Child Abuse & Neglect 81 (2018) 296–307

Contents lists available at ScienceDirect

Child Abuse & Neglect

journal homepage: www.elsevier.com/locate/chiabuneg

Identifying the trauma recovery needs of maltreated children: An examination of child welfare workers' effectiveness in screening for traumatic stress

Adrienne Whitt-Woosley[a,*], Ginny Sprang[a], David G. Royse[b]

[a] University of Kentucky, College of Medicine- Department of Psychiatry, United States
[b] University of Kentucky, College of Social Work, United States

ARTICLE INFO

Keywords:
Trauma
Posttraumatic stress
Children
Screening
Maltreatment
Child welfare

ABSTRACT

Children in the child welfare system comprise a group characterized by exposure to trauma via experiences of maltreatment, under circumstances presenting multiple risk factors for traumatic stress. High rates of posttraumatic stress have been observed in this population. However, there is currently no standard for the universal screening of children in child welfare for trauma exposure and traumatic stress. This study examined the trauma experiences of a sample of maltreated children and whether their child welfare workers were effective screeners of traumatic stress symptoms. Descriptive and correlational analyses were conducted regarding a sample of children (N = 131) with trauma screenings completed by their child welfare workers and clinical measures of traumatic stress symptoms. Four hierarchical regression models were also examined to determine whether workers' screening information regarding child age, trauma exposure history and symptoms of traumatic stress were predictive of outcomes on clinical measures. The analyses revealed complex trauma exposure histories and high rates of traumatic stress symptoms among this generally younger sample of maltreated children. Additionally, the models supported workers' efficacy in screening for symptoms of total posttraumatic stress and specific trauma symptoms of intrusion and avoidance. Workers were less effective in screening for the symptoms of arousal. These findings support the importance of identifying the trauma recovery needs of maltreated children and the utility of child protection workers in assisting with the trauma screening process. Implications are provided for related practice, policy and training efforts in child welfare.

1. Introduction

Children in the child welfare system represent a group characterized by exposure to maltreatment-related trauma with multiple risk factors for traumatic stress and other associated mental health concerns. In 2012, approximately 679,000 children in the United States were found to be victims of maltreatment, with a child maltreatment victim rate of 9.2 per 1000 children in the general population (U.S. Department of Health & Human Services, 2014). Studies have found rates of maltreatment-related trauma in children in foster care that range from 80 to 93% (Lipschitz, Winegar, Hartnick, Foote, & Southwick, 1999; Stein et al., 2001; U.S. Department of Health & Human Services, 2013). The vast number of children maltreated and subsequently involved in child welfare systems present a significant public health problem in the United States, especially given the associated negative effects of these

* Corresponding author.
E-mail address: alwhit4@uky.edu (A. Whitt-Woosley).

https://doi.org/10.1016/j.chiabu.2018.05.009
Received 14 July 2017; Received in revised form 30 April 2018; Accepted 8 May 2018
Available online 26 May 2018
0145-2134/ Published by Elsevier Ltd.

experiences (Jamora et al., 2009).

The impact of child maltreatment is evident in the growing body of related research including the Adverse Childhood Experiences study and others that demonstrate the deleterious, long-term consequences of early trauma such as mental health disorders, substance abuse and serious physical health problems such as heart disease, obesity and even shortened life expectancy (Anda et al., 2006; Felitti et al., 1998). One study indicates that childhood maltreatment presents a ten-fold increase in the lifetime risk for Posttraumatic Stress Disorder and other anxiety, mood and substance abuse disorders (Scott, Smith, & Ellis, 2010). The short-term impact of child maltreatment can also be severe. Studies demonstrate significantly higher rates of Posttraumatic Stress Disorder and various other mental health diagnoses in samples of maltreated children versus the general population (Jamora et al., 2009; Keller, Salazar, & Courtney, 2010; Pecora, White, Jackson, & Wiggins, 2009; White, Havalchak, Jackson, O'Brien, & Pecora, 2007). Therefore, general mental health screening with children in child welfare systems is indicated, and the nearly universal trauma exposure rates for children in this system combined with the significant risks for adverse reactions and long-term consequences of childhood trauma support the need for specific trauma screening and assessment to be a part of this process. Screening and assessment are the gateway to identifying a child's needs in terms of recovery from the trauma of abuse and neglect. Fortunately, if necessary, there are many evidence-based trauma interventions that can interrupt the cascade of potential problems cited in the literature. Some of the trauma treatment programs rated as effective based on their evidentiary support include *Child-Parent Psychotherapy* (CPP), *Trauma Affect Regulation: Guide for Education and Therapy* (TARGET), *Trauma-Focused Cognitive Behavior Therapy* (TF-CBT) and *Cognitive Behavioral Intervention for Trauma in Schools* (CBITS) (Pilnik & Kendall, 2012). These interventions meet the needs of a variety of children across settings, and there are several other evidence based trauma treatments and promising practices available as well. In spite of these facts and best practice recommendations for child welfare, there is currently no standard for universal trauma screening in most child welfare systems though some states are making progress toward this goal (Griffin et al., 2012).

Child welfare workers represent an important resource for addressing problems associated with the under-identification of maltreated children's trauma recovery needs. Not only are child welfare workers mandated by policy to assess the mental health and other basic needs of children as part of the case planning and family intervention process, they also have access to a unique database that should prove useful in screening for traumatic stress and related concerns. McCrae and Barth (2008) found that the information typically collected during a maltreatment investigation including the age, frequency and intensity of exposures to maltreatment; parental history of mental illness and substance misuse; and other environmental risks are critical elements of assessing mental health and trauma recovery needs in children.

This study was designed to address the research questions of whether child welfare workers are able to effectively screen children from their caseloads for traumatic stress, and whether there are notable differences in their abilities to screen for specific manifestations of trauma symptoms such as intrusion, avoidance and arousal. There are no known studies that examine child welfare workers' trauma screening abilities and compare their identification of child traumatic stress symptoms to those of caregivers or child self-reports. Additionally, this study aimed to describe the trauma experiences of the sample in order to further examine the nature of traumatic stress observed in children from the child welfare population. The specific symptoms reported by the child welfare workers were compared to the clinical measures administered with children and caregivers as informants to further analyze what aspects of trauma screening may be more or less challenging. Implications for training and the implementation of trauma screening protocols in child welfare are provided based on the results of the analysis.

