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## Understanding trauma experiences and needs through a comprehensive assessment of transition age youth in child welfare

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### ABSTRACT

**Background:** In the context of child welfare, Transition Age Youth (TAY) have high rates of trauma experiences (TEs) and are more likely to exhibit negative outcomes as they transition into adulthood.

**Objective:** This study describes the frequency and distribution of TEs among TAY in child welfare, as a whole and across sex and race/ethnicity. This study also examines the relationship between TEs and Child and Adolescent Needs and Strengths (CANS) needs.

**Participants and setting:** Participants included 3324 TAY (14.5 to 21-year-olds) who were under the care of the Illinois Department of Child and Family Services (IDCFS) and in out-of-home care for at least one year.

**Methods:** The CANS was the primary measure for this study. Administrative and clinical data were examined for youth who met the identified criteria. Pearson's chi-square tests of association were conducted to determine differences in TEs across race/ethnicity and sex. Negative binomial regressions were used to determine the association between TEs and needs.

**Results:** Most TAY had at least one TE (91%) and the majority had four or more TEs (52%). Significant differences occurred in relation to sex and race/ethnicity. Furthermore, TEs were significantly associated with needs across all CANS domains examined (e.g., behavioral/emotional needs, life domain functioning).

**Conclusions:** This is one of the few empirical studies to examine TEs and related functional, behavioral, and emotional needs of TAY in child welfare. Overall, findings suggest a need for improving trauma-informed approaches and interventions that serve TAY.

### 1.1. The effect of trauma in child welfare

In 2017, over 442,000 youth were in the child welfare system in the United States. Youth may enter the child welfare system due to a range of factors such as physical abuse, sexual abuse, neglect, or parental death, disability, incarceration, or drug use. Given the circumstances under which youth come into child welfare, most have experienced at least one traumatic event at the time of entry

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(Greeson et al., 2011; Ko et al., 2008), and they are often exposed to chronic, interpersonal trauma (i.e., physical abuse, sexual abuse, neglect, witnessing domestic violence; Kisiel, Fehrenbach, et al., 2009; Cook et al., 2005).

The developmental impact of childhood trauma has gained attention over the last two decades. The well-known Adverse Childhood Experiences (ACEs) Study, which examined experiences of both childhood trauma and adversity, found that each additional type of exposure had a dose-like effect on increasing risk for negative physical and mental health outcomes in adulthood (Felitti et al., 1998). Research has also shown that experiencing trauma in childhood alters the development of several areas of brain functioning and development including those responsible for regulating and processing emotions, cognition, fear, and threat (McCrory et al., 2011; Pechtel & Pizzagalli, 2011).

Given the pervasive impact of childhood trauma, there has been greater interest in understanding the experiences of high-risk populations, such as youth in foster care. One study found that youth in child welfare who experienced repeated interpersonal traumas were more likely to experience significant traumatic stress symptoms, emotional and behavioral needs, and a greater likelihood of placement disruptions (Kisiel, Fehrenbach, et al., 2009). Additionally, placement disruptions have been linked to negative long-term outcomes such as behavioral problems, decreased well-being, and developmental difficulties (Newton et al., 2000; Rubin et al., 2007; Ryan & Testa, 2005). Other studies of foster youth have also found that as the number of TEs increased, the number of mental health symptoms, risk behaviors, and functional impairments also increased (Griffin et al., 2009; Griffin et al., 2011; Kisiel et al., 2014; Kisiel et al., 2017). While existing research has illustrated the relationship between high rates of TEs and associated negative outcomes for foster youth in general, there is limited investigation into TEs and outcomes among older foster youth. This group, often referred to as transition age youth (TAY), may be at higher risk of negative outcomes as they prepare to transition out of child welfare.

### 1.2. Outcomes of youth transitioning out of child welfare

Transition age youth (TAY) are a large subpopulation of youth in child welfare, comprising nearly one fourth of the entire population (US DHHS, 2018). While states and systems use differing definitions, TAY usually include youth who are transitioning from adolescence to adulthood, often out of systems, and generally fall within the age range of 14 to 26 years old. TAY are typically considered a vulnerable subpopulation within child welfare, as research has indicated TAY often have poor outcomes after exiting from the system. Studies of youth that have exited foster care show that TAY have high rates of homelessness, decreased employment rates, low rates of high school graduation, and high rates of arrests, when compared to same-aged peers. (Berzin et al., 2011; Boonstra, 2011; Courtney et al., 2007; Courtney et al., 2011). Furthermore, system-involved, older youth are more likely than their same-aged peers to experience poor health, premature parenthood, and addiction as adults (Mittler & Jackson, 2002; Simon & Owen, 2006).

Negative outcomes for TAY may be related, in part, to unaddressed trauma (Conradi et al., 2011; Salazar et al., 2013), partially evidenced by high rates of PTSD in this subpopulation. A study of 17- to 18-year-old foster youth reported a prevalence rate of 14–16% for PTSD, nearly twice as high as same-age peers in an urban setting (Keller et al., 2010; Merikangas et al., 2010). Despite this high rate of diagnosis, rates of mental health service use for TAY decline during and after the time of transition from child welfare (McMillen & Raghavan, 2009). Identifying the effects of trauma through assessment and service planning, however, may help overcome this treatment barrier (Kisiel, Blaustein, et al., 2009). By exploring TEs and related outcomes for TAY, we can better understand the lasting effects of trauma and how services can support TAY in overcoming those effects.

### 1.3. Current understanding of trauma in TAY

To date, studies have shown high rates of TEs among TAY, with over 80% experiencing at least one trauma, and the majority suffering at least two (Lehmann et al., 2020; Salazar et al., 2013). Some studies suggest that sex and race/ethnicity may impact the types of trauma experienced among TAY. Findings indicated that female foster youth were more likely to experience sexual trauma (Salazar et al., 2013; van Berkel et al., 2020) and emotional abuse (van Berkel et al., 2020), while male foster youth were more likely to experience interpersonal violence, witness others being hurt or killed, and survive a natural disaster (Rebbe et al., 2017; Salazar et al., 2013). Further, higher rates of physical abuse and sexual abuse have been reported among white foster youth, while higher rates of witnessing traumatic events, such as observing someone be injured or killed, were reported among African American foster youth (Salazar et al., 2013). Additionally, youth with multiple, chronic TEs were more likely to report homelessness, depressive symptoms, PTSD symptoms, risky sexual behavior, drug and alcohol abuse, selling drugs, gang membership, and engagement in other criminal activities (Rebbe et al., 2017).

While previous research has shown high rates of trauma among TAY and has begun to examine related outcomes, more investigation is needed. Previous studies of TAY have restricted age criteria, for instance, to only investigating the experiences of youth who are closest to aging out (i.e., 17- and 18-year-olds). By excluding youth at the beginning of their transition period (i.e., 15 to 17-year-olds), research may be missing a critical prevention or intervention period. Additionally, much of the previous research on TAY utilized data collected solely from the Midwest Evaluation Study (Courtney et al., 2007). While this study and subsequent research using the same study sample has helped to establish foundational knowledge of TAY experiences and outcomes, continuing to use this study sample poses constraints related to generalizability. Moreover, given that baseline data were collected in 2002, the findings may not reflect the current situation of TAY. Knowing that TAY have high exposure to trauma and heightened risk of negative outcomes after transition, there is a growing need to develop and implement trauma-informed services and resources to effectively meet the present needs of this subpopulation. Gaining a better understanding of the experiences and needs of TAY is critical to applying trauma-informed practices effectively and, ultimately, improving outcomes.

