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Sociodemographic characteristics of youth in a trauma focused-cognitive behavioral therapy effectiveness trial in the city of Philadelphia

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Abstract

While randomized controlled trials of trauma-focused cognitive behavioral therapy (TF-CBT) have demonstrated efficacy for youth with posttraumatic stress disorder (PTSD), TF-CBT effectiveness trials typically show attenuated outcomes. This decrease in effectiveness may be due to the differences in sociodemographic characteristics of youth in these trials; youth in efficacy trials are more often white and middle-income, whereas youth in effectiveness trials are more often racial/ethnic minorities, of low socioeconomic status (SES) and live in high crime neighborhoods. In this study—drawn from an effectiveness trial of TF-CBT in community mental health clinics across Philadelphia—we describe the sociodemographic characteristics of enrolled youth. We measured neighborhood SES by matching participants' addresses to American Community Survey data from their Census tracts, housing stability using the National Outcomes Measurement System, and neighborhood violence using police department crime statistics. Our results suggest that the majority of youth presenting for TF-CBT in mental health clinics in the City of Philadelphia live in poor and high-crime neighborhoods, experience substantial housing instability, and are predominantly ethnic and racial minorities. Thus, youth presenting for treatment experience significant racial and socioeconomic adversity. We also explored the association between these characteristics and youth symptom severity upon presenting for treatment. These factors were not associated with youth symptom severity or overall mental health

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functioning in our sample (with small effect sizes and $p > 0.05$ for all). Implications for future research, such as the need for efficacy and effectiveness trials to more fully characterize their samples and the need for pragmatic trials are discussed.

Keywords

social determinants of health; posttraumatic stress disorder; implementation science; trauma-focused cognitive behavioral therapy (TF-CBT); effectiveness trials; neighborhood context; pragmatic trials

Decades of randomized controlled trials (RCTs) have demonstrated the efficacy of trauma-focused cognitive behavioral therapy (TF-CBT) for youth with posttraumatic stress disorder (PTSD) (Morina, Koerssen, & Pollet, 2016). Indeed, TF-CBT is considered the gold-standard treatment for youth with PTSD (Cohen, Deblinger, & Mannarino, 2018). Despite these robust findings, in our recent TF-CBT effectiveness trial implemented in community mental health agencies across the city of Philadelphia, clinical outcomes for youth were attenuated (Rudd et al., 2019). This often-described “voltage drop” in positive treatment outcomes when interventions move from efficacy to effectiveness trials is often multiply determined (Santucci, Thomassin, Petrovic, & Weisz, 2015). The growing implementation science literature proposes several explanations, including the fact that most efficacy studies are conducted outside the context of clinical practice, with therapists who are not community clinicians, and with youth who may differ considerably from those seeking mental health treatment in community settings. Though some trials suggest that research participants do not dramatically differ from clients in clinical practice in terms of diagnostic status or symptom severity (Stirman, DeRubeis, Crits-Christoph, & Brody, 2003), research trial participants tend to be more well-resourced and to be of the majority racial/ethnic group (see Table A1).

A growing body of evidence on the social determinants of mental health suggests that sociodemographic characteristics, such as low socioeconomic status (SES), racial/ethnic discrimination, and neighborhood crime, likely play a considerable role in youths’ response to treatment. All of these sociodemographic factors are associated with PTSD symptoms: youth who live in poor, crime-ridden neighborhoods are exposed to more traumatic events, are more likely to continue being retraumatized, experience more functional impairment as a result of their symptoms, and are less likely to recover from PTSD (Bonanno, Galea, Bucciarelli, & Vlahov, 2007; Breslau, Wilcox, Storr, Lucia, & Anthony, 2004; Brewin, Andrews, & Valentine, 2000; Hudson, 2005; Leventhal & Brooks-Gunn, 2003; McLaughlin, Costello, Leblanc, Sampson, & Kessler, 2012; Stafford, Chandola, & Marmot, 2007; Williams, Yu, Jackson, & Anderson, 1997). Furthermore, qualitative interviews of the therapists implementing TF-CBT in community mental health agencies in Philadelphia reported that these sociodemographic characteristics are significant barriers to youth engagement and outcomes (Frank et al., 2018). Given the well-established link between sociodemographic characteristics and PTSD as well as therapist self-reports, we sought to characterize the youth in our sample to investigate whether these factors may explain the “voltage drop.”