The empirical literature and theoretical models reviewed supported the consideration of child age and history of trauma exposure as pertinent information when assessing traumatic stress reactions in children. Age and developmental stage not only exert significant influences on the manifestation of a child's trauma response, but knowledge of a child's age may also affect the way others observe and contextualize a child's behavior and expressions of distress (Cicchetti & Toth, 1997; Margolin, 2005). Numerous studies additionally confirm the significance of trauma exposure history and number of traumas experienced as risk factors for traumatic stress reactions (Breslau, Chilcoat, Kessler, & Davis, 2014; Green et al., 2000). Knowledge of what traumatic events children have been exposed to should provide necessary context for their emotional and behavioral responses are interpreted. Child welfare workers attain knowledge of these two critical categories of information as part of their routine case work with children; first learning basic information such as the age of a child, then acquiring historical information including a child's history of trauma exposure. Workers then accumulate observational and collateral data regarding a child's functioning during the course of service provision. Therefore, for the primary research question regarding whether child welfare workers can effectively screen for traumatic stress in children, the following hypothesis statement was tested:

H_1: Utilizing knowledge of a child's age, trauma exposure history and a child's emotions and behaviors, child welfare workers are able to effectively predict posttraumatic stress scores indicated on clinical measures.

A secondary question was also examined regarding whether there are differences in child welfare workers' abilities to screen for certain types of traumatic stress symptoms. Information regarding the nature of these symptoms, how they manifest in children, and challenges regarding the assessment of child traumatic stress was used to guide the development of the second hypothesis. For example, intrusive or re-experiencing symptoms are directly connected to traumatic experiences, and may be more clearly reported by children or observed to be effects of their trauma history. Avoidance is less visible or difficult to observe, and the nature of successful avoidance prevents children from talking about it (Cohen & Scheeringa, 2009). Screening or assessing for arousal in children is complicated by these symptoms being more easily confused with other emotional and behavioral conditions. As a result, children with traumatic stress are often misdiagnosed with or experience co-morbid conditions such as Separation Anxiety Disorder, Attention Deficit Hyperactivity Disorder and Oppositional Defiant Disorder, and the overlap of symptoms associated with these disorders and trauma-related arousal specifically is considerable (Cohen & Scheeringa, 2009; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Consequently, for the secondary research question regarding whether there are differences in child welfare workers'

abilities to screen for certain types of traumatic stress symptoms, the following hypothesis statement was tested:

H_2: Child welfare workers are more effective at identifying symptoms of intrusion than avoidance and arousal in trauma-exposed children.

Therefore, the workers' reports of child age, child trauma exposure history and screenings of child trauma symptoms were included in the models testing their predictions of posttraumatic stress scores from clinical measures completed by the children or their caregivers. Models were tested regarding the child welfare workers' abilities to predict symptom outcomes of total posttraumatic stress, intrusion, avoidance and arousal.

2. Methodology

2.1. Sample

A sample of children with substantiated cases of maltreatment was screened for traumatic stress in this study. The children were all referred by their ongoing services, child welfare workers to a university-based assessment clinic for families with high-risk cases of maltreatment. Each child's worker completed a trauma screening on their behalf as part of the assessment process, which is a multidimensional, family assessment model designed to provide the worker with case planning recommendations regarding placement viability, permanency and individual and relational treatment needs (Whitt-, Woosley, Eslinger, & Sprang, 2018). The children screened were all from the same state, but represented every region of the state including urban and rural areas. The workers completed the trauma screenings at their child welfare offices throughout the state and sent these to the university-based clinic for inclusion in the children's assessments. Data was not collected on the workers themselves, however all were frontline, child welfare workers engaged in ongoing service provision, i.e. no measures were completed by staff members operating as investigators, supervisors, administrators or other roles. Depending on the child's age, a clinical trauma measure was also completed as part of the assessment process for each child by either self-report and/or a caregiver. The number of children in the sample with both completed trauma screenings from their child welfare worker and at least one clinical trauma measure was 131.

The sample of children included in the analysis ranged from 3 to 17 years of age (mean = 7.75, SD = 3.90), with 76 of the children being eligible to complete their own trauma measures (ages 8–17) and 55 (ages 3–7) requiring caregivers to report trauma symptoms. The children had spent an average of 8.51 months (SD = 8.01) in their placement at the time of data collection. Data regarding their histories of trauma exposure was also collected from their child welfare workers. The children had reportedly experienced an average of 4.36 different types of traumas (SD = 1.99), with the most frequently endorsed type being neglect (96.4%) followed by exposure to domestic violence (77.5%). The next most frequently experienced types of traumatic events were emotional abuse (53.3%), physical abuse (44.4%) and sexual abuse (44.3%). Rates of exposure to extreme interpersonal violence, traumatic loss and systems-induced trauma ranged from 26.2 to 36%. The remaining trauma types including disasters, war/terrorism, community violence and serious accidents or medical trauma were reportedly experienced at lower rates ranging from 0.8 to 7.1%.

2.2. Measures

2.2.1. Dependent Variables

The *Trauma Symptom Checklist for Children- Alternate Form* (TSCC-A) was used to measure the children's self-reported total posttraumatic stress symptoms in this study (Briere, 1996). The 44-item instrument contains two validity scales measuring under-response and hyper-response, as well as five clinical scales that assess anxiety, depression, anger, posttraumatic stress, and dissociation (with two subscales). Extensive analyses of reliability and validity have been conducted for this measure. It has been found to have good construct and predictive validity in numerous studies with both clinical and non-clinical samples (Elliott & Briere, 1994; Lanktree et al., 2008; Wherry, Graves, & Rhodes, 2008). Alpha coefficients reported for the clinical subscales range from 0.82 to .89 (Briere, 1996). Alpha coefficients were not obtained for this sample due to limitations in the availability of data for analysis as only subscale and total scores were entered into the database. The 10-item Posttraumatic Stress clinical scale was utilized to measure the dependent variable for the first model in this study. Raw scores on this scale range from 0 to 30.