#### 1.4. Addressing trauma in child welfare

As awareness of ACEs and related consequences has increased, so too has awareness of the need for trauma-informed services and systems of care. In recent years, identification, assessment, and treatment of trauma among child welfare-involved youth has increased (Conradi et al., 2011). Also, in 2011, federal legislation was introduced requiring that child welfare agencies address trauma by developing case plans which meet the mental health needs of foster youth (Casey Family Programs, 2011). Child-serving systems have also shown an increased desire to expand training and implement trauma-informed care (Hanson & Lang, 2016; Ko et al., 2008). Nevertheless, when children enter foster care, agencies often focus on behavioral and emotional reactions (i.e., high-risk behaviors, externalizing behaviors, etc.), rather than focusing on treating the underlying trauma (Greeson et al., 2011; Kisiel et al., 2014). Shifting the focus to addressing underlying trauma-related issues, however, can further improve symptoms and lead to lasting gains (Deblinger et al., 2010). Although general knowledge of trauma-informed practices has increased across child welfare systems, as well as the number of recommendations for addressing trauma in practice, child welfare agencies continue to face challenges and barriers in fully implementing practices (Connell et al., 2019; Donisch et al., 2016; Lang et al., 2016). As efforts to address trauma in child welfare populations continue to grow, increased exploration of the connection between trauma and outcomes in specific subpopulations would be beneficial for tailoring interventions.

#### 1.5. The present study

The goal of the present study was to describe the frequency and distribution of different types of TEs among TAY in child welfare, overall and in relation to sex and race/ethnicity. This study also aimed to examine whether trauma exposure was associated with traumatic stress symptoms, functional difficulties, behavioral and emotional needs, risk behaviors, readiness for transition, and number of placements for TAY. Lastly, this study sought to better understand TAY by exploring the frequency and distribution of specific needs in the domains above. Aligned with previous research findings discussed previously, we hypothesized that trauma exposure would be highly prevalent in our sample and that patterns of trauma exposure would differ across sex and race/ethnicity. Further, we hypothesized that a higher number of trauma exposures and higher levels of severity or chronicity of trauma would be associated with an increase in needs and number of placements for TAY.

## 2. Method

### 2.1. Participants

The study sample included youth who were under the care of the Illinois Department of Child and Family Services (IDCFS) and in out-of-home care for at least one year; who had a Child and Adolescent Needs and Strengths (CANS) 2.0 assessment (Lyons et al., 2008) completed during fiscal year 2017 (July 1, 2016 to June 30, 2017); and who were between 14.5 and 21 years of age at the time of assessment ( $N = 3392$ ). Additionally, we limited the sample to youth who were identified as African American, Hispanic, or non-Hispanic White given the number of Asian American ( $n = 36$ ) and Native American ( $n = 8$ ) youth was too small to easily allow for generalization or sound comparisons. Finally, we excluded youth with missing data for the main variables of interest ( $n = 24$ ). The final total study sample included 3324 youth.

### 2.2. Ethics

The Northwestern Institutional Review Board and IDCFS approved this study and its related data extraction and analysis. A waiver of consent and parent permission was granted as this is a retrospective data review study that involved no more than minimal risk to youth using administrative and clinical data that would be collected regardless of this study.

### 2.3. Measures and data sources

#### 2.3.1. IDCFS Child and Youth Central Information System (CYCIS) administrative data

Administrative data were extracted from the IDCFS Child and Youth Central Information System (CYCIS) for youth meeting the above criteria. These data included demographic variables, dependent and independent variables, and covariates, explained in detail below.

#### 2.3.2. Child and Adolescent Needs and Strengths (CANS)

The IDCFS CANS 2.0 was the primary measure used for this study and was completed for each participant during fiscal year 2017. The IDCFS CANS 2.0 is a multi-purpose, information integration tool that is designed to support care planning, facilitate quality improvement, and monitor service outcomes (Praed Foundation, 2017). A clinician, clinical screener, or caseworker completes the CANS by integrating data from multiple sources. These may include interviews with the child and caregivers, self-report questionnaires from the child, caregiver, and teacher, provider observations, review of case records, and the clinical judgment of a clinician. The CANS is typically completed within 45 days of a youth entering foster care (Lyons, 2009) and can be used to reassess youth every 6 months, at the termination of foster care and/or mental health services, and during decision points such as placement changes, placement, interruptions or disruptions, and for crisis intervention (Rosanbalm et al., 2016).

The IDCFS CANS 2.0 includes 139 items across 8 domains and is used as the primary tool within IDCFS to evaluate child and caregiver needs and strengths in relation to treatment and services. The IDCFS CANS 2.0 is scored based on a clinically anchored scoring system according to two criteria: (a) the level of strength or impairment and (b) the degree of urgency for intervention. Across the domains of the CANS, the child and caregiver are rated on a four-point scale based on needs and strengths over the past 30 days (Lyons, 2009): '0' indicates no evidence of impairment or need, or a centerpiece or core area of strength = No need for action plan on needs; '1' indicates a mild degree of difficulty or need, or a useful strength = Plan for watchful waiting to see whether action or prevention planning is needed; '2' indicates a moderate level of difficulty (need) or a potential strength = Plan for action/intervention; '3' indicates a severe level of difficulty or no identified strength = Plan for immediate or intensive action/intervention (for further details and examples on scoring across domains, see Lyons, 2009). For all items and domains, higher scores represent greater difficulties or fewer strengths. Clinically significant or "actionable" scores are those rated as '2' or '3' on any of the needs items. Domains are scored by summing all scores for items within each of the eight domains. The CANS is not intended, however, to offer a total or overall score or to be used as a diagnostic tool (Praed Foundation, 2017). For information on the specific items, domains, scoring, or administration, please refer to earlier publications (Lyons, 2009; Praed Foundation, 2017).

Research on the CANS has offered evidence for its reliability and validity at the item and domain levels and across multiple settings, including child welfare and behavioral health settings (Anderson et al., 2003; Anderson & Estle, 2001; Kisiel et al., 2018; Lyons, 2004; Praed Foundation, 2017). In one sample of more than 80,000 trainees, the average inter-rater reliability of the CANS was 0.78 when using case vignettes and 0.84 to above 0.90 when using case records and live cases respectively (Lyons, 2009). Likewise, the CANS maintained good inter-rater reliability across various populations and service settings (intraclass correlation of 0.81; Kisiel et al., 2018).

The CANS is also a valid tool for measuring youth and caregiver needs and strengths, supporting level of care decisions across programs, predicting service utilization and costs, and evaluating outcomes of clinical interventions, services, and programs (Anderson & Estle, 2001; Lyons, 2004, 2009). Furthermore, CANS scores have been used to assess the prevalence of TEs and how they relate to outcomes. TEs on the CANS are significantly associated with risk behaviors, traumatic stress symptoms, life domain functioning, and emotional and behavioral needs for youth in child welfare (Griffin et al., 2009; Kisiel et al., 2017; Kisiel et al., 2018; Kisiel, Fehrenbach, et al., 2009).

## 2.4. Variables

### 2.4.1. Sex and race/ethnicity

Sex and race/ethnicity are categorical variables as defined and reported by the IDCFS administrative data at the time of the CANS assessment. Sex categories include male and female. Race/ethnicity categories include African American, Hispanic, and Non-Hispanic White.

### 2.4.2. CANS trauma experiences (TEs) domain score

Unlike other domains of the CANS where needs are scored based on the past 30 days, the TEs domain score is based on lifetime exposure of trauma and includes the following items: neglect, emotional abuse, physical abuse, sexual abuse, witness to family violence, parent criminal behavior, witness/victim to criminal activity, community violence, school violence, medical trauma, being affected by war, experiencing a natural or man-made disaster, or being affected by terrorism. For more specific information on these domain items, please refer to earlier publications (Lyons, 2009; Praed Foundation, 2017).

Scoring on the TEs domain has the same overall framework as CANS scoring described above, but with slightly different anchors: a score of '0' indicates no evidence of trauma exposure in a given area; a score of '1' can indicate a single incidence of trauma, a less severe form of trauma, or an area where trauma is suspected but with no confirming evidence; a score of '2' indicates the experience of multiple traumas or moderate degree of trauma; and a score of '3' indicates chronic, repeated, or severe patterns of a particular trauma that may have resulted in medical or physical consequences. Therefore, the TEs domain score is sensitive to severity and chronicity of TEs.

