**Caregiver and Child Agreement on Traumatic Events, PTSD, Internalizing, Externalizing, and ADHD Problems in a Child Welfare Population**

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**Abstract**

Child welfare recipients face unique obstacles for accurate mental health screening and assessment. This study examined the concordance between youth and caregiver respondents on mental health problems. Agreements between youths and caregivers about traumatic event exposure were mostly Moderate or Substantial, but greater discrepancy was associated with greater child psychopathology. Both caregiver and children endorsed PTSD symptoms more often than internalizing, externalizing, and ADHD problems. Single respondents—whether child, foster parent, or biological parent—significantly underestimated severity compared to multiple respondents. Repeat screenings showed that concordance between youth and caregiver endorsements did not improve after six months of entering care.

Keywords: screen; post-traumatic stress; children; respondent agreement; child welfare

**Introduction**

In 2016, there were over 437,000 children in foster care in the United States (Child Welfare Information Gateway, 2017) representing a vulnerable population disproportionately more likely to experience a range of emotional and behavioral problems. This population also experiences more trauma exposure and more trauma-related mental health problems than the general population (Stein et al., 2001). Nearly half of all youths in child welfare have clinically significant emotional and behavioral problems (Burns et al., 2004; Pecora et al., 2009; Salazar et al., 2012). A history of child welfare involvement confers significantly higher probability of five behavioral disorders relative to the general population, with the strongest association being posttraumatic stress disorder (PTSD) (Scott et al., 2010).

During 2011-2013, the Children's Bureau recognized the greater mental health needs of this population and made an unprecedented investment in this area by funding a total of 20 five-year demonstration projects in three cohorts. The first cohort of five grantees (representing entire states or counties in Colorado, Connecticut, Massachusetts, Montana, and North Carolina) began work in 2011 (Children's Bureau, 2011). The second cohort of nine grantees (California, District of Columbia, Louisiana, Michigan, New Hampshire, New York, Ohio, Oklahoma, and Washington) began work in 2012 (Children's Bureau, 2012). The third cohort of six grantees (Kansas, Kentucky, New Hampshire, Rhode Island, Tennessee, and Vermont) began work in 2013 (Children's Bureau, 2013). Each cohort had slightly different aims but there was much overlap among the funded aims, and all shared an aim of implementing evidence-based screening or assessment for trauma-related problems in child welfare populations. At a total cost of nearly $50 million dollars for all three cohorts, this represents the largest investment to date for implementing best practices around mental health screening of this population.

Because child welfare recipients with emotional and behavioral problems face unique sets of obstacles for accurate screening and assessment compared to other individuals, these implementation projects needed to address several unique challenges of screening—namely, how to measure trauma exposure, whom to ask about symptoms, how to account for the well-known discrepancy between youth and caregiver respondents, and how these discrepancies change over time.

*How to measure trauma exposure*

Exposure to trauma in the child welfare population is common. In a survey of 732 17- and 18-year-old adolescents in child welfare, 80% had experienced at least one-life threatening trauma consistent with the definition of trauma in the Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) definition of PTSD (APA, 2004), and 62% had experienced two or more events (Salazar et al., 2012). In a survey of 229 6- to 18-year-old youth in a higher intensity level of care (i.e., treatment or therapeutic foster care), 93% had experienced at least one traumatic event, 80% had experienced two or more events, and 49% had experienced four or more types of trauma (Dorsey et al., 2012). Both of these surveys relied on single-respondent methodology, with the former using only youth reports and the latter using only parent reports.

It is likely that the estimates of trauma exposure of both surveys contained imprecisions because it is well known that youths and caregivers disagree frequently about the extent of youths' exposure to trauma. In a community-representative sample of a large Swedish birth cohort, researchers followed 1,174 youths and assessed their exposure to trauma at 12 years of age. In regards to life-threatening types of traumas, there was poor agreement (Cohen's kappa < .40) between children and mothers about being in a fire, natural disasters, witnessing domestic violence, and physical abuse. There was moderate agreement (Cohen's kappa between .40 and

.75) on motor vehicle accidents and sexual abuse (Tingskull et al., 2015).  In most discrepancies, the trend was for youths to report events more frequently than parents.

Goodman and colleagues (2010) reviewed nine studies of at-risk samples that focused on exposure to violence.  They found that agreements between youths and caregivers were generally poor, with youths tending to report more exposure to violence than caregivers.  Discrepancies are also found in help-seeking samples recruited into treatment studies.  Researchers assessed 114 7- to 16-year-old youths referred to a treatment study following disclosure of sexual abuse (Oransky et al., 2013).  There was poor agreement (Cohen's kappa < 0.40) regarding all of the truly life-threatening events including serious accidents, physical assaults, mugging, attacks by animals, and witnessing physical violence.

This discrepancy may differ by age of the youths.  In the only known study to examine age differences in respondent reports about trauma exposure, researchers assessed 76 7- to 17-year-olds recruited from the community for a treatment study.  Researchers found that agreements about experiencing muggings and animal attacks were moderate between children and parents, but were poor between adolescents and parents.  Children and adolescents tended to have similar degrees of agreement with parents for serious accidents, physical assaults, witnessing violence, and sexual assaults (Stover et al., 2010).

***Whom to ask about symptoms?***

When assessing child psychopathology, best practice recommendations for assessment and treatment planning must be multimethod and multi-informant when possible (Richters, 1992) because of the well-known discrepancies between youths and caregivers about the presence of symptoms for all types of psychiatric syndromes (Rescorla et al., 2013).  Research has shown that having multiple informants assess a child's mental health through screening can provide a

more thorough understanding of a child's psychiatric symptomology and increase diagnostic accuracy (De Los Reyes, Alfano, & Biedel, 2009; Parker et al., 2018; Toche-Manley et al., 2014).  For example, when relying solely on youth self-report in 12- to 18-year-old youths following trauma exposure, the rate of PTSD diagnosis was 8.3%.  When relying solely on parent-report, the rate was 4.2%.  However, when youth and parent reports were combined, the rate of PTSD diagnosis jumped to 37.5%, because each respondent was reporting information not reported by the other respondent (Scheeringa et al., 2006).