The *Trauma Symptom Checklist for Young Children (TSCYC)* was used to measure traumatic stress reactions in children via caregiver report (Briere, 2005). This measure was utilized for outcomes of total posttraumatic stress (for children too young to complete the TSCC-A), intrusion, avoidance and arousal. The 90-item instrument contains two validity scales and nine clinical scales that measure traumatic stress as intrusion, avoidance, arousal, dissociation and total posttraumatic stress, as well other symptoms frequently experienced by traumatized children including anxiety, depression, anger/aggression, and sexual concerns. Extensive analyses of reliability and validity have been conducted for this measure. It has been found to have sound construct, predictive and discriminant validity in numerous studies with both clinical and non-clinical samples (Briere et al., 2001; Finkelhor, Ormrod, & Turner, 2009; Gilbert, 2004). Alpha coefficients reported for the clinical subscales range from 0.78 to .92 (Gilbert, 2004, Briere et al., 2001). Alpha coefficients were also not obtained for this measure due to limitations in the availability of data for analysis. The Posttraumatic Stress-Total clinical scale was utilized to measure the dependent variable for the first model in this study. Raw scores on this scale range from 27 to 108 because the Total score is the sum of the three other Posttraumatic Stress scales (intrusion, avoidance, and arousal). The 9-item Posttraumatic Stress-Intrusion, Avoidance and Arousal clinical scales were utilized to measure the dependent variables for the three additional models tested. Raw scores range from 9 to 36 for each of these scales.

2.2.2. Independent Variables

The *Child Welfare Trauma Referral Tool (CWTRT)* was utilized to measure child welfare workers' reports regarding age, trauma history, and traumatic stress symptoms in children from their caseloads (Taylor, Steinberg, & Wilson, 2006). It contains 35 trauma-related and clinical items, as well as two basic information questions regarding the child's age and number of months in current placement. The CWTRT is completed by workers based on their knowledge of the child from direct observation, record review and caregiver and other collateral reports. It is designed for use with children and adolescents aged 1–20. The tool contains a related decision-making structure to connect the child's experiences and reactions to the level of mental health services indicated (Taylor et al., 2006). The CWTRT has not been tested in a normative sample, and there is no associated scoring mechanism.

For this study, child age was operationally defined as the child's chronological age in years as reported by the child welfare worker on the CWTRT. Trauma exposure history was operationalized by the number of trauma types reported as having been experienced by the child on the CWTRT. Fourteen different trauma types were defined for workers for selection on the screening tool. This provided necessary clarification of certain terminology such as systems induced trauma (defined as "traumatic removal from the home, traumatic foster placement, sibling separation, or multiple placements in a short period of time") or witness to extreme interpersonal violence (defined as exposure to violence not previously accounted for that included "exposure to homicide, suicide and other similar extreme events"). The variable of total posttraumatic stress symptoms reported by child welfare workers was operationally defined as the combined score derived from the workers' ratings regarding the presence of symptoms of posttraumatic stress in the DSM-IV categories of re-experiencing, avoidance, numbing and arousal. A composite variable was created to obtain a total score from the workers' ratings of the presence of each symptom on the CWTRT as no (0), suspected (1) or yes (2). Possible scores ranged from 0 to 8. Higher scores reflected increased endorsement of child traumatic stress symptoms.

The *Child Behavior Checklist* (CBCL) was also utilized to collect descriptive data on the children in the sample to provide context for understanding the workers' abilities to conduct trauma screenings with this group (Achenbach & Edelbrock, 1991). The children's caregivers completed a CBCL for each child reporting on the presence of various emotional, behavioral, social and developmental problems. The CBCL is an empirically derived measure with established norms and psychometric properties that has been used extensively to study the mental health status of children in child welfare and other settings (Heflinger, Simpkins, Combs-, & Orme, 2000; McIntyre & Keesler, 1986; Pecora, 1997; Silver et al., 1992). Two CBCL versions are available and were utilized for children ages 1.5–5 and ages 6–18. For this study, scores were available regarding the clinical problem scales only.

3. Results

PASW 21.0 was utilized for data analysis. A priori power analysis indicated that a sample size of 76 would be sufficient to achieve a medium effect at 80% power ($p = .05$). Descriptive analyses found that the children in this sample were experiencing high rates of distress as indicated by their self-reported responses, as well as the reports from their caregivers and child welfare workers. The children self-reported the lowest rate of clinically concerning (classified by measures as either potentially problematic or clinically significant) total posttraumatic stress at 21.1%, followed by caregiver reports at 40.6% and worker reports at 40.8%. Examination of specific symptoms of posttraumatic stress indicated that both caregivers and child welfare workers observed the presence of concerning levels of arousal in the children more frequently than the other symptoms at rates of 38.4 and 49.4% respectively. The TSCC-A provides scoring for only total posttraumatic stress, dissociation and related conditions, which prevented comparisons of caregiver and worker reports on specific trauma symptoms to child reports. Table 1 provides more detail regarding the symptoms of posttraumatic stress observed in the sample by reporting source and rates of children experiencing these conditions at or above the cutoff for clinical concern (TSCC-A, $T \geq 60$; TSCYC, $T \geq 65$). The cutoffs for clinical concern or potential problems rather than clinical significance were applied to this descriptive analysis given research suggesting that any observation of clinically concerning trauma symptoms warrants full assessment and/or intervention, especially with younger children given the assessment challenges with

Table 1
Description of Posttraumatic stress (PTS) and Related Symptoms by Child, Caregiver and Worker Report.