### 2.4.3. Number of trauma experiences (TEs)

The number of TEs variable was calculated by totaling the number of items in the CANS TEs domain scored above a '0,' indicating varying degree of or suspected exposure to that TE. Creating a variable that counted the number of TEs (aside from chronicity, severity, or type of trauma) was informed by the ACEs literature (Felitti et al., 1998).

### 2.4.4. CANS needs domains

The CANS manual defines needs as areas in life where youth require help or serious intervention (Praed Foundation, 2017). Across the CANS, specific needs are grouped under relevant domains described below. Although this study does not analyze specific needs at the item level, the frequencies and distributions of specific item-level needs were reported for two main reasons: 1) To provide context regarding the specific items in each dependent variable domain and the weight each item contributes to the overall domain score; and 2) To better understand the specific behavioral, emotional, and functional needs of TAY in more depth.

Several CANS needs domains were examined for the purposes of this study. The CANS traumatic stress symptoms domain describes a range of reactions that children and adolescents may exhibit to a variety of TEs; life domain functioning domain describes how youth are doing in their various environments or life domains and describes needs that pertain to functioning in everyday living; child behavioral and emotional needs domain identifies the behavioral health needs of the youth; child risk behaviors domain identifies

problem areas that can get youth in trouble or put them in danger of harming themselves or others; and the transition to adulthood domain includes important to areas to assess as youth transition from adolescence in child welfare to adult independence. Most CANS items assess needs or behaviors within the past 30 days; however, for certain risk behaviors, the timeframe impacts the rating and thus, the level of need. For instance, for suicide risk, a rating of '3' would indicate current and suicidal ideation and intent in the past 24 h while a '2' would indicate recent (last 30 days) but not acute (today) suicidal ideation or gesture. For runaway risk, a rating of '3' indicates a child who has run away from home or treatment settings within the last seven days or twice or more overnight during the past 30 days; while a '2' would indicate a child who has run away from home or a treatment setting once in the past year (for more detailed information on each item and scoring, please see [Lyons, 2009](#)).

#### 2.4.5. Number of placements

Number of placements was operationalized as the number of placements, or moves, a youth experienced during their time in child welfare for a particular foster care episode. For instance, if a youth was in foster care, returned home, and then reentered foster care, number of placements only captured the number of moves beginning when the youth reentered foster care. Number of placements did not include placement interruptions due to temporary stays in hospitals, runaways, respite care, juvenile detention centers, or mental health facilities. Number of placements is a well-studied predictor for longer-term outcomes ([Newton et al., 2000](#); [White et al., 2007](#); [Wulczyn et al., 2003](#)) and was included as a preliminary step in understanding how trauma might impact longer-term outcomes for TAY.

#### 2.4.6. Sex, race/ethnicity, years in child welfare

Sex and race/ethnicity were used as covariates for regression models as previous studies have shown significant differences in outcomes among foster youth based on these variables ([Aarons et al., 2008](#); [Ryan & Testa, 2005](#); [Summersett et al., 2019](#)). Years in child welfare refers to how long the youth has been in custody of the IDCFS during this care episode at the time of the CANS assessment. Years in child welfare were used as a covariate in regression models because older youth have been shown to spend more time in foster care ([Lee & Berrick, 2014](#)) and have greater likelihoods of "aging out" or transitioning out of foster care to adulthood ([Gibson et al., 1984](#)). Furthermore, the amount of time in foster care can impact number of placements ([Barber & Delfabbro, 2002](#); [Wulczyn et al., 2003](#)), a dependent variable in this study.

### 2.5. Statistical analysis

Preliminary analyses consisted of running frequencies and descriptive statistics on the identified variables of interest, including CANS domain total scores. Domain totals were tabulated by adding up scores for each item in a given domain (from 0 to 3). For TEs, the domain total score represents both total number of TEs and also the chronicity/severity of TEs, as noted above. For the CANS needs domains, this total score represents both the total number of symptoms/needs and also their severity. A list of items within each domain and their distributions across TAY in this sample are included below. Individual TEs were compared by demographic characteristics, sex and race/ethnicity of youth, using two-tailed Pearson's chi-square tests of association. For each chi-square test, significance levels were adjusted using the Bonferroni adjustment to correct for alpha error accumulation, such that results were designated as significant if  $p < .05/40$ , since 40 chi-square tests were performed. Negative binomial regressions were then used to test the associations between trauma and each dependent variable separately across two types of models where the independent variable was either (1) the TEs domain score or (2) number of TEs. Negative binomial regressions were chosen because dependent variables were mostly count variables and all were positively skewed with conditional variances exceeding conditional means. Negative binomial regressions are often used when modeling data with count variables because they do not rely on assumptions of normality or consistency of variance ([McCullagh & Nelder, 1983](#)). We ran both model types as unadjusted and then adjusted for years in foster care, sex, and race/ethnicity. All analyses were performed using R software (version 1.2.5033) and accompanying packages. For each negative binomial regression, the Bonferroni adjustment was also applied, such that results were designated as significant if  $p < .05/24$ , since 24 regressions were performed.

**Table 1**  
Characteristics of sample.

| Characteristic     |          |     | Age in years |           | Years in child welfare |           | Number of placements |           | Number of traumatic experiences (TEs) |           |
|--------------------|----------|-----|--------------|-----------|------------------------|-----------|----------------------|-----------|---------------------------------------|-----------|
|                    | <i>n</i> | %   | <i>M</i>     | <i>SD</i> | <i>M</i>               | <i>SD</i> | <i>M</i>             | <i>SD</i> | <i>M</i>                              | <i>SD</i> |
| Total sample       | 3324     | 100 | 18.1         | 1.9       | 5.5                    | 3.9       | 6.8                  | 4.8       | 3.9                                   | 2.5       |
| Female             | 1638     | 49  | 18.1         | 1.9       | 5.2                    | 3.7       | 7.1                  | 5.0       | 4.0                                   | 2.5       |
| Male               | 1686     | 50  | 18.0         | 1.9       | 5.9                    | 4.1       | 6.6                  | 4.7       | 3.8                                   | 2.5       |
| African American   | 1931     | 58  | 18.3         | 1.9       | 6.0                    | 4.3       | 7.5                  | 5.1       | 3.9                                   | 2.6       |
| Hispanic           | 263      | 8   | 17.8         | 1.8       | 5.3                    | 3.6       | 5.7                  | 4.4       | 4.0                                   | 2.3       |
| Non-Hispanic White | 1130     | 34  | 17.8         | 1.8       | 4.7                    | 3.1       | 5.8                  | 4.2       | 4.0                                   | 2.4       |

### 3. Results

#### 3.1. Sample demographics

Table 1 describes sample demographics and other notable characteristics. The total sample included 3324 participants. Approximately 51% of the sample ( $n = 1686$ ) were identified as male, while 49% ( $n = 1638$ ) were identified as female. Approximately 58% ( $n = 1931$ ) were identified as African American, 34% as Non-Hispanic White ( $n = 1130$ ), and 8% as Hispanic ( $n = 263$ ). The mean age at the time of CANS assessment was 18.1 years old ( $SD = 1.9$ ; range: 14.5–21). At the time of our study, TAY had spent an average of 5.5 years in the child welfare system ( $SD = 3.9$ ; range: 1–20.8) with an average of 6.8 placements ( $SD = 4.8$ ; range: 1–33).

#### 3.2. Trauma experiences (TEs)

On average, TAY in our sample experienced an average of 3.9 different types of trauma ( $SD = 2.5$ ; range: 0–13) on the CANS (see Table 1). Females ( $M = 4.0$ ;  $SD = 2.5$ ) had slightly more TEs than males ( $M = 3.8$ ;  $SD = 2.5$ ), and African American TAY ( $M = 3.9$ ;  $SD = 2.6$ ) had slightly fewer TEs than Hispanic TAY ( $M = 4.0$ ;  $SD = 2.3$ ) or Non-Hispanic White TAY ( $M = 4.0$ ;  $SD = 2.4$ ). Table 2 describes the number of TEs in the total sample and by sex and race/ethnicity: 91% ( $n = 3024$ ) had at least one TE, while the majority (53%;  $n = 1766$ ) had 4 or more different TEs. Exposure was comparable across demographic groups.