Implementation efforts in child welfare therefore must consider the unique challenges in which youths are living in atypical caregiving situations.  Foster parents may have limited information regarding their child's trauma, thus affecting symptomology endorsement (Grasso & Kaufman, 2013).  On the other hand, children who receive in-home services for family preservation remain with biological parents (referred to as Family Services for the remainder of the paper) who are often the suspected perpetrator of abuse and the subject of agency investigation.  These biological parents may have ulterior motives to minimize the severity of their children's psychopathology.  Biological parents' denials of symptoms may reflect an effort to preclude child protection investigators from filing reports against parents, taking custody of children, or delaying reunifications.  Partly because of these challenges, many grantees in the Children's Bureau-funded cohorts opted to bypass caregivers altogether and have caseworkers complete the screens (Lang et al., 2017).  There is currently no known study examining discrepancy of youth and caregiver reports of symptoms in the child welfare population.

*Discrepancy related to severity of symptoms*

It has been suggested that discrepancy about exposure to events is not to be viewed simply as respondent bias, but may be used as a marker for greater child psychopathology

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(Goodman et al., 2010). Ceballo and colleagues (2001) recruited from two inner-city elementary schools a sample of 104 primarily poor children in the fourth and fifth grades, and found that greater disagreement between children and caregivers about exposure to community violence was associated with higher severity of PTSD and internalizing symptoms, but not externalizing symptoms. Similarly, Oransky (2013) found greater caregiver-youth discrepancy about trauma events associated with more youth-reported PTSD symptoms, but this association was not found using caregiver-reported PTSD symptoms.

Based on these data indicating that greater discrepancy about trauma exposure is associated with greater symptom severity, there are speculations that it may be beneficial for children to talk with their parents about their community violence exposure so that parents have opportunities to express feelings, normalize reactions, and/or discuss coping skills (Ceballo et al., 2001). Concerns have been expressed simultaneously however that parents who are unaware of their children's violence exposures will not possess the parenting skills to help their children effectively cope with trauma reactions. Nevertheless, this association between discrepancy about exposure and symptom severity has not yet been examined in child welfare.

*Change in discrepancies over time*

Lastly, an important topic regarding respondent discrepancies is how these discrepancies change over time. If discrepancy is associated with greater psychopathology, then greater caregiver awareness of trauma-related symptoms over time might be an important avenue for decreased psychopathology. Youth and caregiver reports of symptoms were measured serially in a study of 7- to 17-year-old youths hospitalized for physical injuries and randomized to either art therapy or hospital services as usual. In both groups, youth and caregiver reports differed significantly during the inpatient stay, with youths reporting more symptoms than caregivers.

However, this discrepancy decreased over time and became nonsignificant by the 18-month follow-up (Schreier et al., 2005).

In the only other known study that examined change in agreement about PTSD symptom endorsement over time, researchers studied 7- to 17-year-old youths randomized to either cognitive behavioral therapy (CBT) plus D-cycloserine or CBT plus placebo pill (Humphreys et al., 2015). They found evidence suggesting that, contrary to intuition, concordance between parent and child responses worsened over the course of treatment for PTSD symptoms.

One would intuitively expect that informant discrepancy for PTSD symptoms in foster care would gradually decrease over time due to caregivers getting to know the children better and their heightened awareness of symptomology. There has been no known study to our knowledge concerning informant discrepancy of PTSD symptology over time in a non-treatment setting for youths in child welfare.

As mental health problems in child welfare are becoming more recognized and the Children's Bureau has pushed for mental health screening implementation, this places additional burdens on child welfare caseworkers. In a workforce that has difficulty in recruiting and retaining workers, who oftentimes have caseloads that exceed the national recommendation, screens need to be as short and efficient as possible. At the same time however, screens must gather sufficient information in screening children for potential diagnoses and concerns, thereby allowing caseworkers to more easily make referrals based on the mental health screen scores (National Association of Socal Workers, 2004).

Because trauma-related mental health concerns so clearly represent a significant problem for the child welfare population, and PTSD symptoms are particularly difficult for caregivers and clinicians to identify, multi-informant screens that address PTSD are ideal for caseworkers to

efficiently advocate for their clients' mental well-being (Scheeringa, 2011). There is little

agreement however on what exactly to screen for, and who should be the respondents. For

example, within the first cohort of grantees funded by the Children's Bureau, Colorado, after

pilot testing, opted to use only caseworkers as respondents, assuming that caseworkers would be

the most reliable source of data (Lang et al., 2017). North Carolina also opted to use

caseworkers as respondents, but supplemented this with four questions with youths as

respondents. Montana, in contrast, opted initially to use only caseworker reports, but they had

difficulty getting caseworkers to do it so they switched to having clinicians gather the screen

data. Connecticut, choosing a completely different method, opted for youth-only report, to be

gathered in clinician offices.

There are gaps in our understanding of how to address these challenges. In order to

address these gaps, this study collected mental health screens on over three thousand youths and

their caregivers who were under the care of the Louisiana Department of Children & Family

Services (DCFS) to address four research questions. Hypothesis (1): Although a number of

studies have looked at agreements between parents and youths about exposure to trauma, none

have evaluated parent-child agreement about exposure in a child welfare population to our

knowledge. It was hypothesized that agreement between child and caregiver respondents about

exposure to trauma will be poor, and thereby provide support for a strategy of obtaining reports

from both respondents. Hypothesis (2): Single respondents, whether it is the child or caregiver,

will be significant underestimates of PTSD, internalizing, externalizing, and attention-

deficit/hyperactivity disorder (ADHD) symptom severity compared to reports combining

informant responses. Hypothesis (3): The degree of discrepancy about trauma exposure will be

associated with higher PTSD symptom severity. Hypothesis (4) will explore caregiver-child

agreement over time.  Given conflicting findings in two prior studies, a directional hypothesis was not made.  All of these aims will be examined for age effects.  Also, because foster parents are not biological parents, and Family Services parents are biological parents who are often under suspicion of being the source of maltreatment, results will be examined separately by Foster Care and Family Services groups.