Source/Measure	Symptom	Mean/SD	% above cutoff/reported as present
Child/TSCC-A	Total PTS	47.37/11.21	21.1
Child/TSCC-A	Anxiety	47.88/12.07	14.5
Child/TSCC-A	Depression	45.89/10.56	7.9
Child/TSCC-A	Anger/Aggression	45.16/9.76	9.2
Child/TSCC-A	Dissociation	47.91/11.34	11.8
Child/TSCC-A	Dissociation-Overt	48.63/11.22	14.5
Child/TSCC-A	Dissociation-Fantasy	47.81/10.69	13.3
Caregiver/TSCYC	Total PTS	63.55/20.25	40.6
Caregiver/TSCYC	Intrusion	61.56/20.94	34.1
Caregiver/TSCYC	Avoidance	62.78/20.83	37
Caregiver/TSCYC	Arousal	61.04/17.79	38.4
Worker/CWTRT	Total PTS	5.84/2.75	40.8
Worker/CWTRT	Re-experiencing	N/A	37.4
Worker/CWTRT	Avoidance	N/A	32.6
Worker/CWTRT	Numbing	N/A	30
Worker/CWTRT	Arousal	N/A	49.4

Table 2
Bivariate correlations between the independent and outcome variables in the analysis.

Variables	1	2	3	4	5	6	7	8
1. Child age (years)	–							
2. Trauma history (total)	−0.137	–						
3. Total PTS (worker)	−0.063	0.419**	–					
4. Total PTS (TSCC-A)	−0.144	0.048	−0.034	–				
5. Total PTS (TSCYC)	−0.059	0.271**	0.340**	0.302*	–			
6. Intrusion (TSCYC)	0.035	0.234*	0.438**	0.216	0.894**	–		
7. Avoidance (TSCYC)	−0.023	0.317**	0.340**	0.258	0.916**	0.783**	–	
8. Arousal (TSCYC)	−0.162	0.144	0.194*	0.316*	0.878**	0.672**	0.717**	–

* $p \leq .05$.
** $p \leq .001$.

regard to child traumatic stress (Ai, Jackson Foster, Pecora, Delaney, & Rodriguez, 2013; Kolko et al., 2010).

Bivariate analyses were conducted to examine potential relationships among the variables conceptually indicated for inclusion in the models. The analyses revealed several significant relationships among the variables, particularly between child welfare worker and caregiver observations of traumatic stress. Moderate, significant relationships were noted regarding their reports of total posttraumatic stress ($r = 0.340$, $p \leq .001$), intrusion ($r = .438$, $p \leq .001$) and avoidance ($r = 0.340$, $p \leq .001$) in the sample. A significant but weak relationship was observed between worker reports of total posttraumatic stress and caregiver reports on measures of arousal ($r = 0.194$, $p \leq .05$) in the children sampled. A moderate, significant relationship was observed between child and caregiver reports of total posttraumatic stress ($r = 0.302$, $p \leq .001$), but the relationship between worker and child reports was not significant.

It was notable that child age did not relate significantly to the other variables. Child age was observed to have inverse relationships, though insignificant, with all variables regarding trauma symptoms and trauma history. Trauma history was found to have a moderate, significant correlation with both worker ($r = 0.419$, $p \leq .001$) and caregiver ($r = 0.271$, $p \leq .001$) reports of total posttraumatic stress, but there was not a significant relationship observed with regard to child reports of total posttraumatic stress. Table 2 provides further information regarding correlations.

Hierarchical regression models analyzed relationships between child welfare workers' knowledge of child age, trauma history and total posttraumatic stress with child and caregiver reports of posttraumatic stress symptoms. Four models were tested to specifically examine outcomes regarding total posttraumatic stress, intrusion, avoidance and arousal. The predictors in each hierarchical regression model included child age, trauma history and total posttraumatic stress reported by child welfare workers. They were entered in this order in three steps, which was meant to represent the sequencing of the workers' acquisition of information regarding children from their caseloads. The dependent variable for the first model tested was total posttraumatic stress reported by the child (if available) or the caregiver (if child score was not available due to child age).

The first hierarchical regression model examined the dependent variable of total posttraumatic stress and revealed that at step one child age contributed significantly to the model, $F(1,115) = 19.570$, $p \leq .001$. The inclusion of this factor accounted for 14.5% of the variance. The addition of trauma history into the model explained 3.8% more of the variance and this change in R^2 was significant, $F(1, 114) = 12.733$, $p \leq .001$. Including total posttraumatic stress reported by the child welfare workers explained an additional 3.5% of the variance and this change in R^2 was also significant, $F(1, 113) = 10.494$, $p \leq .001$. When all three independent variables were entered into the model in step three, trauma history was no longer a significant predictor. In combination, the three independent variables accounted for 21.8% of the variance in the dependent variable. Table 3 summarizes these findings.

The next hierarchical regression model examined the dependent variable of intrusion and revealed that at step one child age did not contribute significantly to the model, $F(1,95) = 0.003$, $p = .957$. The addition of trauma history into the model explained 6.4% of the variance and this change in R^2 was significant, $F(1, 94) = 3.204$, $p \leq .05$. Including total posttraumatic stress reported by the

Table 3
Hierarchical Regression of Total Posttraumatic Stress (TSCC-A/TSCYC) from Child Welfare Workers' Trauma Screening Information.

Predictor	*B*	R^2	ΔR^2	*F*	ΔF
Step 1					
Child age	−0.381**	0.145	0.145	19.570**	19.570**
Step 2					
Child age	−0.347**				
Trauma history	0.196*	0.183	0.037	12.733**	5.183*
Step 3					
Child age	−0.346				
Trauma history	0.110				
Total PTS (worker)	0.207*	0.218	0.035	10.494**	5.100*

* $p \leq .05$.
** $p \leq .001$.

Table 4
Hierarchical Regression of Posttraumatic Stress-Intrusion (TSCYC) from Child Welfare Workers' Trauma Screening Information.