The present study seeks to provide information on the sociodemographic characteristics of youth participating in an effectiveness trial of TF-CBT in the city of Philadelphia, which saw attenuated outcomes across a variety of symptom and functioning measures (Rudd et al., 2019). The current study examines individual-level sociodemographic characteristics of youth (i.e., race/ethnicity and housing stability) receiving TF-CBT as well as detailed sociodemographic information on the neighborhoods in which the youth presenting for treatment lived (i.e., neighborhood SES and crime). To determine the degree of sociodemographic adversity experienced by youth receiving TF-CBT in our trial, we compared our sample's sociodemographic characteristics with those of the average Philadelphian and American. We hypothesized that youth in our sample experience significant sociodemographic adversity, particularly when benchmarked against the average Philadelphian or American. Finally, as part of an exploratory analysis, given the well-established association between sociodemographic characteristics and PTSD, we analyzed whether neighborhood-level and individual-level sociodemographic measures significantly predicted symptom severity when youth presented for treatment. Characterizing the sociodemographics of youth in our sample will provide a deeper understanding of the client-level and contextual factors that may have influenced the attenuated treatment response in our effectiveness trial.

Setting

Philadelphia is racially and ethnically diverse and is one of the poorest and most violent large cities in the United States. Of the 1.5 million people living in Philadelphia, 26% live below the poverty line (U.S. Census Bureau, 2017b). Children experience disproportionately more poverty than any other age group in the city. Thirty-seven percent of individuals living under the poverty level are under the age of 18 and the majority of youth (between 55-80%) in Philadelphia are enrolled in Medicaid (Beidas et al., 2016; Pennsylvania Partnership for Children, 2017). Moreover, Philadelphia has some of the highest violent crime rates in the country, with approximately 10 violent crimes occurring per 1,000 residents (OpenDataPhilly, 2018). A recent survey found that 41% of adults in Philadelphia witnessed someone being stabbed, beat up or shot in their childhood (Wade et al., 2016). In addition to witnessing violence, 39% of Philadelphian adults report that growing up they experienced four or more adverse child experiences, which include potentially traumatic interpersonal events and neighborhood-level stressors. Conservative estimates suggest that approximately 30,000 youth in Philadelphia are in need of trauma treatment (Beidas et al., 2016).

Philadelphia's Department of Behavioral Health and Intellectual disAbility Services (DBHIDS) oversees all public behavioral health service delivery in the city. Services are paid for via Community Behavioral Health (CBH), a not-for-profit 501c (3) corporation contracted by the City of Philadelphia to provide mental health and substance abuse services for Philadelphia County Medicaid recipients. Due to the particularly high rates of trauma exposure among youth seeking public behavioral health services in Philadelphia, DBHIDS began developing a comprehensive trauma-informed public behavioral health treatment system in 2011. DBHIDS was subsequently awarded a National Child Traumatic Stress Initiative Community Treatment and Service Center grant (Category III) from the Substance Abuse and Mental Health Services Administration (SAMHSA) in 2012 to form the

Philadelphia Alliance for Child Trauma Services (PACTS). PACTS aims to increase the number of children who receive evidence-based trauma treatments in Philadelphia by (1) integrating the system of child trauma providers, (2) increasing trauma screening and assessment, (3) building partnerships between PACTS behavioral health providers and other child serving systems (e.g., schools, child welfare, juvenile justice), and (4) increasing the delivery of EBP for trauma with a particular focus on TF-CBT (Beidas et al., 2016). Since 2012, over 300 community therapists have been trained in TF-CBT via a two-day workshop and eight months of bi-weekly consultation calls with a TF-CBT certified master trainer. Due to PACTS efforts to forge partnerships with community agencies, therapists trained in TF-CBT are spread equitably throughout the city in order to reach all youth who are in need of services. As part of this effort, DBHIDS partnered with a University of Pennsylvania research team to evaluate the effectiveness of the PACTS initiative and the implementation of TF-CBT in the community.