**Methods**

The Louisiana Child Welfare Trauma Project (LCTP) was a service implementation demonstration project funded by the national Children's Bureau, a federal agency under the Administration for Children, Youth, and Families.  The LCTP was primarily focused on training the child welfare workforce of Louisiana DCFS to implement a new screen on trauma exposure and emotional and behavioral problems.  DCFS is a state-wide child welfare system that employs over 1,100 caseworkers who work out of 46 offices.  DCFS provides services to over 4,000 youths in care each year.  Louisiana is ranked 25th in population and 31st in size among the 50 states.  According to the latest available U.S. Census Bureau statistics, it is 73.2% urban (United States Census Bureau, 2010).  It includes 64 parishes (counties), eleven cities that meet the U.S. Census Bureau definition of an Urbanized Area (50,000 or more people), and 64 cities that meet the definition of an Urban Cluster (at least 2,500 and less than 50,000 people).

*Participants*

Participants were open cases, 7-18 years, in either the Foster Care (FC) or Family Services (FS) programs.  No personally identifying information was collected with the screen besides the children's ages.  Demographics were not available because the screening database was not yet integrated with the DCFS databases.  Caseworkers, of course, had the capability to collate screen results with demographic data in the DCFS databases on a case-by-case basis.  The

racial composition for the latest year that data are available, 2016, indicated 4,373 youths in foster care with the following racial composition: 55.9% White/Caucasian, 37.4% Black/African-American, and 6.7% Other (Department of Children & Family Services, 2017, p. 249).  Gender composition was 48.9% female (p. 80).

*Measures*

The Trauma & Behavioral Health Screen (TBH) was created for this project (available for free at www.latrauma.com).  In order to achieve the goal of having a universal screen that could be implemented by DCFS caseworkers, the project team determined that a screen ought to have the following characteristics: **(1) Cover traumatic events comprehensively** and ask about all possible types of traumatic events with a menu because individuals are unlikely to spontaneously acknowledge their traumatic experiences with an open-ended probe (Cohen & Scheeringa, 2009; Scheeringa, 2011) and approximately one-third of children who experienced one trauma have experienced multiple traumas (Copeland, Keeler, Angold, & Costello, 2007); **(2) Cover PTSD items** fairly well (at least 10 specific PTSD symptoms), because PTSD is the core psychological injury for traumatized children; **(3) Cover co-morbid items** (depression, anxiety, oppositional defiant, and ADHD) with at least several items per syndrome in order to create a range of scoring that can show change over time; **(4) Brief.**  Contain < 40 symptoms total and/or accomplished in 5-10 minutes to minimize the burden on workers and clients and facilitate completion rates; **(5) Self-administered**, as opposed to interview style (with exceptions for clients with reading limitations), to make the most economical use of time and resources; **(6) Apply to infants through adolescents** with one screen for logistical simplicity in a system that was not accustomed to mental health screening measures; and **(7) Free in the public domain** in

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order to remove any cost barrier for an underfunded child welfare system and enhance

sustainability.

After reviewing the literature, it was apparent that no single existing instrument

possessed all seven characteristics.  The TBH was created, consisting of elements from four

instruments:

(1) The screen for traumatic events was taken from the Child PTSD Checklist (CPC)

(Scheeringa, 2010), which asks about eight types of traumatic events, plus an option for Other to

write in events not covered under the other eight types.  The CPC was selected because it

included instructions for respondents to endorse events only if they were truly life-threatening:

the individual felt like he/she might die, or he/she had a serious injury or felt like he/she might

get a serious injury, or he/she saw life-threatening events happen to another person.  Most of the

other existing measures either describe events as stressful or ascribe no valence to the events

without the requirements that events ought to have been perceived as life-threatening.  Each

event can be endorsed Yes, No, or Not Sure.  For each endorsed event, it asks for the earliest age

it happened, the latest age it happened, and approximately how many times it happened.  Items

endorsed as Not Sure are counted as missing in data analyses because they could not be clearly

attributed as either Yes or No.

(2) The Child PTSD Symptom Scale (Foa, Johnson, Feeny, & Treadwell, 2001) is a

questionnaire that maps onto the 17 DSM-IV PTSD symptoms rated on a 4-point (0-3) Likert

scale.  This measure has shown excellent sensitivity to change, internal consistency, and test-

retest reliability.  A cutoff of 11 or greater was shown to have 95% sensitivity and 96%

specificity for correctly classifying high and low severity cases of PTSD (Foa et al., 2001).  Two

items were deleted because they were redundant with items in the PSC-17: "Having much less

interest in doing things he/she used to do," and "Having trouble concentrating."  Because these two items were deleted, the cutoff was lowered from 11 to 10 or higher to indicate clinical concern and cause for referral to clinicians.  The PTSD scale consists of the 15 items from the CPSS (items #11-25).

(3) The Pediatric Symptom Checklist-17 (PSC-17), is a 17-item, parent-report questionnaire, with each item scored on 0,1,2 Likert scale.  The PSC is the most commonly recommended measure for general psychosocial screening for school-aged children (Semansky, Koyanagi, & Vandivort-Warren, 2003).  Subscales can be calculated for attention (5 items), internalizing (5 items), and externalizing (7 items).  The attention score maps onto ADHD; the internalizing score maps onto depression and anxiety; and the externalizing score maps primarily onto oppositional defiant disorder (ODD).  When compared to diagnoses from a structured diagnostic interview, the attention scale (cutoff $\geq$ 5) showed 88% sensitivity and 72% specificity for an ADHD diagnosis.  The internalizing scale (cutoff $\geq$ 4) showed 86% sensitivity and 61% specificity for a depression diagnosis, and 65% sensitivity and 62% specificity for an anxiety diagnosis.  The externalizing scale (cutoff $\geq$ 5) showed 85% sensitivity and 68% specificity for a diagnosis of ODD, conduct disorder, or adjustment disorder with disturbances of conduct.

(4) The low sensitivity of the PSC-17 for anxiety appears to be because there are only two items in the PSC-17 that map onto anxiety disorders.  We therefore added three anxiety symptoms from the Screen for Child Anxiety Related Emotional Disorders (SCARED) in order to create a broader range of scoring for anxiety (Birmaher et al., 1999).  "I worry about things working out for me," and "I worry about being as good as other kids" loaded highest on the generalized anxiety disorder factor (Muris, Merckelbach, Schmidt, & Mayer, 1999).  "I am afraid to be alone at home" was used to represent separation anxiety disorder as one of the few items

that would not confound worry about parents in a foster care population.