#### 3.3. Trauma experiences (TEs) in total sample and by demographics

Table 3 describes specific types of TEs among TAY. In the total sample, the most common TE was neglect (74%) while the least common was exposure to natural or man-made disasters (1%) and terrorism (1%). The most common chronic, repeated, and/or severe TEs among TAY were sexual abuse (7%) and neglect (7%). About one-half of TAY in the sample had exposure to emotional abuse (55%), family violence (46%), and physical abuse (45%) and more than one-third had exposure to parent criminal behavior (40%), sexual abuse (36%), and being a witness/victim to criminal activity (34%).

Tables 4 and 5 and Fig. 1 represent frequencies and chi-square results for TEs by sex (see Table 4) and race/ethnicity (see Table 5). Female TAY had significantly higher exposure to emotional abuse (59% vs 51%;  $\chi^2(1, N = 3324) = 21.09, p < .001/40$ ) and sexual abuse (46% vs 25%;  $\chi^2(1, N = 3324) = 156.18, p < .001/40$ ). Male TAY had significantly higher rates of exposure to community violence (23% vs 30%;  $\chi^2(1, N = 3324) = 20.81, p < .001/40$ ) and school violence (14% vs 20%;  $\chi^2(1, N = 3324) = 19.23, p < .001/40$ ). Exposure to physical abuse, medical trauma, and witnessing family violence did not differ significantly across any race/ethnicity group comparisons. When comparing African American with Hispanic TAY, African American TAY had significantly higher rates of exposure to community violence (34% vs 24%;  $\chi^2(1, N = 3324) = 10.74, p < .05/40$ ), while Hispanic TAY had significantly higher rates of exposure to witnessing or being a victim to criminal activity (43% vs 57%;  $\chi^2(1, N = 3324) = 19.06, p < .001/40$ ). When comparing African American TAY and Non-Hispanic White TAY, Non-Hispanic White TAY had significantly higher rates of exposure to the following: neglect (72% vs 78%;  $\chi^2(1, N = 3324) = 11.10, p < .05/40$ ), emotional abuse (53% vs 60%;  $\chi^2(1, N = 3324) = 13.83, p < .01/40$ ), parent criminal behavior (37% vs 46%;  $\chi^2(1, N = 3324) = 26.83, p < .001/40$ ), sexual abuse (32% vs 41%;  $\chi^2(1, N = 3324) = 22.87, p < .001/40$ ), and being a witness or victim to criminal activity (43% vs 50%;  $\chi^2(1, N = 3324) = 14.64, p < .01/40$ ). For the same two groups, African American TAY had significantly higher rates of exposure to community violence (34% vs 15%;  $\chi^2(1, N = 3324) = 122.13, p < .001/40$ ) and school violence (20% vs 12%;  $\chi^2(1, N = 3324) = 37.68, p < .001/40$ ). No significant differences were found when comparing Hispanic TAY and Non-Hispanic White TAY after applying the Bonferroni adjustment.

#### 3.4. Distribution of specific CANS needs

Table 6 shows score distributions across CANS items by each relevant needs domain. Items scored at a level of '2' or '3' are

**Table 2**  
Number of trauma experiences (TEs) overall and by sex and race/ethnicity.

| Number of TEs | Total sample<br>( $N = 3324$ ) |    | Female<br>( $n = 1638$ ) |    | Male<br>( $n = 1686$ ) |    | African American<br>( $n = 1931$ ) |    | Hispanic<br>( $n = 263$ ) |    | Non-Hispanic White<br>( $n = 1130$ ) |    |
|---------------|--------------------------------|----|--------------------------|----|------------------------|----|------------------------------------|----|---------------------------|----|--------------------------------------|----|
|               | <i>n</i>                       | %  | <i>n</i>                 | %  | <i>n</i>               | %  | <i>n</i>                           | %  | <i>n</i>                  | %  | <i>n</i>                             | %  |
| 0             | 300                            | 9  | 131                      | 8  | 169                    | 10 | 200                                | 10 | 13                        | 5  | 87                                   | 8  |
| 1             | 350                            | 11 | 159                      | 10 | 191                    | 11 | 218                                | 11 | 30                        | 11 | 102                                  | 9  |
| 2             | 456                            | 14 | 210                      | 13 | 246                    | 15 | 277                                | 14 | 31                        | 12 | 148                                  | 13 |
| 3             | 452                            | 14 | 257                      | 16 | 195                    | 12 | 241                                | 12 | 43                        | 16 | 168                                  | 15 |
| 4             | 428                            | 13 | 224                      | 14 | 204                    | 12 | 216                                | 11 | 45                        | 17 | 167                                  | 15 |
| 5             | 388                            | 12 | 184                      | 11 | 204                    | 12 | 208                                | 11 | 33                        | 13 | 147                                  | 13 |
| 6             | 363                            | 11 | 173                      | 11 | 190                    | 11 | 217                                | 11 | 25                        | 10 | 121                                  | 11 |
| 7             | 272                            | 8  | 129                      | 8  | 143                    | 8  | 159                                | 8  | 22                        | 8  | 91                                   | 8  |
| 8             | 194                            | 6  | 101                      | 6  | 93                     | 6  | 115                                | 6  | 16                        | 6  | 63                                   | 6  |
| 9             | 81                             | 2  | 46                       | 3  | 35                     | 2  | 55                                 | 3  | 2                         | 1  | 24                                   | 2  |
| 10+           | 40                             | 1  | 24                       | 1  | 16                     | 1  | 25                                 | 1  | 3                         | 1  | 12                                   | 1  |

**Table 3**  
Score distributions of trauma experiences (TEs) domain (N = 3324).

| TEs domain item                     | No evidence (CANS Score 0) |     | Suspected or single incident (CANS Score 1) |      | Multiple incidents or moderate (CANS Score 2) |     | Chronic, repeated, and/or severe (CANS Score 3) |     |
|-------------------------------------|----------------------------|-----|---|------|---|-----|---|-----|
|                                     | n                          | %   | n   | %    | n   | %   | n   | %   |
|                                     | Neglect                    | 857 | 26  | 1263 | 38  | 969 | 29  | 235 |
| Emotional abuse                     | 1483                       | 45  | 1293  | 39   | 474   | 14  | 74  | 2   |
| Witness to family violence          | 1784                       | 54  | 989   | 30   | 452   | 14  | 99  | 3   |
| Physical abuse                      | 1841                       | 55  | 786   | 24   | 600   | 18  | 97  | 3   |
| Parent criminal behavior            | 1995                       | 60  | 773   | 23   | 439   | 13  | 117   | 4   |
| Sexual abuse                        | 2138                       | 64  | 504   | 15   | 455   | 14  | 227   | 7   |
| Witness/victim to criminal activity | 2181                       | 66  | 790   | 24   | 275   | 8   | 78  | 2   |
| Community violence                  | 2439                       | 73  | 663   | 20   | 177   | 5   | 45  | 1   |
| School violence                     | 2748                       | 83  | 507   | 15   | 61  | 2   | 8   | 0   |
| Medical trauma                      | 2846                       | 86  | 329   | 10   | 103   | 3   | 46  | 1   |
| War affected                        | 3274                       | 98  | 34  | 1    | 11  | 0   | 5   | 0   |
| Natural or man-made disaster        | 3277                       | 99  | 41  | 1    | 4   | 0   | 2   | 0   |
| Terrorism affected                  | 3296                       | 99  | 26  | 1    | 2   | 0   | 0   | 0   |

