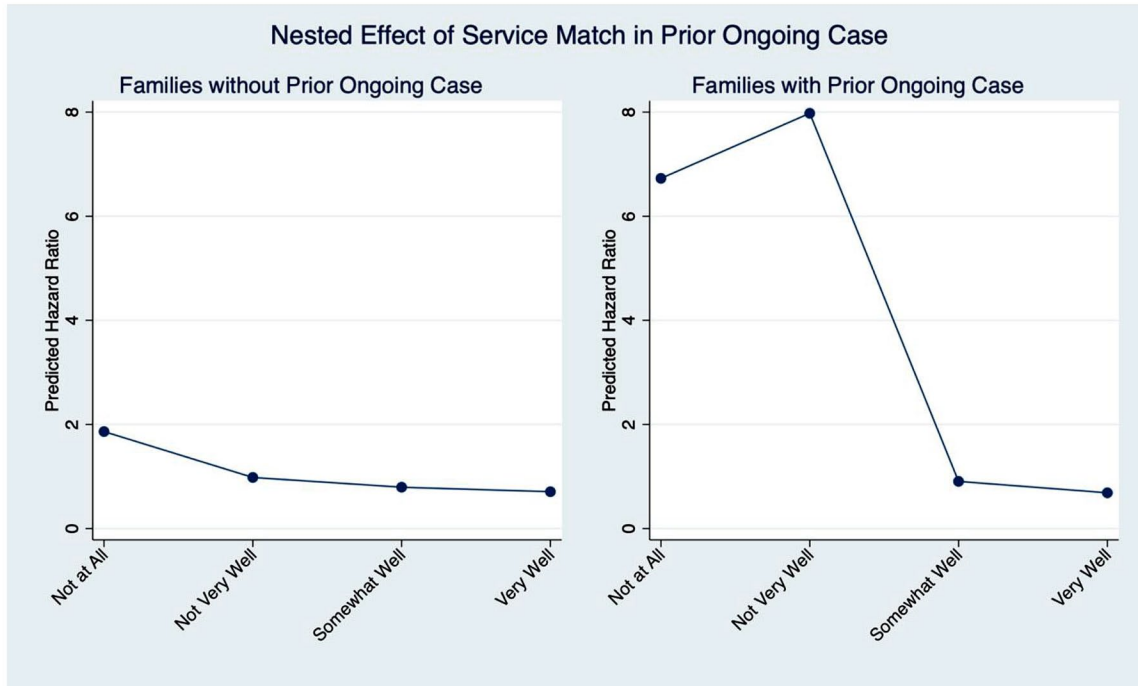


Fig. 1. Nested effect of service match in prior ongoing case.

very well-matched services significantly decreased the predicted hazard ratio of re-referral. When comparing families with very-well matched services to families with not-at-all matched services, we found a 62 percent drop in the risk of re-reporting for families without prior ongoing cases. In comparison, this impact of service match is even more significant among families with prior ongoing cases, and depending on the strength of the match, it can possibly cut the hazard ratio by 87 percent to 90 percent (somewhat well vs very well). However, no significant differences in hazard ratios were observed between families that were provided with not-very-well-matched services and families that received services that did not match their needs at all, regardless of their status of previous involvement in the child welfare system.

The proportional assumption was tested for the overall model (Chi-square = 5.96, p greater than 0.05) and for each covariate while adjusting for the rest. The non-significance suggests that the proportional assumption was not violated in this model. We also graphed the Nelson-Aalen cumulative hazard function and the Cox-Snell residuals so that we could compare the hazard function to the 45-degree line.

The graphed hazard function aligned closely with the 45-degree line except towards the extremely high age range, which indicates that the model is a good fit to the data.

4. Discussion

While it is difficult to ascertain the direct impact of certain factors on the Midwestern state's DR outcomes, our study results highlighted the lack of differences in re-reporting between AR and TR tracks after controlling for key case and familial characteristics. This result can be viewed in two ways. On the one hand, the AR case practices in this state did not reduce the likelihood of re-reporting for the involved families. On the other hand, children and families receiving the AR program track were not less safe due to the intervention, which would have resulted in a higher rate of re-reporting for AR families. To contextualize the findings, this lack of difference might be a result of the agency's workload management during the study period. In counties with greater staffing resources, CPS workers were solely allocated to either AR or TR caseloads and thus were able to specialize their practice. However, in areas with limited staffing resources and fewer AR cases, workers by necessity were often assigned to both AR and TR cases, in essence "wearing both hats" in their case practice. It is unknown to what extent these generalist workers may have applied some AR case practices to TR families. Winokur et al (2015)'s study using Colorado data concluded that the reluctance to randomly assign caseworkers exclusively into AR or TR tracks may confound the evaluation results. Our focus groups and informal interviews with workers in the Midwestern state also suggested that having a mixed caseload was extremely challenging, in that the demands of TR cases (such as court involvement) often required them to prioritize TR over AR tasks. TR cases tended to be more time-consuming as the process is more restrictive and often involves more formal investigations. As one worker with a mixed caseload put it, "TR always trumps AR." With the workers' often overburdened caseloads, the expected time and effort dedicated for AR families may not have been implemented with fidelity and may have contributed to the lack of observed differences between AR and TR families.