The cutoff to indicate clinical concern for the Internalizing score in the PSC-17 is five or higher. Because three items for anxiety from the SCARED were added, the cutoff score for the TBH Internalizing score, based on eight items (items #26-30 and #43-45), was raised to eight or higher. The cutoff for the Externalizing score, comprised of seven items (#36-42), was seven or higher. The cutoff for the ADHD score, comprised of five items (#31-35), was seven or higher (Borowsky et al., 2003). Internal consistency was excellent for PTSD (Cronbach's alpha 0.83 child report and 0.87 caregiver report), and good for Internalizing (0.86 child report, 0.87 caregiver report), Externalizing (0.84 child report, 0.89 caregiver report), and ADHD (0.83 child report, 0.87 caregiver report). The trauma events screen plus the symptoms included 45 items.

When data from both caregiver and child versions were available, a joint score could also be calculated. The joint score is calculated by taking the highest of the caregiver and child report scores for each item.

The caregiver version also included 11 items from an instrument that DCFS was using previously, called the Behavioral Health Screen-I. These 11 items covered important issues that were not covered by the items from the CPC, CPSS, PSC-17, and SCARED, such as attachment, autism, psychosis, and drug use. The child version included three of these items. These 11 items are not used for creating scores.

*Procedure*

For staging of the project, we implemented the components in a stepwise design necessary to cover a large state. DCFS caseworkers actively involved with FC or FS programs were required to attend trainings. The trainings on the TBH were piloted in one of the nine state regions in the first year of implementation. Over the next three years, the remaining eight

regions were trained by adding one new region approximately every four months. Each region typically included three or four offices. The LCTP team traveled to each office to meet with staff.

The process of training each region involved four visits by LCTP team members to each office separated by one month between visits. After the first training in a region, which lasted 1.5 hours, caseworkers were asked to gather a screen from at least one of their clients to discuss at the second training meeting one month later. After the second training meeting, caseworkers were expected to be gathering screens on all of their eligible cases. The second, third, and fourth training meetings lasted approximately one hour each. It was expected of the caseworkers to collect a TBH Caregiver Version filled out by a biological parent, foster parent, relative, caseworker, or other guardian on every newly opened case as part of their routine workload and at six-month intervals on every case that remained open. If the child was 7 years or older, the child was expected to fill out the TBH Child Version. If children were young or needed assistance reading the questions, caseworkers read the questions to the children.

Screens were completed on paper by respondents and then caseworkers entered the data online in their offices. Data for analyses were extracted from the online TBH submissions throughout the project's duration from 2014 to 2017.

At least one TBH screen was gathered on 10,216 unique individuals, 0-18 years of age. The number of possible unique individuals on whom TBH screens could have been collected is difficult to estimate accurately because the number of youths in care fluctuated on a daily basis. While trainings were being conducted within a region, the LCTP team determined whether TBH screens were completed on every open case in that region. The completion rate was calculated for each region at the time of the final training session. With all nine regions combined, it was

estimated that 50% of possible cases received a screen. The Covington region achieved the highest rate, 69%, while the Thibodaux region had the lowest rate, 24%.

Of these 10,216 cases, 6,331 were 0-6 years of age, leaving 3,885 who were 7-18 years of age eligible for analysis in this report. For analyses on each subscale (PTSD, Internalizing, Externalizing, and ADHD), we retained cases for analyses only if they had responses for 80% or more of the items within a subscale. The number of cases that had responses for 80% or more items were 3,059 for Internalizing, 3,072 for Externalizing, and 3,067 for ADHD. For PTSD, there were 3,087 cases in which both caregivers and youths completed 80% or more of the trauma events items and 80% or more of the PTSD symptom items.

The time frame for collecting repeat screens was dictated by the DCFS policy for collecting the first TBH screen within 30 days of cases being opened, and to collect the repeat (second) screen to coincide with the six-month case review meetings. At least two TBH screens from each respondent (both child and caregiver) were collected in that time frame on 1,459 cases. Repeat screens could not be collected on many cases because they did not remain open for at least six months.

*Data Analysis*

For Hypothesis 1, agreement reliabilities between respondents were calculated with Cohen's kappa statistic. Following Landis, Koch (1977), kappa values of .81 or higher are Almost Perfect, .61-.8 are Substantial, .41-.6 are Moderate, and .4 or lower are Poor. For Hypothesis 2, the frequency of cases that scored above cutoff values by different respondents were compared with chi-square tests: child report was compared to joint report, and caregiver report was compared to joint report. For Hypothesis 3, the degree of discrepancy between responses about trauma exposure was calculated as the absolute value of the number of trauma

events endorsed from child report minus the number of trauma events endorsed from caregiver report. This degree of discrepancy was then compared with PTSD scale scores from child reports and PTSD scale scores from caregiver reports with separate Pearson correlation tests. For Hypothesis 4, agreement between respondents on the first screen was compared to agreement between respondents on the second screen by calculating 95% confidence intervals for each kappa. The agreements were considered significantly different if the two confidence intervals did not overlap.

**Results**

***Hypothesis 1: Agreement between child and caregiver about exposure to events***

The data in Table 1 shows that trauma exposure was common. In the 7-12 years age group, youth respondents reported exposure to one or more trauma events in 59.8% of individuals in FC, and 46.6% in FS. Caregiver respondents reported exposure to one or more trauma events in 53.9% of individuals in FC and 45.5% in FS.

[Table 1 near here]

In the 13-18 years age group, youth respondents reported exposure to one or more trauma events in 52.0% in FC, and 27.6% in FS. Caregiver respondents reported exposure to one or more trauma events in 44.8% of individuals in FC and 24.3% in FS.

Contrary to expectations for Poor agreements, the agreements between respondents were most commonly in the Moderate (.41-.60) or Substantial (.61-.80) ranges. Across all subgroups, sexual abuse had the highest caregiver-youth agreement, with kappa values ranging from .77 (Substantial) to .84 (Almost Perfect). Endorsement for life-threatening injury generally had the lowest caregiver-youth agreement, with kappa values ranging from .31 (Poor) to .46 (Moderate).

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*Hypothesis 2: Comparisons of subscale symptom endorsement by single respondents versus joint scores*

Table 2 shows the percentage of youths who scored above clinical cutoffs for each subscale. For example, in the 7-12 years FC group, 36.4% scored above cutoff for PTSD by the joint score, whereas 18.9% scored high for Internalizing, 21.0% for Externalizing, and 20.6% for ADHD. The pattern of PTSD being the most commonly endorsed problem was similar for 13-18 years FC group, 7-12 years FS group, and 13-18 years FS group.