Predictor	*B*	R^2	ΔR^2	*F*	ΔF
Step 1					
Child age	−0.006	0.000	0.000	0.003	0.003
Step 2					
Child age	−0.007				
Trauma history	0.253*	0.064	0.064	3.204*	6.405*
Step 3					
Child age	−0.025				
Trauma history	0.083				
Total PTS (worker)	0.420**	0.211	0.147	8.266**	17.279**

* $p \leq .05$.
** $p \leq .001$.

child welfare workers explained an additional 14.7% of the variance and this change in R^2 was also significant, $F(1, 93) = 8.266$, $p \leq .001$. When all three independent variables were entered into the model in step three, neither child age or trauma history remained significant predictors. In combination, the three independent variables accounted for 21.1% of the variance in the dependent variable. Table 4 summarizes these findings.

The next hierarchical regression model examined the dependent variable of avoidance and revealed that at step one child age did not contribute significantly to the model, $F(1,95) = 0.350$, $p = .555$. The addition of trauma history into the model explained 12.5% of the variance and this change in R^2 was significant, $F(1, 94) = 6.737$, $p \leq .01$. Including total posttraumatic stress reported by the child welfare workers explained an additional 7.2% of the variance and this change in R^2 was also significant, $F(1, 93) = 7.609$, $p \leq .001$. When all three independent variables were entered into the model in step three, only child age was not significant as a predictor. In combination, the three independent variables accounted for 19.7% of the variance in the dependent variable. Table 5 summarizes these findings.

The final hierarchical regression model examined the dependent variable of arousal and revealed that at step one child age did not contribute significantly to the model, $F(1,95) = 1.996$, $p = .161$. The addition of trauma history into the model was also not significant, $F(1, 94) = 2.649$, $p = .076$. Including total posttraumatic stress reported by the child welfare workers did result in a significant change in R^2, $F(1, 93) = 3.120$, $p \leq .05$. When all three independent variables were entered into the model in step three, neither child age or trauma history was a significant predictor. In combination, the three independent variables accounted for 9.1% of the variance in the dependent variable. Table 6 summarizes these findings.

Additional analyses were conducted to determine the effect sizes attributable to the addition of step 3 (workers' assessments of total posttraumatic stress) in each of the four models. For the first model, Cohen's effect size value ($f^2 = 0.05$) indicated a small effect. For the second model, Cohen's effect size value ($f^2 = 0.19$) indicated a medium effect. For the third model, Cohen's effect size value ($f^2 = 0.09$) indicated a small effect. For fourth model, Cohen's effect size value ($f^2 = 0.04$) indicated a small effect.

Analyses were also conducted to further examine child welfare workers' abilities to screen for different types of traumatic stress symptoms. Given that the workers appeared less effective in their efforts to screen for symptoms of arousal as compared to intrusion and avoidance, further analyses of the children with clinically significant arousal scores (TSCYC, $T \geq 70$) was warranted. A series of *t*-tests were conducted to examine differences between these children and the rest of the sample. The children with clinical levels of arousal were found to be younger on average though this difference was not statistically significant. The children in the arousal group had significantly more exposure to different trauma types and higher traumatic stress reported by caregivers in all domains. Information was also available in this dataset from completed *Child Behavior Checklists* (CBCL) for these children. Children in the arousal group had higher scores on all problem scales included on the CBCL. A summary of these group differences is provided in

Table 5
Hierarchical Regression of Posttraumatic Stress-Avoidance (TSCYC) from Child Welfare Workers' Trauma Screening Information.

Predictor	*B*	R^2	ΔR^2	*F*	ΔF
Step 1					
Child age	−0.061	0.004	0.004	0.350	0.350
Step 2					
Child age	−0.044				
Trauma history	0.349**	0.125	0.122	6.737*	13.079**
Step 3					
Child age	−0.031				
Trauma history	0.230*				
Total PTS (worker)	0.294*	0.197	0.072	7.609**	8.306*

* $p \leq .05$.
** $p \leq .001$.

Table 6
Hierarchical Regression of Posttraumatic Stress-Arousal (TSCYC) from Child Welfare Workers' Trauma Screening Information.

Predictor	*B*	R^2	ΔR^2	*F*	ΔF
Step 1					
Child age	−0.143	0.021	0.021	1.996	1.996
Step 2					
Child age	−0.135				
Trauma history	0.181	0.053	0.033	2.649	3.255
Step 3					
Child age	−0.126				
Trauma history	0.094				
Total PTS (worker)	0.214*	0.091	0.038	3.120*	3.898*

** $p \leq .001$.
* $p \leq .05$.

Table 7
Comparison of Children with Elevated Arousal Scores on the TSCYC to the Rest of the Sample.

Variable	Arousal Group Mean/SD	Non-Arousal GroupMean/SD	*t*-scores
Child age	6.28/2.87	6.67/2.98	−0.766
Trauma history (number, types)	5.05/2.12	4.13/1.89	2.308*
TSCYC Intrusion	76.22/21.66	51.84/13.56	7.435**
TSCYC Avoidance	77.44/21.77	53.07/13.16	7.446**
TSCYC Total Trauma	75.09/22.49	49.26/9.89	8.016**
CWTRT Total Trauma	6.38/3.09	5.41/2.58	1.787
CBCL Emotional-reactivity	62.45/15.80	53.58/5.94	2.862**
CBCL Anxious-depressed	58.36/9.29	53.98/5.93	3.108**
CBCL Somatic complaints	56.91/8.08	53.54/5.79	2.649**
CBCL Withdrawn	59.35/9.99	55.40/8.04	2.444*
CBCL Sleep problems	60.03/13.44	52.72/4.10	2.826**
CBCL Social problems	59.81/9.64	55.58/5.87	2.075*
CBCL Thought problems	61.93/10.91	54.88/6.45	3.070**
CBCL Attention problems	62.15/11.41	55.71/7.69	3.665**
CBCL Rule-breaking behavior	62.59/9.98	55.79/6.58	3.174**
CBCL Aggression	62.50/14.59	56.35/8.87	2.739**
CBCL Affective problems	60.20/10.67	54.36/6.47	3.638**
CBCL Anxiety problems	60.00/10.29	54.57/6.83	3.435**
CBCL Pervasive dev. Problems	62.57/12.30	55.92/7.57	2.522*
CBCL ADHD problems	59.36/8.74	55.25/7.37	2.977**
CBCL ODD problems	61.02/10.81	55.43/6.59	3.431**
CBCL Conduct problems	64.48/11.24	57.29/8.08	2.926**

* $p \leq .05$.
** $p \leq .01$.