Study Procedure

All study procedures were approved by Institutional Review Boards (IRB) at the University of Pennsylvania (Penn; 817282) and the City of Philadelphia (2012-47).

The current investigation uses administrative data made publicly available by the United States Census Bureau and Philadelphia Police Department, and data collected from the PACTS evaluation team. Administrative data include neighborhood-level measures of socioeconomic context (e.g., the average median household income, educational attainment, households living under the poverty level, and owner-occupied housing) as well as neighborhood-level measures of crime (e.g., district-level crime incident reports). Collected data include individual demographic information (i.e., age, gender, race/ethnicity), self-reported housing stability, and measures of mental health symptoms and functioning. See Measures for more detailed information on the data in our analysis.

In order to collect primary clinical evaluation data for the effectiveness study (Rudd et al., 2019), a research coordinator sent weekly emails to therapists and supervisors in community agencies to identify eligible youth from 2013-2016. Youth were eligible if they were 1) receiving TF-CBT from PACTS-trained therapists, 2) within the first four sessions of TF-CBT treatment, 3) were between 3-21 years of age, and 4) had a legal guardian who could provide consent (if under 18). Of note, due to the complexities of obtaining consent, we excluded children who were under guardianship of the Department of Human Services or were involved in the juvenile justice system. Therapists would alert the coordinator if an eligible youth was identified and verbally assented/consented to the research team outreach to assess eligibility and schedule the baseline visit.

Although we could not systematically track youth eligible for the effectiveness evaluation, we obtained an approximate number by identifying the total number of eligible youth receiving TF-CBT per the monthly reports that our evaluation team received from the DBHIDS PACTS director. Between 2013 – 2016, these reports indicated that approximately 440 of the youth receiving TF-CBT were eligible for the evaluation. It is worth noting that oftentimes youth identified by the PACTS director as eligible, were deemed ineligible once

reached by the PACTS evaluation team coordinator per the study's inclusion and exclusion criteria (e.g., often youth were under custody of child protective services, were beyond their fourth TF-CBT session, did not have a consistent caregiver who could provide consent, etc.) Of those "eligible youth," 114 from 15 PACTS agencies participated in our study. Table 1 displays the demographic characteristics of these youth.

At the baseline visit, youth and their guardian provided written assent and consent before completing the interview, which was conducted by trained research assistants in the PACTS agency where the youth received services. For all assessment measures in the battery, the youth was interviewed if 11 years old or older and the caregiver if the youth was younger than 11. Follow-up evaluations with the same battery of measures were conducted every six months or until the youth's TF-CBT treatment terminated, when there was a final assessment. Because the current investigation focuses on PACTS youths' sociodemographic characteristics when presenting for treatment, only baseline data were analyzed in this study. See Rudd et al., 2019 for the results of the effectiveness trial.

Measures

Administrative Data

American Community Survey measures (ACS; U.S. Census Bureau, 2017).—

The ACS is an annual survey that the U.S. Census Bureau conducts with a 95% household response rate (U.S. Census Bureau, 2016). The Bureau randomly samples addresses and collects data by internet, mail, telephone, or in-person interviews. The ACS collects detailed information including (but not limited to) housing, income and poverty, occupation, family structure, living arrangements, and education. These data are aggregated to the Census-tract (an area roughly equivalent to a neighborhood, encompassing a population between 2,500 to 8,000 people), city, county, state, and national level to derive population estimates. Estimates are averaged over five years to create a more stable approximation. The ACS 5-year estimate for 2012 to 2016 coincide with primary data collection years of this study. Participants' primary addresses were matched to their corresponding Census-tract level ACS data. We included the following neighborhood socioeconomic indicators in our analyses: the percentage of individuals living below the poverty level, the percentage of individuals over the age of 25 with only a high school education/equivalent or less, the median household income, and the percentage of owner-occupied housing units. These indicators are frequently used in studies examining neighborhood context and were chosen specifically in other investigations examining socioeconomic status and psychopathology (Beidas et al., 2012; Stockdale et al., 2007).