[Table 2 near here]

To test Hypothesis 2, child reports of PTSD were compared to joint reports in four separate tests (7-12-year-old children in FC or FS, and 13-18-year-old adolescents in FC or FS), and caregiver reports were compared to joint reports in the same four separate tests. In all eight tests, consistent with the hypothesis, the proportion scoring above cutoff by joint report was significantly larger than the proportion scoring above cutoff by child or caregiver report alone (Tables 2 and 3). For example, in the subgroup of 7-12 year-old children in the FC group, the percentage scoring above cutoff by joint report, 36.4% (n = 227), was significantly higher than the percentages of youth scoring above the cutoff by child report, 26.7% (n = 166) and by caregiver report, 20.9% (n = 130) (chi-square test 394.77, df = x, p<.0001).

[Table 3 near here]

To estimate the magnitude of this effect, the numbers of individuals whose probable PTSD diagnosis would be missed by single respondents were calculated. With joint report considered the most accurate because it was a multi-informant assessment, the full sample joint report "diagnosed" 722 youths with PTSD. Caregiver report alone diagnosed 357 of those

youths and missed 50.6% of those diagnosed by joint report.  Youth report alone diagnosed 553

of those youths and missed 23.4% of those diagnosed by joint report.

The pattern of results were the same in regards to the Internalizing, Externalizing, and

ADHD scores, with joint report always significantly higher than child report or caregiver report

alone.  These are summarized in Table 2 for conciseness.

The reliabilities of agreements between single respondents (children versus caregiver) to

score above cutoffs confirmed that children and caregivers are discrepant with each other.

Cohen's kappa values are shown in Table 4.  Reliabilities were mostly Poor, with some being

Moderate, and none being Substantial or Almost Perfect.  Specifically, for 7-12 year-old youths

in FC, kappa reliabilities were Moderate for all four subscales (PTSD, Internalizing,

Externalizing, and ADHD).  Kappa reliabilities were Poor for 13-18 year-old youths in FC and

for 7-12 year-old youths in FS for all four subscales.  For 13-18 year-old youths in FS, kappa

reliability was Moderate for PTSD and ADHD, but Poor for Internalizing and Externalizing.

[Table 4 near here]

Overall, out of all symptoms endorsed from any subscale by either youths or caregivers,

both respondents agreed on the endorsement 39.4% of the time.  Caregivers endorsed 20.7% of

the symptoms when youths did not.  Youths endorsed the remaining 39.9% of the symptoms

when caregivers did not.

***Hypothesis 3. Does degree of discrepancy about trauma exposure associate with higher***

***symptom levels?***

In all four age by service subgroups,  (FC 7-12, FC 13-18, FS 7-12, and FS 13-18), the

amount of discrepancy between respondents about trauma exposures positively correlated with

the severity of PTSD symptoms when youths were the respondents about PTSD symptoms.  For

FC 7-12 years, r = .25, p<.0001; for FC 13-18 years, r=.29, p<.0001; for FS 7-12 years, r=.33, p<.0001; and for FS 13-18 years, r=.38, p<.0001.

When caregivers were the respondents endorsing PTSD symptoms, three of the four correlations were significant. For FC 7-12 years, r= .10, p=.0028; for FS 7-12 years, r=.18, p<.0001, and for FS 13-18 years, r=.20, p<.0001. The correlation for FC 13-18 years, r= .07, p=.069 was not significant.

### *Hypothesis 4. Concordance between youth and caregiver reports over time*

Over time, there was an overall substantial reduction of symptoms for the sample. For the FC group, 58.8% according to child respondents, and 56.8% according to caregiver respondents reduced symptoms by 30% or more on at least one for the four subscales. For the FS group, 39.1% according to child respondents, and 40.2% according to caregiver respondents reduced symptoms by 30% or more on at least one of the four subscales.

Despite this trend for reduction of symptoms over time, for youths in FC, none of the kappas statistically significantly improved from Time 1 to Time 2 (Table 5) even though the kappas for child-caregiver agreement generally improved over time. The only exception observed was the 7-12 year-old group for which agreement on the ADHD subscale worsened over time.

[Table 5 near here]

Change in kappas over time could not be computed for most of the youths in FS because during either Time 1 or Time 2, 100% of caregivers reported zero youths above the cutoff. Only two changes in kappas could be computed. For Externalizing problems in 7-12 year-old FS children, the kappa worsened from Time 1 (0.64) to Time 2 (0.49). For ADHD 7-12 year-old FS

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children, Time 1 (.25) worsened to Time 2 (-.03). Both of these changes were not statistically significant.

**Discussion**

Seven main findings emerged from this assessment of trauma events and symptoms of youths in child welfare stratified by age and type of service use. First, we demonstrated that agreements between youths and caregivers about trauma event exposure in a child welfare population were mostly Moderate or Substantial. This contrasted with previous studies in other populations that tended to find Poor levels of agreement.

The better-than-expected agreements about trauma exposure could be explained by the instructions to respondents in the trauma events measure. The instructions in the CPC educate respondents to endorse events only if the events were perceived as *life-threatening* events, which are known to be the most common causes of PTSD, and which is consistent with the diagnostic criteria of PTSD in the Diagnostic and Statistical Manual, Fifth Edition (APA, 2013). In contrast, previous studies used life events measures that either described events as stressful (as opposed to life-threatening) or ascribed no valence to the events in terms of life-threat (Goodman et al., 2010; Stover et al., 2010; Oransky et al., 2013; Tingskull et al., 2015).

The better-than-expected agreements about traumatic events might also be due to the data collection procedure. TBH screens were self-administered, with the exception of younger children who may have had the items read to them by caseworkers. In contrast, nearly all of the previous studies collected these data through interviews by research assistants. The lone exception is the study by Tingskull and colleagues (2015) with a community sample in Sweden which allowed 12-year old children to record their own answers after research assistants read the questions aloud. They also found Moderate agreements for having been robbed, sexual abuse,

and car accidents. However, they found Poor agreements for natural disaster, physical abuse, fire, and parental fights. Interviews are typically considered more accurate than self-administered questionnaires in psychosocial research because interviews allow follow-up probes and clarifications. These findings suggest the possibility that the greater privacy of self-administered questionnaires may allow more accurate disclosures of traumatic events.