**Table 4**  
Frequencies and chi-square results for trauma experiences (TEs) by sex (N = 3324).

| TEs domain item                     | Female (n = 1638) |     | Male (n = 1686) |     | χ <sup>2</sup> (I) (OR) |
|-------------------------------------|-------------------|-----|-----------------|-----|-------------------------|
|                                     | n                 | %   | n               | %   |                         |
| Neglect                             | 1233              | 75% | 1234            | 73% | 1.89 (0.90)             |
| Emotional abuse                     | 973               | 59% | 868             | 51% | 21.09*** (0.73)         |
| Witness to family violence          | 536               | 33% | 607             | 36% | 3.96 (1.16)             |
| Physical abuse                      | 750               | 46% | 733             | 43% | 1.80 (0.91)             |
| Parent criminal behavior            | 676               | 41% | 653             | 39% | 2.23 (0.90)             |
| Sexual abuse                        | 757               | 46% | 429             | 25% | 156.18*** (0.39)        |
| Witness/victim to criminal activity | 745               | 45% | 795             | 47% | 0.93 (1.07)             |
| Community violence                  | 378               | 23% | 507             | 30% | 20.81*** (1.43)         |
| School violence                     | 236               | 14% | 340             | 20% | 19.23*** (1.50)         |
| Medical trauma                      | 240               | 15% | 238             | 14% | 0.19 (0.96)             |

Note. Bonferroni correction applied such that \*p < .05/40. \*\*p < .01/40. \*\*\*p < .001/40. Natural or man-made disaster, war, and terrorism occurred in fewer than 2% of the sample and were not included in comparisons.

**Table 5**  
Frequencies and chi-square results for trauma experiences (TEs) by race/ethnicity (N = 3324).

| TEs domain item                     | African American (n = 1931) |      | Hispanic (n = 263) |     | Non-Hispanic White (n = 1130) |     | χ <sup>2</sup> (I) (OR) |                  |               |
|-------------------------------------|-----------------------------|------|--------------------|-----|-------------------------------|-----|-------------------------|------------------|---------------|
|                                     | n                           | %    | n                  | %   | n                             | %   | A                       | B                | C             |
|                                     | Neglect                     | 1395 | 72                 | 194 | 74                            | 878 | 78                      | 0.27 (1.08)      | 11.10* (1.34) |
| Emotional abuse                     | 1025                        | 53   | 138                | 52  | 678                           | 60  | 0.03 (0.98)             | 13.83** (1.33)   | 4.98 (1.36)   |
| Witness to family violence          | 660                         | 34   | 88                 | 33  | 395                           | 35  | 0.05 (0.97)             | 0.19 (1.04)      | 0.21 (1.07)   |
| Physical abuse                      | 845                         | 44   | 124                | 47  | 514                           | 45  | 1.08 (1.15)             | 0.86 (1.07)      | 0.24 (0.94)   |
| Parent criminal behavior            | 710                         | 37   | 96                 | 37  | 523                           | 46  | 0.01 (0.99)             | 26.83*** (1.48)  | 8.27 (1.50)   |
| Sexual abuse                        | 624                         | 32   | 100                | 38  | 462                           | 41  | 3.41 (1.29)             | 22.87*** (1.45)  | 0.73 (1.13)   |
| Witness/victim to criminal activity | 826                         | 43   | 150                | 57  | 564                           | 50  | 19.06*** (1.77)         | 14.64** (1.33)   | 4.33 (0.75)   |
| Community violence                  | 650                         | 34   | 62                 | 24  | 173                           | 15  | 10.74* (0.61)           | 122.13*** (0.36) | 10.39 (0.59)  |
| School violence                     | 395                         | 20   | 48                 | 18  | 133                           | 12  | 0.70 (0.87)             | 37.68*** (0.52)  | 7.93 (0.60)   |
| Medical trauma                      | 278                         | 14   | 35                 | 13  | 165                           | 15  | 0.22 (0.92)             | 0.02 (1.02)      | 0.29 (1.11)   |

Note. Bonferroni correction applied such that \*p < .05/40. \*\*p < .01/40. \*\*\*p < .001/40. Natural or man-made disaster, war, and terrorism occurred in fewer than 2% of the sample and were not included in comparisons. χ<sup>2</sup> comparisons are as follows:

- A = African American and Hispanic;
- B = African American and Non-Hispanic White; and
- C = Hispanic and Non-Hispanic White.

considered clinically significant or actionable scores (Lyons, 2009). In the traumatic stress symptoms domain, TAY exhibit the highest levels of clinically significant need with adjustment to trauma (14%) and traumatic grief/separation (10%). In the life functioning domain, TAY experience the highest level of actionable needs in school achievement (18%) and legal (16%). In the behavioral and emotional needs domain, TAY experience the highest level of actionable needs with attention deficit/impulse control (14%),

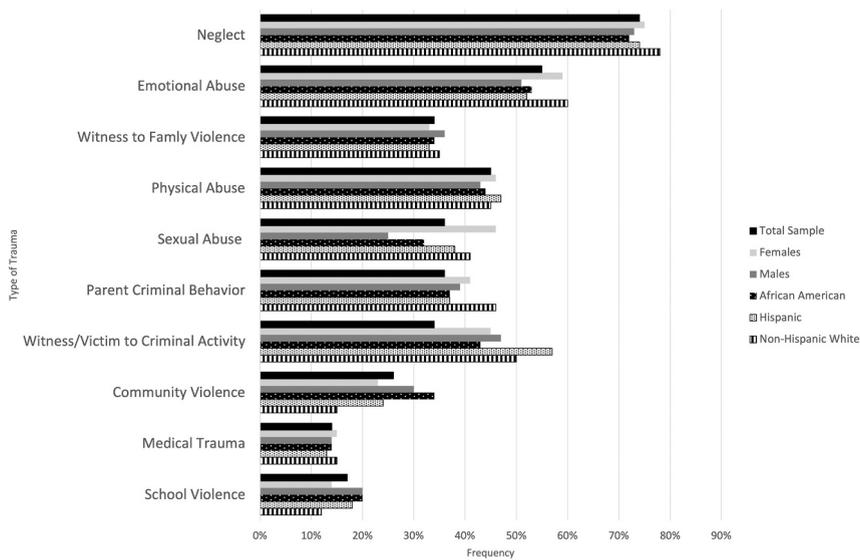


Fig. 1. Frequencies of trauma experiences (TEs) in TAY by sex and race/ethnicity.

depression (13%), and anger control (13%). For the risk behaviors domain, TAY experience the highest level of actionable needs with runaway (12%) and judgment (11%). In the transition to adulthood domain, TAY experience the highest level of actionable needs with educational attainment (16%) and independent living skills (12%).

3.5. Functional and mental health needs related to trauma

Table 7 shows the results of separate regression models, both adjusted and unadjusted, testing the association between the TEs domain score and each of the CANS needs domains and number of placements. In unadjusted models, the TEs domain score, which indicates a greater level of severity, chronicity, and/or exposure to more types of trauma, was significantly associated with all CANS domain-level needs and number of placements. These results indicate that the higher the TEs domain score, the higher the domain total score for traumatic stress symptoms, incidence rate ratio (IRR) = 1.12,  $p < .001/24$ , 95% Confidence Interval (CI) [1.11–1.13]; life domain functioning,  $IRR = 1.08, p < .001/24$ , 95% CI [1.07–1.09]; behavioral and emotional needs,  $IRR = 1.09, p < .001/24$ , 95% CI [1.08–1.10]; risk behaviors,  $IRR = 1.11, p < .001/24$ , 95% CI [1.10–1.13]; needs related to transitioning to adulthood,  $IRR = 1.07, p < .001/24$ , 95% CI [1.06–1.08]; and number of placements,  $IRR = 1.01, p = ns$ , 95% CI [1.00–1.01]. After adjusting for years in child welfare, sex, and race/ethnicity, all models remained significant at the previous levels, except number of placements for which the level of significance increased ( $p < .001/24$  in adjusted model). Having nearly the same IRRs in adjusted and unadjusted models indicates main associations are relatively unchanged by possible effects of control variables.