Table 7.

Frequency distributions of the CBCL scores for the arousal group were also examined to determine what other problems these children may be presenting clinically that could potentially interfere with the workers' abilities to screen for traumatic stress. The highest rates (33.3%) of clinically significant problems for the group overall were in the domains of emotional-reactivity, conduct and thought problems. Rule-breaking behavior (29.6%), attention problems (26.4%), affective problems (26.4%) and aggression (26.0%) were also frequently reported as clinically significant issues for the arousal group. Clinically significant pervasive developmental problems in the younger children from the arousal group were reported at a higher rate than in the full sample (38.5% versus 20.0%).

4. Discussion

The results from this study support that child welfare workers can be an effective resource for identifying maltreated children's traumatic stress symptoms. This implication, if confirmed through further research, is of enormous practical significance given that all children in the system have access to a child welfare worker even when they may not have a mental health professional or consistent caregiver available to assist with the trauma screening process. Child welfare workers have generally not been utilized in the trauma screening role in most systems potentially because the systems have not yet acquired a trauma-informed perspective, or due to concerns that workers may not have sufficient knowledge of a child to assist with the screening process. Examining the utility of child welfare workers as trauma screeners sheds light on ways to develop resources to address the public health issue of childhood trauma exposure and the consequences of adverse experiences for maltreated children. It also provides an opportunity to tailor training needs to improve workers' functionality in this role.

The analyses revealed a sample of children with high rates of multiple trauma exposures and traumatic stress, which supports the need for trauma screening and underscores the complexity of trauma screening with this group especially given their younger age overall (mean = 7.75, SD = 3.90). Findings in this area seemed generally consistent with previous research on the trauma experiences of maltreated children in terms of exposure and symptomatology. The children self-reported the lowest rate of clinically concerning posttraumatic stress symptoms at 21.1%, compared to the nearly identical rates reported for the sample by child welfare workers and caregivers which were approximately twice as high. Previous research has shown that younger children tend to underreport symptoms on self-reported trauma measures such as the TSCC-A (Butcher, Kretschmar, Lin, Flannery, & Singer, 2013). This was likely a factor affecting the results from this sample. However, in spite of possible underreporting by the children themselves, this remains a high rate of posttraumatic stress symptoms, much greater than would be expected in a sample of children from the general population where rates of PTSD are estimated between 3 and 6% (De, Bellis, Van, & Dillen, 2005).

Analysis of specific traumatic stress symptoms as reported by child welfare workers and caregivers revealed some interesting findings. Arousal was the symptom most frequently endorsed by both. However, child welfare workers endorsed this symptom approximately 11% more frequently than caregivers. While arousal was found to be a significant problem for children in this sample, this discrepancy with child welfare workers' reports may have been due to difficulties distinguishing between the more observable behavioral indicators of arousal and symptoms of other disorders such as Attention Deficit Hyperactivity Disorder (ADHD). The *Child Welfare Trauma Referral Tool* (CWTRT), a less sensitive screening tool than the clinical measures utilized, defines arousal for workers in terms that may promote higher estimations. The definition is as follows:

"These symptoms consist of difficulties with hypervigilance (an exaggerated awareness of potential dangers), difficulty concentrating, exaggerated startle reactions, difficulties falling or staying asleep, and irritability or outbursts of anger. Children with these symptoms often seem distractible, impulsive and inattentive, leading to a common misdiagnosis of ADHD" (Taylor et al., 2006, p. 3).

Further complicating matters, examination of the children with clinically elevated arousal scores revealed a complex picture. This group had significantly more trauma exposure types historically, higher rates of traumatic stress symptoms in other domains (total symptoms, intrusion, avoidance), and higher rates of symptoms reported on the problem scales of the CBCL. Similar to the sample overall, the arousal group presented a clinical profile of more intensely emotional, inattentive, aggressive and behaviorally challenging children. Pervasive developmental issues were also significantly higher among the young children in this group.

Previous studies have documented the breadth of symptoms associated with childhood trauma, particularly in children with multiple trauma exposures (D'Andrea et al., 2012). Co-morbidity with PTSD has been estimated at 40% or higher with co-occurring disruptive behavior, mood and anxiety disorders being common (Copeland, Keeler, Angold, & Costello, 2007; Ford et al., 2000). Differentiating between ADHD and traumatic stress in children is known to be particularly difficult, and it is not surprising that the least sensitive trauma screening tool utilized for this analysis produced higher rates in the domain of arousal (Becker-, Blease, & Freyd, 2008; Conway, Oster, & Szymanski, 2011; Szymanski, Sapanski, & Conway, 2011). However, this discrepancy is not problematic given that the child welfare workers' screening results would appropriately direct these emotionally and behaviorally dysregulated children to more comprehensive trauma assessments that would be able to make the necessary distinctions.

Findings from both bivariate and multivariate analyses confirmed many consistencies between the child welfare workers' and caregivers' screenings of child traumatic stress. While there were some significant relationships observed between caregiver and child reports of traumatic stress, there were not significant relationships noted between worker and child reports, which could be related in part to differences in the sensitivity of screening versus assessment measures. In general, child welfare workers were reporting the highest observations of distress while the children themselves were reporting the lowest rates. The discrepancy here was not unexpected especially given indications cited previously regarding underreporting on the TSCC-A, as well as previous research that demonstrates imperfect cross-informant overlap when assessing subtle internal states such as anxiety, depression and worry particularly with young children (Edelbrock, Costello, Dulcan, Kalas, & Conover, 1985; Silverman, Saavedra, & Pina, 2001; Southam-Gerow, Flannery-Schroeder, & Kendall, 2003). This may be what is reflected in the increased caregiver and worker reports of arousal symptoms which are more easily observed when manifested behaviorally, as opposed to the high rates of anxiety and dissociation reported by the children that are likely less discernible to outside observers.