Despite most of the agreements between respondents in this study being Moderate or Substantial, agreements were far from perfect. It is not clear if caregivers simply knew about fewer events or if they knew about different events than the youths. In nearly all types of trauma, caregivers endorsed fewer traumatic events than children, and in all age by group classes, caregivers underestimated the total amount of different traumatic events that children had experienced.

These data suggest that adults are oftentimes insufficient sources of traumatic event endorsement, and therefore, at a minimum, youths need to be asked about trauma exposure with a comprehensive menu of trauma types. There has been reluctance among child welfare agencies to ask youths directly about trauma events (Lang et al., 2017) because of a concern about upsetting the youths. This concern seems largely unfounded based on a study in which researchers interviewed over 2,000 youths, aged 10-17 years. Researchers asked respondents directly about exposure to traumatic events and about trauma-related symptoms. Afterwards, they asked the youths if the questions in the survey upset them and, knowing now the nature of the survey, would they have still agreed to do it. Only 4.5% reported feeling any upset, and only 0.3% said they would not participate again (Finkelhor et al., 2014). This survey ought to give confidence that asking these types of questions do not make the vast majority of youths upset.

Second, PTSD appears to be more common than internalizing disorders, externalizing disorders, and ADHD in a child welfare population. To our knowledge, there has been no prior literature on studying the rate of PTSD compared to rates of the three other disorders within this population. This study shows that across all ages and child welfare groups, more youths score above the cut-off score for PTSD than any of the other three disorders. These findings provide meaningful implications for other states wishing to implement mental health screening within child welfare agencies, indicating that youths in care should be screened adequately for trauma and PTSD.

Third, consistent with prior studies in non-child welfare populations, it was found that using only a single respondent guarantees a significant underestimation of the prevalence of PTSD. Caregiver-only rates missed 50.6% of joint-report cases and child report missed 23.4% of joint-report cases. The relatively larger discrepancy between the caregiver and joint scores is further indication that caregivers may be insufficient sources of information on symptomology endorsement, and therefore, child welfare agencies should utilize a multi-informant approach to mental health screening.

These data are consistent with other research showing that under-detection of PTSD in youths is common. A study was conducted at two mental health programs for children and adolescents in Pennsylvania (Miele & O'Brien, 2010). The researchers reviewed the charts of the patients at the beginning of the study and found that the rates of PTSD diagnosis were 2% at one program and 5% at the second program. This represented the recognition of PTSD when clinicians used their usual methods of practice. They then re-evaluated the same patients with a standardized diagnostic interview for PTSD. This time they found that the rates of diagnosis of

PTSD were actually 48% and 45% at the two programs. Trained and licensed clinicians were missing the diagnosis of PTSD about 90% of the time.

Fourth, whereas many state welfare agencies have opted to utilize other informants besides caregivers (Lang et al., 2017) based on faulty assumptions that caregivers in FC and FS populations may be limited in accuracy as respondents, these data showed they are willing and able to provide unique information. For all disorders, caregivers provided distinctive information not obtainable from child self-report. This finding is consistent with prior studies that have shown that significantly higher rates of cases are detected with joint report compared to youth-report alone or caregiver-report alone (Scheeringa et al., 2006; Meiser-Stedman et al., 2008).

Fifth, this study replicated findings from two previous studies that greater discrepancy about exposure to events is associated with greater child psychopathology. Ceballo and colleagues (2001) showed this association in children from two inner-city elementary schools, and was limited in scope to exposure to community violence. Oransky and colleagues (2013) also showed this association in youths recruited for a treatment study, although they found the association only with youth-reported PTSD symptoms, while the association was not found using caregiver-reported PTSD symptoms. The current study is the first to demonstrate this association in a child welfare population.

It has been suggested that this discrepancy may be viewed as an opportunity for intervention of sorts. Specifically, that it may be beneficial for children to talk with their caregivers about their trauma exposure so that parents have opportunities to express feelings, normalize reactions, and/or discuss coping skills (Ceballo et al., 2001). However, our current understanding of treatment for PTSD is that it is a chronic condition best treated by licensed

clinicians following evidence-based protocols, and it is likely unrealistic to expect many FC and FS parents to achieve that level of parenting competency. Nevertheless, there may be a subset of situations in which caregivers can facilitate discussions about trauma exposure which can lead to symptom reduction.

Sixth, when screens are repeated six months following the first screen when they entered care, agreement between youths and caregivers did not improve. The two previous studies on change in agreement over time included youths who received treatment and both showed significant shifts in agreement over time. One study, involving youths who had been hospitalized for physical injuries, showed greater concordance over time (Schreier et al., 2005), but the other study, involving youths who had experienced a wide range of traumas, showed smaller concordance over time (Humphreys et al., 2015). Because the current study did not involve treatment, this suggests that discrepancies between respondents are not easily altered by time alone, and instead require active intervention.

Seventh, there were relatively few age findings. Whereas Stover et al. (2010) had found that agreements about muggings and animals attacks between youths and caregivers were moderate for younger children but poor for adolescents, we found agreements to be Moderate for animal attacks for both age groups. We did not assess muggings as a separate category. The only type of event for which we found adolescents to have relatively worse agreement than children was for medical trauma in both the FC and FS samples.

In regards to symptom endorsements, agreements between 7-12 year-old youths and caregivers in FC were in the Moderate range for all four subscales, but tended to be Poor for the same age group in FS and for 13-18 year-old youths in both FC and FS. This difference in agreements does not appear to be explainable by the frequency of trauma exposure or the

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frequency of problems between groups, as there was no consistent pattern of lesser or greater exposure or problems in the FC 7-12 years group compared to the other three groups. This difference in agreements may reflect differences in how these different age groups come into care and how open they are to communicating with foster parents. These findings would need replication and further investigation before making additional conclusions.

*Limitations*

Screens could not be gathered from all of the FC and FS cases that were eligible for screening. We estimated that approximately 50% of eligible cases were screened. This was due most likely to the speed of adoption by caseworkers of the new screening policy and not to any known bias to screen cases that were more or less symptomatic. It is conceivable that caseworkers were biased to screen their more symptomatic clients because they might have wanted more information about those clients. However, it is also conceivable that caseworkers were biased to screen their least symptomatic clients in order to save time.