Table 8 shows the results of separate models, adjusted and unadjusted, testing the association between the number of TEs and each of the CANS needs domains and number of placements. In unadjusted models, number of TEs was significantly associated with all domain-level needs and number of placements, such that the more types of trauma TAY had been exposed to, the higher the domain total score for traumatic stress symptoms,  $IRR = 1.22, p < .001/24$ , 95% CI [1.20–1.24]; life domain functioning,  $IRR = 1.14, p < .001/24$ , 95% CI [1.12–1.15]; behavioral and emotional needs,  $IRR = 1.17, p < .001/24$ , 95% CI [1.15–1.19]; risk behaviors,  $IRR = 1.21, p < .001/24$ , 95% CI [1.18–1.23]; needs related to transitioning to adulthood,  $IRR = 1.12, p < .001/24$ , 95% CI [1.10–1.13]; and number of placements,  $IRR = 1.02, p < .001/24$ , 95% CI [1.01–1.03]. After adjusting for years in child welfare, sex, and race/ethnicity, all models remained significant at the previous levels.

4. Discussion

This study investigated patterns of trauma experiences (TEs) among TAY in child welfare and their relationship to a range of functional, behavioral, and emotional needs. Overall, findings were consistent with study hypotheses and previous research, and the results offer needed empirical support for understanding TEs and related needs among TAY in child welfare. Findings indicate TEs were highly prevalent among TAY in this sample. When considering rates of childhood trauma among adolescents not involved in child welfare, rates of trauma among this sample are much higher (Felitti et al., 1998). Nearly all of our sample (91%) were exposed to at least one type of trauma, and the majority were exposed to 4 or more, which was consistent across sex and race/ethnicity. High rates of trauma exposure are likely related to the context of our sample, including youth in the child welfare system who are often removed from parents or caregivers due to abuse or neglect.

While most TAY in the sample were exposed to many types of trauma, only a small percentage had no confirmed trauma history. TAY with no confirmed trauma history may have been siblings of abused or neglected youth who came into care, they may have come

**Table 6**  
Score distributions of needs across CANS domain items (N = 3324).

| CANS domain                           | No evidence<br>(CANS Score 0) |    | Watchful waiting<br>(CANS Score 1) |    | Action required<br>(CANS Score 2) |    | Immediate action<br>(CANS Score 3) |   |
|---------------------------------------|-------------------------------|----|------------------------------------|----|-----------------------------------|----|------------------------------------|---|
|                                       | n                             | %  | n                                  | %  | n                                 | %  | n                                  | % |
| <b>Traumatic stress symptoms</b>      |                               |    |                                    |    |                                   |    |                                    |   |
| Adjustment to trauma                  | 1405                          | 42 | 1464                               | 44 | 383                               | 12 | 72                                 | 2 |
| Traumatic grief/separation            | 1728                          | 52 | 1265                               | 38 | 297                               | 9  | 34                                 | 1 |
| Avoidance                             | 1981                          | 60 | 1116                               | 34 | 198                               | 6  | 29                                 | 1 |
| Numbing                               | 2483                          | 75 | 756                                | 23 | 77                                | 2  | 8                                  | 0 |
| Re-experiencing                       | 2629                          | 79 | 593                                | 18 | 89                                | 3  | 13                                 | 0 |
| Dissociation                          | 2769                          | 83 | 515                                | 15 | 34                                | 1  | 6                                  | 0 |
| <b>Life domain functioning</b>        |                               |    |                                    |    |                                   |    |                                    |   |
| Family                                | 1572                          | 47 | 1271                               | 38 | 378                               | 11 | 103                                | 3 |
| Social functioning                    | 1978                          | 60 | 1069                               | 32 | 240                               | 7  | 37                                 | 1 |
| Living situation                      | 2085                          | 63 | 892                                | 27 | 244                               | 7  | 103                                | 3 |
| School achievement                    | 2124                          | 64 | 621                                | 19 | 326                               | 10 | 253                                | 8 |
| Legal                                 | 2322                          | 70 | 470                                | 14 | 362                               | 11 | 170                                | 5 |
| School behavior                       | 2379                          | 72 | 572                                | 17 | 266                               | 8  | 107                                | 3 |
| Developmental/intellectual            | 2402                          | 72 | 646                                | 19 | 227                               | 7  | 49                                 | 1 |
| School attendance                     | 2487                          | 75 | 412                                | 12 | 198                               | 6  | 227                                | 7 |
| Recreational                          | 2561                          | 77 | 654                                | 20 | 86                                | 3  | 23                                 | 1 |
| Medical                               | 2699                          | 81 | 468                                | 14 | 136                               | 4  | 21                                 | 1 |
| Sleep                                 | 2878                          | 87 | 376                                | 11 | 61                                | 2  | 9                                  | 0 |
| Sexual development                    | 2925                          | 88 | 281                                | 8  | 90                                | 3  | 28                                 | 1 |
| Physical                              | 3056                          | 92 | 223                                | 7  | 35                                | 1  | 10                                 | 0 |
| <b>Behavioral and emotional needs</b> |                               |    |                                    |    |                                   |    |                                    |   |
| Depression                            | 1582                          | 48 | 1294                               | 39 | 411                               | 12 | 37                                 | 1 |
| Anxiety                               | 1755                          | 53 | 1321                               | 40 | 223                               | 7  | 25                                 | 1 |
| Oppositional behavior                 | 1839                          | 55 | 1107                               | 33 | 316                               | 10 | 62                                 | 2 |
| Attention deficit/impulse control     | 1890                          | 57 | 972                                | 29 | 432                               | 13 | 30                                 | 1 |
| Anger control                         | 1919                          | 58 | 971                                | 29 | 360                               | 11 | 74                                 | 2 |
| Conduct                               | 2219                          | 67 | 841                                | 25 | 212                               | 6  | 52                                 | 2 |
| Substance abuse                       | 2373                          | 71 | 636                                | 19 | 260                               | 8  | 55                                 | 2 |
| Attachment difficulties               | 2492                          | 75 | 698                                | 21 | 113                               | 3  | 21                                 | 1 |
| Affect dysregulation                  | 2819                          | 85 | 408                                | 12 | 77                                | 2  | 20                                 | 1 |
| Behavioral regressions                | 2871                          | 86 | 395                                | 12 | 48                                | 1  | 10                                 | 0 |
| Psychosis                             | 2975                          | 90 | 263                                | 8  | 74                                | 2  | 12                                 | 0 |
| Eating disturbances                   | 3117                          | 94 | 178                                | 5  | 24                                | 1  | 5                                  | 0 |
| Somatization                          | 3189                          | 96 | 125                                | 4  | 9                                 | 0  | 1                                  | 0 |
| <b>Risk behaviors</b>                 |                               |    |                                    |    |                                   |    |                                    |   |
| Judgment                              | 1978                          | 60 | 994                                | 30 | 292                               | 9  | 60                                 | 2 |
| Social behavior                       | 2413                          | 73 | 748                                | 23 | 134                               | 4  | 29                                 | 1 |
| Runaway                               | 2448                          | 74 | 448                                | 13 | 249                               | 7  | 179                                | 5 |
| Delinquency                           | 2481                          | 75 | 587                                | 18 | 149                               | 4  | 107                                | 3 |
| Danger to others                      | 2756                          | 83 | 435                                | 13 | 110                               | 3  | 23                                 | 1 |
| Suicide risk                          | 2783                          | 84 | 420                                | 13 | 101                               | 3  | 20                                 | 1 |
| Sexually reactive behavior            | 2928                          | 88 | 302                                | 9  | 74                                | 2  | 20                                 | 1 |
| Self-mutilation                       | 2947                          | 89 | 314                                | 9  | 45                                | 1  | 18                                 | 1 |
| Other self harm                       | 2948                          | 89 | 313                                | 9  | 50                                | 2  | 13                                 | 0 |
| Sexual aggression                     | 3101                          | 93 | 153                                | 5  | 53                                | 2  | 17                                 | 1 |
| Fire setting                          | 3234                          | 97 | 78                                 | 2  | 8                                 | 0  | 4                                  | 0 |
| <b>Transition to adulthood</b>        |                               |    |                                    |    |                                   |    |                                    |   |
| Independent living skills             | 1656                          | 50 | 1288                               | 39 | 286                               | 9  | 94                                 | 3 |
| Educational attainment                | 2034                          | 61 | 749                                | 23 | 372                               | 11 | 169                                | 5 |
| Intimate relationships                | 2572                          | 77 | 586                                | 18 | 132                               | 4  | 34                                 | 1 |
| Transportation                        | 2610                          | 79 | 605                                | 18 | 80                                | 2  | 29                                 | 1 |
| Medication compliance                 | 2717                          | 82 | 349                                | 10 | 151                               | 5  | 107                                | 3 |
| Victimization                         | 2776                          | 84 | 449                                | 14 | 77                                | 2  | 22                                 | 1 |
| Job functioning                       | 2845                          | 86 | 301                                | 9  | 104                               | 3  | 74                                 | 2 |
| Parenting roles                       | 3082                          | 93 | 156                                | 5  | 49                                | 1  | 37                                 | 1 |