As highlighted in the literature, Fuller & Zhang (2017) found that low to moderate (one to four) matched service needs was associated with higher probability of re-reports in Illinois. The current study focused directly on the quality of the match instead of the number of matched needs, and the result presented a different story. The finding showed that tailoring services to fit the needs of families reduced the likelihood of re-reporting up to 90% when compared to families who did not receive services matched to their needs. The interaction between prior ongoing case and service match was also significant, highlighting that a service match is especially effective for families with prior CPS cases. These findings demonstrated the importance of matching services to families' needs, and how this service match would be particularly beneficial for families with higher risk and potential repeated incidents. Failure to provide services closely matched to identified needs might increase the likelihood of future re-reports. However, we must emphasize that the service match assessment we utilized was based on information provided by case workers, which could be compromised by possible biases and overestimated service performance. Future research might integrate the perspectives of both the family and workers on service quality and expand on this important factor by looking at service types and costs.

According to the Midwestern state's CPS procedures, families that were re-reported to the system would be assigned to the previous worker if the re-report was made within 60 days of the previous case's closure. The underlying assumption was that the same worker would be more familiar working with the family and the rapport built over time would increase engagement and result in better outcomes. However, one of our findings indicated that when compared to cases that have been served by more than one worker, having a sole worker serve the case through closure increased the likelihood of a family being re-reported back to the system. It may be possible that having more than one worker assigned to a family over the life of the case may give additional perspectives on the family's experience and is likely to result in observations that the initial worker may have missed. While group supervision is a core tenet of most DR systems, in this jurisdiction it was implemented in <5% of the AR cases, and thus, multiple perspectives were unlikely to be integrated in casework practices with most of the families in this study.

This finding could also potentially be attributed to surveillance bias, as suggested by some researchers (Drake et al., 2021; Fuller & Zhang, 2017). Given the significant amount of time spent by the original worker with the family, it is plausible that their increased involvement and engagement could lead to better connections with community resources. Consequently, community service providers might engage in continuous monitoring of family dynamics, potentially increasing the chances of re-reporting. However, further investigation is needed to explore the extent to which surveillance bias contributes to this phenomenon.

5. Strengths and limitations

The state's DR program was phased in a 5-year span, which allowed for data collection and analysis of re-reporting over a multi-year period. This research also implemented random assignment of eligible families to AR and TR tracks, which minimized bias and ensured that the observed differences could be attributed to the intervention. We have also intentionally incorporated both system-level and worker-level variables by including measures such as service match, risk assessment level, and the original worker variable in the survival analysis model.

Despite these strengths, the study has limitations. Though the data represents the entire Midwestern state, it is a relatively homogeneous sample demographically. Thus, it may lack generalizability to other states with diverse populations. Further, this study solely focused on the safety outcome as measured by re-reports. Other DR research has focused on other outcomes such as substantiated re-reports or out-of-home placements. A more multi-dimensional measurement of safety could be employed in research onward. In addition, the service match variable, which was significant in the interaction terms, was only collected as part of the workers' self-report data. Future research could further explore this factor by integrating the family perspective and possibly administrative data to triangulate the self-report. Lastly, due to the issue of missing data, we only used variables with complete information as the analytical sample. This resulted in a relatively small sample size compared to the number of intakes that were deemed

AR-eligible over the study period. However, we compensated for this limitation by statistically testing the demographic and case-level differences (e.g., safety assessment level, risk assessment level, child race, child sex, youngest child's age, if prior ongoing case, number of children in households, etc.) between the study sample of AR-eligible families and the families in the analytical sample. No significant differences were found amongst these three populations, which supported the generalizability of our model.

In conclusion, this study demonstrated that AR and TR track assignment may not make a significant difference in terms of re-reporting outcomes, but the study does emphasize the necessity of service matching between family needs and available services. It is possible that even though numerous case variables were controlled through the RCT design and analyses used here, there remain additional uncontrolled variables that could have impacted the results. Future evaluations of the effectiveness of DR programs should focus on assigning workers solely to either AR or TR cases, to avoid the challenges posed by mixed caseloads. Some questions also persist about the pathways between having the original worker serve a case to closure and the incidence of subsequent re-reports. Future research should focus on developing a more expansive model to incorporate additional indicators, such as family engagement and alleged maltreatment type, and delving further into the underlying mechanisms that influence various child welfare outcomes.

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CRediT authorship contribution statement

Jianchao Lai: Writing – original draft, Writing – review & editing, Formal analysis, Methodology, Software. **Michelle Graef:** Writing – original draft, Writing – review & editing, Conceptualization, Project administration. **Todd Franke:** Writing – review & editing, Methodology, Conceptualization, Software. **Toby Burnham:** Data curation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The data that has been used is confidential.

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