Philadelphia Police Department data.—OpenDataPhilly is a web platform that provides access to more than 300 data sets related to the Philadelphia region, among these being Philadelphia Police Department crime incident data (OpenDataPhilly, 2018). We identified PACTS participants' police districts using their self-reported addresses. We aggregated violent crime incident data (e.g., homicide, rape, aggravated assault; Federal Bureau of Investigation) and non-violent crime data reported in the six months preceding

each participant's baseline interview given the well-established association between violent neighborhood crime and traumatization (Finkelhor, Turner, Hamby, & Ormrod, 2011).

Data Collected by the Evaluation Team

Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001).

—The CPSS is a 24-item self-report measure that assesses the frequency of all Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition, Text Revision (DSM-IV-TR) defined PTSD symptoms, functional impairment due to PTSD, and is validated to diagnose PTSD. The first 17 items measure PTSD symptoms on a 4-point Likert scale (0 = “Not at all or only at one time” to 3 = “5 or more times a week/almost always”), yielding a total Symptom Severity score. Higher scores indicate greater PTSD symptom severity. A clinical cutoff of 11 on the PTSD Symptom Severity subscale has adequate sensitivity and specificity to discriminate a PTSD diagnosis status obtained via a structured clinical interview. The primary outcome of our study was the Symptom Severity score. Seven additional items assess the impact of youth's PTSD on daily functioning on a nominal scale (i.e., Yes/No). The more items youth positively endorse indicate greater functional impairment related to PTSD.

National Outcomes Measures—Client-Level Measures for Discretionary Programs Providing Direct Services (NOMs).

—The NOMs was developed by SAMHSA to inform policy, measure the impact of programs, and improve the quality of mental health and substance use services and outcomes for individuals, families, and communities (Center for Mental Health Services, 2012). It includes standard demographic questions (e.g., race/ethnicity, age), general questions about the participant's health and well-being, education (e.g., highest level of education, total number of days missed of school) housing stability, and involvement in the criminal justice system.

The NOMs includes two questions about housing in the past thirty days. The first question asks youth if they were homeless for at least one night in the past month. We transformed responses to this question into a categorical variable, hereby called “Housing Instability,” that indicated whether the participant ever experienced housing instability in the past thirty days (0 = “No”; 1 = “Yes”). The second question asks youth to identify their living arrangements for the majority of the past thirty days. We created another categorical variable hereby called “Normative Housing,” which grouped participants into two categories: those that lived with their primary caregivers (i.e., their legal guardians) for the past thirty days (coded as 1 = “Yes”) and those that did not (e.g., those that were homeless, staying in a residential treatment facility or other transitional living facility, etc.; coded as 0 = “No”). Inter-rater reliability across two investigators when recoding these variables was excellent (kappas > 0.9, p 's < 0.001).

Ohio Mental Health Consumer Outcomes System—Ohio Youth Problem, Functioning, and Satisfaction Scales (Ohio Scales; Ogles, Melendez, Davis, & Lunnen, 2001).—The Ohio Scales include 48 items that evaluate problem severity, functioning, hopefulness, and satisfaction with mental health services from the perspective of youth or their legal guardian. The primary outcome in our study was the General

Functioning subscale. The General Functioning subscale consists of 20 items structured on a 5-point rating scale assessing the youth's functioning in many areas of daily activity (e.g., interpersonal relationships, recreation, self-direction and motivation). Higher scores indicate better functioning and cut-offs are adjusted by who is reporting (i.e., self-report vs. parent report); youth whose scores were below 60, or if their parents completed the Ohio, below 50, are considered to have significantly impaired functioning.

Analysis Plan

Characterizing the Sample Using Administrative Data—To characterize the sociodemographic characteristics of PACTS participants, we used the aforementioned administrative and evaluation team collected data. To characterize the neighborhood-level data, we examined both the ACS socioeconomic data and OpenDataPhilly's crime incident data. First, we averaged the socioeconomic values across PACTS participants' Census tracts, as reported in the ACS. Second, we obtained the same ACS sociodemographic measures for the Census tracts in Philadelphia and the United States (US). To determine average neighborhood socioeconomic status, we averaged the neighborhood-level ACS data in each region. Finally, we compared this information between PACTS participants, Philadelphia, and US samples using one sample t-tests and one proportion z-tests. We used descriptive statistics to analyze the number of crime incidents (violent and non-violent) in the six months preceding each participant's baseline interview. It is worth noting that we did not cluster the data because there were too few cases per agency or Census tract.