into care for adversities other than an identified trauma (e.g., parental disability), or the trauma they did experience was not yet identified or reported (Finkelhor et al., 2005; Marcus et al., 2009). While other versions of the CANS do include an item on 'disruptions in caregiving/attachment losses' as a TE (Praed Foundation, 2016), the CANS version that was used in the present study did not include this as an item. However, research increasingly continues to explore the harm that results when children are removed from their home (Trivedi, 2019) or forcibly separated from parents (Teicher, 2018).

As expected and consistent with previous studies, experiences of child abuse (physical abuse and emotional abuse in particular), neglect, and witnessing family violence were prevalent in our sample (Greeson et al., 2011; Kisiel et al., 2014; Kisiel, Fehrenbach, et al.,

**Table 7**

Negative binomial regressions of associations between CANS trauma experiences (TEs) domain score and CANS needs domain scores.

| Variable                       | B    | SE    | z     | p         | IRR  | 95% CI      |
|--------------------------------|------|-------|-------|-----------|------|-------------|
| Traumatic stress symptoms      |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.12 | 0.004 | 29.07 | <0.001*** | 1.12 | [1.12–1.13] |
| TEs domain score - adjusted    | 0.12 | 0.004 | 28.82 | <0.001*** | 1.12 | [1.11–1.13] |
| Life domain functioning        |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.08 | 0.004 | 18.25 | <0.001*** | 1.08 | [1.07–1.09] |
| TEs domain score - adjusted    | 0.08 | 0.004 | 18.65 | <0.001*** | 1.08 | [1.07–1.09] |
| Behavioral and emotional needs |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.09 | 0.004 | 21.71 | <0.001*** | 1.09 | [1.08–1.10] |
| TEs domain score - adjusted    | 0.09 | 0.004 | 21.96 | <0.001*** | 1.09 | [1.09–1.10] |
| Child risk behaviors           |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.11 | 0.006 | 18.44 | <0.001*** | 1.11 | [1.10–1.13] |
| TEs domain score - adjusted    | 0.11 | 0.006 | 18.66 | <0.001*** | 1.11 | [1.10–1.13] |
| Transition to adulthood        |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.07 | 0.005 | 13.65 | <0.001*** | 1.07 | [1.06–1.08] |
| TEs domain score - adjusted    | 0.07 | 0.005 | 13.76 | <0.001*** | 1.07 | [1.06–1.08] |
| Number of placements           |      |       |       |           |      |             |
| TEs domain score - unadjusted  | 0.01 | 0.003 | 2.49  | 0.0127    | 1.01 | [1.00–1.01] |
| TEs domain score - adjusted    | 0.01 | 0.003 | 4.88  | <0.001*** | 1.01 | [1.01–1.02] |

Note. Bonferroni correction applied such that \* $p < .05/24$ . \*\* $p < .01/24$ . \*\*\* $p < .001/24$ . Adjusted models control for years in foster care, sex, and race/ethnicity. IRR = Incidence Rate Ratio. CI = Confidence Interval.

**Table 8**

Negative binomial regressions of associations between number of CANS trauma experiences (TEs) and CANS needs domains.

| Variable                       | B    | SE    | z     | p         | IRR  | 95% CI      |
|--------------------------------|------|-------|-------|-----------|------|-------------|
| Traumatic stress symptoms      |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.20 | 0.007 | 28.65 | <0.001*** | 1.22 | [1.20–1.24] |
| Number of TEs - adjusted       | 0.20 | 0.007 | 28.54 | <0.001*** | 1.22 | [1.20–1.24] |
| Life domain functioning        |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.13 | 0.007 | 18.61 | <0.001*** | 1.14 | [1.12–1.15] |
| Number of TEs - adjusted       | 0.13 | 0.007 | 18.94 | <0.001*** | 1.14 | [1.12–1.15] |
| Behavioral and emotional needs |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.16 | 0.007 | 23.0  | <0.001*** | 1.17 | [1.15–1.19] |
| Number of TEs - adjusted       | 0.16 | 0.007 | 23.27 | <0.001*** | 1.17 | [1.16–1.19] |
| Child risk behaviors           |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.19 | 0.010 | 19.61 | <0.001*** | 1.21 | [1.18–1.23] |
| Number of TEs - adjusted       | 0.19 | 0.010 | 19.88 | <0.001*** | 1.21 | [1.19–1.23] |
| Transition to adulthood        |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.11 | 0.008 | 13.84 | <0.001*** | 1.12 | [1.10–1.13] |
| Number of TEs - adjusted       | 0.11 | 0.008 | 13.86 | <0.001*** | 1.12 | [1.10–1.13] |
| Number of placements           |      |       |       |           |      |             |
| Number of TEs - unadjusted     | 0.02 | 0.004 | 4.98  | <0.001*** | 1.02 | [1.01–1.03] |
| Number of TEs - adjusted       | 0.03 | 0.004 | 6.90  | <0.001*** | 1.03 | [1.02–1.04] |

Note. Bonferroni correction applied such that \* $p < .05/24$ . \*\* $p < .01/24$ . \*\*\* $p < .001/24$ . Adjusted models control for years in foster care, sex, and race/ethnicity. IRR = Incidence Rate Ratio. CI = Confidence Interval.

2009). When comparing TEs by sex, females had significantly higher rates of exposure to sexual abuse and emotional abuse, while males had significantly higher rates of exposure to community violence and school violence than females. No significant differences were found between males and females for exposure to neglect, witnessing family violence, physical abuse, parent criminal behavior, witnessing or being victim to criminal activity, or medical trauma. Likewise, no significant differences were found when comparing Hispanic TAY and non-Hispanic White TAY, nor were significant differences found across race/ethnicity for physical abuse, witnessing family violence, or medical trauma. However, results indicated rates of exposure to neglect, emotional abuse, parent criminal behavior, sexual abuse, community violence, school violence, and being a witness or victim to criminal activity differed significantly across racial/ethnic groups. Given these findings, services and resources that aim to prevent and address TEs in TAY may be most beneficial if appropriately tailored, specifically assessing and targeting particular types of trauma and providing care that is best suited to improve outcomes after the reported experience. For example, youth who are healing from and building resilience after interpersonal trauma within the family context (e.g., neglect, emotional, physical or sexual abuse) may need a different intervention than those who have witnessed community or school violence.