The findings from the hierarchical regression models further indicate that if given an adequate screening mechanism that operationalizes traumatic stress terminology and organizes the workers' knowledge of a child's age, trauma exposure history and potential trauma symptoms indicated by a child's displays of emotion and behavior, child welfare workers appear similarly capable to caregivers at identifying traumatic stress in children from their caseloads. Child welfare workers demonstrated particular effectiveness with identifying symptoms of total posttraumatic stress, intrusion, and avoidance. Use of a more sensitive screening tool or additional training may be indicated to enhance consistency with the screening of arousal. In terms of workers' abilities to predict symptoms of total posttraumatic stress, the domain where they appeared most effective, information regarding age and observations of potential trauma symptoms were the most significantly predictive factors. A negative relationship was noted with age, indicating that the younger children in the group were observed to be more symptomatic. This is consistent with some studies that have found age to be a risk factor for maltreated children with higher rates of traumatic stress being reported at both ends of the age continuum; in very young children and older adolescents (Fusco & Cahalane, 2013; Griffin et al., 2012; Kolko et al., 2010). This was a younger sample of children overall, and a sample of children exhibiting high rates of clinically concerning problems in a variety of domains. The correlational and additional analyses conducted suggested that age not only had an inverse relationship with traumatic stress symptoms, but also with trauma exposure. This indicates that special attention to trauma screening is warranted for younger children with more complex trauma exposure histories.

Significant predictors in the subsequent models were noted as well. Following total posttraumatic stress, the child welfare workers

were most effective at predicting symptoms of intrusion. Trauma history was a significantly predictive factor in this model, which is likely due to this category of symptoms being more directly linked to the child's particular history of exposure. Knowledge of the child's trauma history would plausibly improve the workers' abilities to correctly identify intrusive symptoms such as distressing images, thoughts or memories of traumatic events. Lastly, the workers were only slightly less effective at predicting symptoms of avoidance. Trauma history and potential trauma symptoms were significant factors. The importance of having knowledge of a child's trauma history was also likely critical in that without this knowledge as context, it would be more difficult or even impossible to identify a child's efforts to avoid reminders of those events. These findings support having child welfare workers routinely engage in the practice of constructing thorough trauma exposure histories for children from their caseloads in order to enhance their conceptualizations of child mental health and trauma recovery needs.

5. Limitations

While this study provides some useful insights into the experiences of a sample of children in the child welfare system and efforts to screen them for symptoms of traumatic stress, there are some notable limitations. First, this was not a randomly selected sample that can be assumed to be fully representative of the child welfare population and the sample represents children and workers from one state, thus generalizability is limited. The sample utilized for this study does, however, present an age profile of being younger with average ages between 6 and 8 years and the high rates of multiple trauma exposures confirmed by other surveys of the general child welfare population indicating similarities regarding factors known to affect traumatic stress outcomes (Child Welfare Information Gateway, 2015; Kolko et al., 2010). In spite of these similarities, there could be important cultural or geographical differences not fully captured in this study.

The sample size was also limited due to many children being too young to complete their own trauma measures or for caregivers to complete a measure on their behalf for comparison to the child welfare workers' screenings. Also, adolescents were ineligible for inclusion in the three models testing outcomes of intrusion, avoidance and arousal due to the age cutoff for the measure utilized. While power analysis confirmed the sample sizes were sufficient for the models tested, the generally smaller sample prohibited the inclusion of additional variables that may have further enhanced the analyses such as interaction terms regarding age-trauma history and age-total PTS reported by workers. The significant number of young children represented in the child welfare population does present challenges to data collection regarding mental health and traumatic stress in particular. Future development of additional trauma screening and assessment tools for younger children would be beneficial for both clinical and research endeavors, and seems indicated given findings of high rates of traumatic stress among younger maltreated children (Fusco & Cahalane, 2013; Kolko et al., 2010). Increasing the number of children able to complete their own measures in future studies and including other self-report measures that measure specific symptoms of traumatic stress would assist with clarifying issues of accuracy in screening protocols.

There were also limitations regarding the data available about the child welfare workers and caregivers conducting the screenings or completing clinical measures. Important factors regarding the workers' educational status, previous trauma training exposure, years of professional experience and length of the relationship with the child were unknown and may have influenced the manner in which they approached the screening process. Similarly, information regarding the caregivers who served as informants was unknown. Possible relevant factors include the nature of their relationship to the child (biologic parent, foster parent, relative caregiver), length of the relationship, and exposure to trauma training or related information. While previous research provides a general profile of most child welfare workers that is useful context for considering possible implications of this research (i.e. the majority are female, 25–44 years old, Caucasian, have an average of 5 years of child welfare experience and report a bachelor's degree as their highest level of educational attainment), less is known about the population of foster and relative caregivers in these domains other than it can be assumed that the foster parent respondents have had some form of training on basic child care and development (Child Welfare League of America, 2017; Dolan, Smith, Casanueva, & Ringeisen, 2011; Whitaker, 2012).

No other studies that specifically relied on child welfare workers as the informants and examined their effectiveness in this capacity were found in the existing literature. In order to better understand this phenomenon, additional studies should be conducted that examine child welfare workers' effectiveness as trauma screeners, various aspects of their screening process, attributes of the workers themselves that may influence the process, associated trauma training factors, the use of different screening tools, organizational support and outcomes for children who receive trauma screening services from their workers. Targeted research on the use of the CWTRT and other screening and decision-making tools designed for child welfare, such as the *Child and Adolescent Needs and Strengths* (CANS) tool (Lyons, 2009) should be pursued in order to not only examine worker effectiveness with regard to trauma screening, but also the effects of screening on child welfare decision making and improving outcomes for children via trauma-informed care. Studies that are designed to control for caregiver informant variables would also be beneficial. Furthermore, additional studies that include larger sample sizes should be pursued in order to enhance the complexity of statistical analyses employed given that this was a limiting factor of the present study.