It is possible that cases receiving mental health treatment could be more likely to develop better concordance between youths and caregivers over time. Due to Medicaid service claims data being unavailable throughout the duration of the project, the study was unable to receive information and verify whether children sought mental health treatment while in care. Therefore, we were unable to determine whether treatment may have affected the concordance and discordance between initial and repeat screens.

Caregivers were not required to personally identify themselves on the screen, so we were unable to confirm that caregivers who filled out the repeat screens were the same caregivers who completed the first screens. If different caregivers completed the screens at each time, this could limit our ability to draw conclusions about how agreement changes over time. This limitation is

likely to be more relevant for the FC group because children often move between foster care homes. Nevertheless, it is unlikely that children in the FS group moved to different caregivers, and there were not major differences in agreements between the FC and FS groups.

**Conclusion**

The federal Children's Bureau has made an unprecedented investment in screening for mental health issues in the child welfare population. While many agencies have implemented screening for mental health problems for the first time, the vast majority of agencies in the U.S. have not yet implemented universal screening. As more agencies contemplate voluntary implementation and/or await a federal mandate, these data provide findings for consideration on how best to accurately screen this population.

This research underscores the importance of systematic and universal mental health screens to adequately address trauma exposure and PTSD symptoms in the child welfare population. The data show that irrespective of age and group, approximately 25% to 60% of 7- to 18-year-old youths under care experience at least one traumatic event. Furthermore, our findings indicate that PTSD is the most common psychiatric disorder. For 7- to 18-year-old child welfare recipients in Louisiana, rates of PTSD were substantially higher than Externalizing and ADHD, and double the rate of Internalizing. Identifying trauma exposure and PTSD seems to warrant the highest priority for the mental well-being of the child welfare population.

The evidence also confirms that multi-informant screens are necessary to accurately assess a child's mental health. These findings further confirm that when either caregiver (whether biological or foster parent) or child responses are assessed solely, they represent significant underestimates of the child's traumatic event experience and psychiatric symptomology. These underestimations of psychiatric symptomology from a single respondent

were also found when evaluating Externalizing problems, Internalizing problems, and ADHD. Therefore, in order to obtain the most accurate information, mental health screens should obtain both a caregiver and child report. The findings of this research also indicate that both traumatic event endorsement and clinical information can be gleaned regardless of whether the caregiver is a foster parent or a biological parent who may be under suspicion for being the source of maltreatment for the child.

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Table 1. Exposure to Specific Types of Trauma Events and Youth-Caregiver Agreements.

| | Foster Care | | | | | | Family Services | | | | | |
| | 7-12 Years | | | 13-18 Years | | | 7-12 Years | | | 13-18 Years | | |
| Trauma Events | k | Youth (%) | Caregiver (%) | k | Youth (%) | Caregiver (%) | k | Youth (%) | Caregiver (%) | k | Youth (%) | Caregiver (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Accident | .78 | 12.2 | 11.4 | .70 | 15.8 | 12.0 | .75 | 11.4 | 10.5 | .68 | 14.2 | 11.8 |
| Animal Attack | .57 | 7.8 | 4.5 | .58 | 15.2 | 8.9 | .43 | 8.0 | 3.5 | .57 | 10.6 | 7.0 |
| Disaster | .64 | 17.2 | 14.8 | .65 | 33.5 | 28.1 | .67 | 14.9 | 16.4 | .65 | 25.9 | 25.2 |
| Medical | .64 | 14.5 | 12.6 | .48 | 16.8 | 12.2 | .56 | 11.5 | 8.7 | .33 | 12.4 | 9.9 |
| Physical abuse | .72 | 22.3 | 21.9 | .70 | 34.5 | 30.9 | .64 | 7.7 | 7.4 | .58 | 12.4 | 10.2 |
| Sexual abuse | .81 | 12.6 | 13.5 | .82 | 27.3 | 26.9 | .77 | 4.5 | 5.4 | .84 | 14.4 | 12.7 |
| Injury | .40 | 9.1 | 5.6 | .46 | 10.9 | 7.2 | .41 | 7.7 | 3.0 | .31 | 7.8 | 3.6 |
| Witnessing DV | .63 | 21.5 | 22.5 | .62 | 22.7 | 21.1 | .53 | 9.6 | 9.1 | .61 | 13.2 | 13.5 |
| Other | .74 | 8.1 | 10.1 | .39 | 4.6 | 6.2 | .65 | 5.3 | 5.4 | .62 | 5.3 | 3.7 |
| 1 or more events | | 59.8 | 53.9 | | 52.0 | 44.8 | | 46.6 | 45.5 | | 27.6 | 24.3 |
| 2 or more events | | 32.1 | 26.3 | | 34.5 | 25.6 | | 20.7 | 16.2 | | 13.6 | 10.7 |
| 3 or more events | | 15.9 | 13.6 | | 22.2 | 13.5 | | 9.7 | 6.5 | | 6.5 | 4.9 |

Sample sizes for data analyses for each type of event: FC 7-12 ranged from 806-852, and Other = 434; FC 13-18 ranged from 568-594, and Other = 306; FS 7-12 ranged from 971-994, and Other = 589; FS 13-18 ranged from 409-416, and Other = 244.