Lastly, as hypothesized, our results show significant relationships between TEs and traumatic stress symptoms, other mental health needs, and number of placements. These findings suggest that the greater the number of TEs and the greater the severity or chronicity of these TEs for TAY, the higher the level of mental health needs and greater number of placements for TAY. Overall, higher scores on the TEs domain and greater numbers of trauma exposures were both associated with higher levels of traumatic stress symptoms, broader mental health needs (emotional and behavioral needs), functional difficulties, risk behaviors, and needs related to transitioning to independence/adulthood. Findings were similar for both unadjusted and adjusted models. Furthermore, the strongest association shown was between TEs and traumatic stress symptoms, which is consistent with other studies among child welfare-involved youth (see [Greenson et al., 2011](#); [Kisiel, Fehrenbach, et al., 2009](#)) and offers empirical support for this relationship among TAY in particular.

A second goal of this study was to describe the needs of the TAY subpopulation more specifically. The examination of CANS needs indicated that TAY experienced several clinically significant needs at the time of the assessment and in the 30-day period prior (given the CANS rating system), including traumatic stress symptoms. This finding bolsters earlier work on PTSD in TAY, and given that TAY in our sample had already spent an average of 5.5 years in child welfare by the time of the assessment, the continued high levels of needs may indicate that traumatic stress symptoms are persisting, perhaps despite any system-level intervention efforts ([Salazar et al., 2013](#)). Although this study did not explore data in relation to any specific interventions, the majority of youth in child welfare often receive various services or interventions during their time in care including mental health services, educational services, and health-related services ([Larsen et al., 2018](#); [Spinelli et al., 2020](#)). As such, our findings may suggest that existing interventions or services, if implemented while the youth was in child welfare, may not have been sufficiently trauma-informed to address the complex, trauma-related needs of TAY. Further research is needed in this area.

Additionally, while some needs could be reflective of normal adolescent development (i.e., judgment), other needs echo the significant vulnerabilities of this subpopulation. For instance, 12% of TAY in our sample were indicated as having runaway in the past year, whereas an estimated 6–7% of youth in the general population run away ([Chen et al., 2012](#)). Likewise, 4% of TAY had significant needs related to suicide risk, including suicide ideation, intent, or gesture within at least the past 30 days while only 1.9% of 18 to 25-year-olds in a national sample indicated a suicide attempt in the past year ([SAMHSA, 2019](#)).

Unexpectedly, while a sample of providers in a recent study indicated “drugs” as the most frequent response to ways TAY cope with trauma ([Spinelli et al., 2020](#)), our findings indicate that the majority of TAY in our sample do not have substance use difficulties (71%) and relatively few TAY (10%) had significant problems in this area. Our findings on substance use among TAY appear aligned with the National Survey on Drug Use and Health (2019), indicating that 3.7% of 12 to 17-year-olds and 15% of 18 to 25-year-olds meet criteria for a substance use disorder. Although TAY in child welfare may be using substances to self-medicate or cope with TEs, TAY may also be participating in substance experimentation at the same rates as their peers outside of child welfare. Still, the frequencies in our study may underestimate substance use in TAY as the CANS is completed by a clinician, clinical screener, or caseworker (in conjunction with youth and caregivers) instead of through youth self-report. More research is needed to further explore the discrepancy between provider experience and frequencies of use reported in this study.

Lastly, despite providers frequently reporting that education could be a significant additional support that help TAY successfully transition to adulthood ([Spinelli et al., 2020](#)), only 23% of TAY in our sample were noted as having set educational goals and currently making progress toward achieving them. Because increased levels of education are correlated with other positive outcomes, such as fewer placements in foster care and higher household income ([Naccarato et al., 2010](#); [Pecora et al., 2006](#)), engaging TAY in setting and making progress toward educational goals is crucial. Our findings suggest, perhaps, that addressing underlying trauma and building resilience in TAY could increase positive outcomes across many needs including education.

Given that we used two different, trauma-related independent variables, number of TEs and CANS TEs domain score, it was surprising that both variables yielded such similar results in both adjusted and unadjusted models. The number of TEs (inspired by ACEs) had slightly larger effect sizes across models than the TEs domain score, which accounts for chronicity and severity. This finding lends support for using an “ACEs” score, which may prove as a more efficient variable to utilize outside of a clinical setting, to determine risk and service planning.

The study findings should be interpreted with caution due to certain limitations. First, the data set included secondary analysis of existing CANS assessment and administrative data for TAY. Therefore, we were limited to the variables already collected in their existing format and could not reword the questions or seek clarification. Likewise, this study examined number of placements which did not include placement interruptions such as hospitalizations, nor did it include a cumulative total of placements across multiple foster care episodes. As such, number of placements may be an underestimate, particularly for youth who have exited and reentered care.

In addition, using existing data may limit the generalizability of these research findings to youth in child welfare in Illinois; this may be slightly skewed by the large number of youth in care in the Chicago metropolitan area. This skew may have disproportionately affected minorities and may have increased the reported prevalence of certain TEs such as community violence, school violence, and witnessing or being victim to criminal activity. Additionally, most data were collected by caseworkers or other child welfare staff with the intention of supporting services within child welfare and not for research purposes. Next, we restricted our sample to youth between the ages of 14.5 and 21 years old, the state-defined definition of TAY, so results may not fully generalize to TAY of other ages or in other states where age-related definitions of TAY may differ.

Furthermore, when foster youth in Illinois become adults at age 18 years, they can choose whether to participate in Illinois' extended foster care program. Therefore, youth above age 18 years in our sample, who chose to remain under the care of Illinois child welfare, may have higher needs or other notable differences (i.e., less familial support) than TAY who did not choose to participate in Illinois' extended foster care program; our data were limited in making these distinctions. Another potential limitation was in how we

defined trauma exposure in this study, which was inclusive of both single incident of trauma or suspected trauma as well as ongoing or chronic TEs. Other studies have only coded moderate to severe trauma on the CANS, indicating significant experiences of trauma (Griffin et al., 2011; Kisiel et al., 2014). While our method may differ from other studies and may have slightly inflated the number of trauma exposures, we believe that using a broader, more inclusive definition of trauma may better align with a shifting standard in the field resulting, in part, from the greater emphasis on ACEs across the country. This may also help correct for rates of TEs that might be underreported (Petersen et al., 2014; Marcus et al., 2009).

#### 4.1. Implications

Overall, the findings from this study confirm anticipated patterns of trauma and associated outcomes for TAY. As noted previously, there have been few empirical studies to date that assess a wide variety of TEs in relation to several areas of emotional, behavioral and functional needs and an expanded age range (i.e., 14.5–21 years) for TAY in child welfare. Therefore, this study offers a useful contribution in expanding the literature by offering more recent evidence and by providing much-needed empirical support and insight into specific TEs and needs of TAY in particular.

This study points to the importance of identifying and assessing TEs and outcomes for TAY as a part of a comprehensive assessment process in the context of child welfare; this is a first critical step in effectively addressing the needs of traumatized youth (Kisiel et al., 2014). While it may be more challenging to assess youth involved in child welfare, and TAY in particular, given their complex presentations and perhaps fluctuating needs or circumstances, youth would benefit from more consistent and comprehensive trauma-informed and strengths-based assessment approaches to guide targeted, trauma-informed treatment and service delivery approaches (Kisiel et al., 2014; Kisiel, Fehrenbach, et al., 2009).

These findings suggest the importance of addressing trauma as a key factor impacting a broader set of negative outcomes among TAY; prior studies indicate that negative outcomes among TAY may be related to unaddressed trauma-related needs (Salazar et al., 2013). Given the high rates of trauma exposure and related needs for TAY, this study also suggests the need for enhancing trauma-informed interventions, approaches, and resources that support TAY. This includes trauma-informed treatment and service delivery approaches as well as trauma-informed training efforts for providers that support a broader understanding of the trauma-related needs of TAY.

This study offers evidence for the broad range of TEs and needs among youth in child welfare. Still, future research should continue to examine how TEs impact needs for TAY across several areas of functioning. Enhancing our understanding of TAY can help systems explore and navigate best practices, interventions, and treatments to address and mitigate the effects of trauma and build resilience for this vulnerable subpopulation of older youth.

#### Declaration of competing interest

We have no known conflict of interest to disclose.

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