6. Conclusion

In sum, this study lends further support for the integration of trauma-informed policies and practices in child welfare. The children in this study were found to experience high rates of trauma exposure and traumatic stress symptoms when screened by their child welfare workers.

The primary practice implications from this study include further support for trauma screening with maltreated children and the potential that child welfare workers seem to possess to meet this need. Workers' access to information regarding the child's age,

trauma exposure history and potential indicators of traumatic stress appears to be sufficient, if given an accurate structure or screening mechanism, to identify children requiring a more comprehensive trauma assessment and possible intervention. Although conducting universal trauma screenings in child welfare systems has been well established as a best practice recommendation given that it is the system serving the highest percentage of trauma-exposed youth, this has yet to be fully realized as a standard of care (Ko et al., 2008). In fact, recent studies show that most child welfare systems do not provide any form of universal mental health screening for children entering foster care in spite of the obvious maltreatment, loss and disruption they have experienced and the established literature regarding high rates of traumatic stress and other psychological conditions affecting this population (Levitt, 2009). Because of advancements in mental health technologies and the development of trauma-informed caregiving curriculums designed to promote the recovery of trauma-exposed youth, there are many resources available to assist maltreated children if they can be identified in a timely manner. Child welfare workers, mental health professionals, foster-adoptive parents and courts can serve important functions in promoting post-trauma recovery if operating from a trauma-informed paradigm (Conners-Burrow et al., 2013; Henry et al., 2011; Kramer et al., 2013). Effective trauma screening protocols provide critical entry points for initiating trauma-informed care and decision-making, and child welfare workers in this study appeared capable of facilitating this process.

The implementation of trauma screening protocols in child welfare poses significant challenges. Previous research has cited implementation barriers such as inadequate training on administration of screenings and utilization of screening information, insufficient time to administer the screening tools, and concerns about secondary traumatic stress from asking children about their trauma histories (Conradi, Wherry, & Kisiel, 2011). First, trauma-informed care training for child welfare workers should be made available not only to promote effective screening practices, but also to educate them on how to utilize this information to guide decision-making in a manner appropriate to their scope of practice. Some important training issues to promote effective trauma screening in child welfare include the impact of trauma on children and child development, trauma reminders, creating psychological safety to reduce the impact of trauma, ways service delivery may exacerbate trauma's effects on children, how to facilitate access to specialized mental health services for children when indicated, and how to communicate trauma information to caregivers and others involved in the child's life (Conners-Burrow et al., 2013; Conradi et al., 2011; Kramer et al., 2013; NCTSN, 2015). Based on the findings of the present study, it appears an additional focus of training should be on issues of co-morbidity and how to accurately screen for the different symptomatic presentations of traumatic stress. A specific focus on indicators of arousal and how these symptoms may present in children is indicated. Workers should be advised to consider temporal sequencing with regard to trauma exposure and onset of symptomatology to help distinguish between the behavioral indicators of arousal and the externalizing symptoms of other conditions.

There also appears to be a need to include information regarding the prevention and management of secondary traumatic stress given that this is an identified concern regarding the trauma screening process and is a particularly salient issue for child welfare workers in general. One study found that workers reported issues of secondary traumatic stress and burnout were so significant that they prevented them from being able to focus on learning new protocols and integrating the trauma paradigm as they were operating in "survival mode" (Henry et al., 2011). The supportive training cited in this study was revised in response to this finding to start with addressing secondary traumatic stress and related concerns in order to increase staff responsiveness to issues of trauma and how to integrate them into their work. Another recommendation from the field is to provide workers a forum for discussing their experiences of conducting trauma screenings, especially in the early stages of implementing a trauma screening protocol (Chadwick Trauma-Informed Systems Project, 2013). This has not only been found to provide clarity regarding trauma screening practices and increase fidelity, but to also address potential secondary traumatic stress or related concerns.

There are other practical issues and barriers that need to be addressed in order to promote effective implementation of trauma screening protocols in child welfare. Helping workers integrate trauma screening questions into current practices and utilize existing datasets is indicated given the time and resource constraints prevalent in this system that would likely prohibit protocol expansion and increased documentation demands. Also, helping workers use trauma information to communicate caregiving needs, provide related psychoeducation to foster parents and help children access needed trauma interventions from an established database of trained clinicians may reduce time spent on managing multiple placement disruptions and treatment failures (Chadwick Trauma-Informed Systems Project, 2013; Conradi et al., 2011). However, even with extensive training and advisement on restructuring current protocols, child welfare workers would benefit from ongoing consultation to assist them with effectively utilizing data gathered from the trauma screening process. Collaboration and coaching from knowledgeable mental health providers or consultants can facilitate the application and use of trauma data not only to connect children to comprehensive assessments and evidence-based interventions if necessary, but also to enhance decision-making in numerous areas that potentially support or undermine a child's ability to recover from trauma and the prevention of future maltreatment. These areas include evaluating and intervening with the caregiving system in order to determine goodness of fit, and ultimately making trauma-informed decisions about placement, visitation and reunification with these child factors in mind (Conradi et al., 2011; Henry et al., 2011).

Perhaps most importantly, implementing trauma screening protocols would allow for a greater focus on the child well-being aspect of the child welfare system's three part mission to promote safety, permanency and well-being. At least one study has shown that the use of trauma-informed instruments and screening tools in child welfare facilitates increased use of trauma-language and helped incorporate this information into decision making across domains (Henry et al., 2011). In essence, creating a trauma-informed system would promote child resiliency by increasing children's interactions with individuals who understand, support and believe in them (Chadwick Trauma-Informed Systems Project, 2013). Promoting resiliency is the desired outcome of implementing trauma-informed care, all beginning with the necessary screening of the child's trauma exposure history and its impact to guide the complex series of decisions and interactions that follow the identification of maltreatment.

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