Table 2. Youths as Respondents: Agreements for Scoring Above Cutoffs Between Youth Respondents and Joint Scores.

| Problem | Group | Age | Joint Yes Youth Yes (n) | Joint Yes Youth No (n) | Joint No Youth No (n) | Youth Score Above Cutoff (%) | Joint Score Above Cutoff (%) | Statistic (Youth vs. Joint) |
|---|---|---|---|---|---|---|---|---|
| PTSD | FC | 7-12 | 166 | 61 | 396 | 26.7 | 36.4 | 394.77, p<.0001 |
| | | 13-18 | 213 | 57 | 248 | 41.1 | 52.1 | 332.27, p<.0001 |
| | FS | 7-12 | 87 | 31 | 396 | 16.9 | 23.0 | 351.45, p<.0001 |
| | | 13-18 | 87 | 20 | 183 | 30.0 | 36.9 | 212.56, p<.0001 |
| Int | FC | 7-12 | 120 | 58 | 764 | 12.7 | 18.9 | 590.25, p<.0001 |
| | | 13-18 | 141 | 80 | 472 | 20.4 | 31.9 | 378.06, p<.0001 |
| | FS | 7-12 | 65 | 36 | 883 | 6.6 | 10.3 | 608.46, p<.0001 |
| | | 13-18 | 66 | 31 | 343 | 15.0 | 22.1 | 274.57, p<.0001 |
| Ext | FC | 7-12 | 93 | 106 | 747 | 9.8 | 21.0 | 387.16, p<.0001 |
| | | 13-18 | 76 | 87 | 530 | 11.0 | 23.5 | 277.56, p<.0001 |
| | FS | 7-12 | 55 | 75 | 861 | 5.6 | 13.1 | 385.67, p<.0001 |
| | | 13-18 | 28 | 45 | 369 | 6.3 | 16.5 | 151.11, p<.0001 |
| ADHD | FC | 7-12 | 114 | 81 | 750 | 12.1 | 20.6 | 498.61, p<.0001 |
| | | 13-18 | 90 | 53 | 549 | 13.0 | 20.7 | 397.18, p<.0001 |
| | FS | 7-12 | 64 | 72 | 857 | 6.5 | 13.7 | 431.08, p<.0001 |
| | | 13-18 | 42 | 29 | 366 | 9.6 | 16.3 | 239.53, p<.0001 |

Note: PTSD = posttraumatic stress disorder. Int = Internalizing. Ext = Externalizing. ADHD = attention-deficit/hyperactivity disorder. Test statistic of youth versus joint is the chi-square test.

Table 3. Caregivers as Respondents: Agreements for Scoring Above Cutoffs Between Caregiver Respondents and Joint Scores.

| Problem | Group | Age | Joint Yes Other Yes (n) | Joint Yes Other No (n) | Joint No Other No (n) | Scored Above Cutoff (%) | Joint Score Above Cutoff (%) | Statistic (Caregiver vs. Joint) |
|---|---|---|---|---|---|---|---|---|
| PTSD | FC | 7-12 | 130 | 97 | 396 | 20.9 | 36.4 | 286.59, p<.0001 |
| | | 13-18 | 130 | 140 | 248 | 25.1 | 52.1 | 159.42, p<.0001 |
| | FS | 7-12 | 48 | 70 | 396 | 9.3 | 23.0 | 177.68, p<.0001 |
| | | 13-18 | 49 | 58 | 183 | 16.9 | 36.9 | 100.84, p<.0001 |
| Int | FC | 7-12 | 93 | 85 | 764 | 9.9 | 18.9 | 442.89, p<.0001 |
| | | 13-18 | 104 | 117 | 472 | 15.0 | 31.9 | 261.34, p<.0001 |
| | FS | 7-12 | 39 | 62 | 883 | 4.0 | 10.3 | 355.03, p<.0001 |
| | | 13-18 | 50 | 47 | 343 | 11.4 | 22.1 | 199.47, p<.0001 |
| Ext | FC | 7-12 | 150 | 49 | 747 | 15.9 | 21.0 | 669.17, p<.0001 |
| | | 13-18 | 124 | 39 | 530 | 17.9 | 23.5 | 491.06, p<.0001 |
| | FS | 7-12 | 83 | 47 | 861 | 8.4 | 13.1 | 599.96, p<.0001 |
| | | 13-18 | 49 | 24 | 369 | 11.1 | 16.5 | 278.57, p<.0001 |
| ADHD | FC | 7-12 | 127 | 68 | 750 | 13.4 | 20.6 | 564.30, p<.0001 |
| | | 13-18 | 60 | 83 | 549 | 8.7 | 20.7 | 252.22, p<.0001 |
| | FS | 7-12 | 78 | 58 | 857 | 7.9 | 13.7 | 533.41, p<.0001 |
| | | 13-18 | 38 | 33 | 366 | 8.7 | 16.3 | 214.54, p<.0001 |

Note: PTSD = posttraumatic stress disorder. Int = Internalizing. Ext = Externalizing. ADHD = attention-deficit/hyperactivity disorder. Test statistic of caregiver versus joint is the chi-square test.

Table 4. Agreements for Scoring Above Cutoffs Between Youth and Caregiver Respondents.

| Problem | Group | Age | Youth-Caregiver Agreement (kappa) |
|---------|-------|-----|-----------------------------------|
| PTSD | FC | 7-12 | .57 |
| | | 13-18 | .38 |
| | FS | 7-12 | .37 |
| | | 13-18 | .47 |
| Int | FC | 7-12 | .48 |
| | | 13-18 | .40 |
| | FS | 7-12 | .27 |
| | | 13-18 | .33 |
| Ext | FC | 7-12 | .46 |
| | | 13-18 | .39 |
| | FS | 7-12 | .32 |
| | | 13-18 | .39 |
| ADHD | FC | 7-12 | .51 |
| | | 13-18 | .30 |
| | FS | 7-12 | .29 |
| | | 13-18 | .42 |

Table 5. Youth-Caregiver Agreement to Meet Cutoffs Over Time in Foster Care Group.

| Problem | Age | Time 1 Youth-Caregiver | | Time 2 Youth-Caregiver | |
|---------|-----|------|--------|------|--------|
| | | kappa | 95% CI | kappa | 95% CI |
| PTSD | 7-12 | .42 | (.23, .62) | .57 | (.39, .75) |
| | 13-18 | .44 | (.25, .63) | .63 | (.43, .83) |
| Int | 7-12 | .23 | (.01, .46) | .48 | (.27, .69) |
| | 13-18 | .45 | (.22, .68) | .59 | (.39, .79) |
| Ext | 7-12 | .40 | (.19, .61) | .45 | (.26, .65) |
| | 13-18 | .41 | (.13, .69) | .59 | (.35, .84) |
| ADHD | 7-12 | .43 | (.23, .63) | .16 | (-.05, .38) |
| | 13-18 | .43 | (.17, .69) | .78 | (.57, .99) |

Note: 95% CI = Ninety-five percent confidence interval. None of the Time 2 95% CIs were significantly different from the Time 1 95% CIs; all Time 1 and 2 95% CIs overlapped.