Characterizing the Sample Using Collected Data—We used self-reported descriptive statistics to characterize participants' housing instability, the degree of normative housing they experienced, and race/ethnicity measured by the NOMS. We compared participants' race/ethnicity with city and national statistics on race/ethnicity, measured by the ACS, using one proportion z-tests.

Exploratory Analysis: Associations with Symptom Severity—To examine the relationship between race/ethnicity and housing stability with PTSD symptom severity and overall functioning (as determined by the Ohio scales) at baseline, we used univariate Analyses of Variance (ANOVA). We conducted Pearson's correlations to examine the relationship between neighborhood socioeconomic context and crime incidence with PTSD symptom severity and overall functioning. For all analyses, all measures were standardized to put them on a common scale.

Results

Sample Distribution

In terms of the distribution of youth by agency and therapist, of the 15 participating PACTS agencies, 46 therapists treated the youth in the evaluation study. Therapists were evenly distributed across the PACTS agencies, with a range of 1-8 therapists by agency ($M = 3.07$, median = 2), corresponding to the size of agencies, the number of therapists in each agency trained in TF-CBT by the PACTS initiative, as well as other organizational factors such as more resources and norms relating to the use of EBP (Beidas et al., 2016). That is, agencies

with more resources and more positive attitudes to the use of EBP tended to have more therapists trained in TF-CBT. The distributions of clients by therapist and agency were also evenly distributed: range = 1-21 of clients per therapist; $M = 2.59$; median = 2 and range of clients per agency = 1-24; M clients per agency = 11; median = 7. See (Rudd et al., 2019) for more details on characteristics of the effectiveness trial.

Demographic Characteristics

Table 1 displays the sociodemographic characteristics of PACTS participants. The majority of participants reported stable and normative housing in the thirty days preceding their baseline assessment. A small percentage of PACTS participants (6%) experienced housing instability or non-normative housing experiences (12%; i.e., whether they spent the majority of the month before baseline living with their primary caregiver) when presenting for treatment. The average PACTS participant lived in socioeconomically disadvantaged neighborhoods and in districts with high crime.

Differences between PACTS and the Population of Philadelphia

Table 2 displays the racial/ethnic composition of the PACTS sample as well as the racial/ethnic composition of the city of Philadelphia according to the ACS; Table 3 statistically compares these values. Table 4 displays the socioeconomic characteristics of the PACTS sample with the Philadelphia Census tract socioeconomic indicators for the city between 2012 and 2016; Table 5 statistically compares these values. The population proportion z/t -tests indicated that there were significantly more racial/ethnic minorities in the PACTS sample compared to the city of Philadelphia. Further, these tests revealed that PACTS participants lived in neighborhoods that were significantly more socioeconomically disadvantaged than the average Philadelphia neighborhood on all indicators except owner occupancy.

Differences between PACTS and the General US Population

Table 2 displays the racial/ethnic composition of the PACTS sample as well as the racial/ethnic composition of the US according to the ACS; Table 3 statistically compares these values. Table 4 displays the socioeconomic characteristics of the PACTS sample with the U.S. Census tract socioeconomic indicators for the city between 2012 and 2016; Table 5 statistically compares these values. The population proportion z/t -tests indicated that there were significantly more racial/ethnic minorities in the PACTS sample compared to the rest of the country. Further, PACTS participants lived in neighborhoods that were significantly more socioeconomically disadvantaged than the average US neighborhood on all indicators.

Sociodemographic Factors, PTSD Symptom Severity, and Overall Mental Health Functioning

Overall, our exploratory analyses identified no significant associations between the sociodemographic measures and the CPSS and Ohio Scales symptom severity scores (for descriptive statistics for overall responses on these measures, see Table A2). Housing instability measures were not significantly related to symptom or functional impairment as measured by the CPSS ($p > 0.05$ for all), or the Ohio Scales ($p > 0.05$ for all; see Table A3).

Race/ethnicity also did not significantly predict symptom or functional impairment as measured by the CPSS or the Ohio Scales ($p > 0.05$ for all; see Table A4). Finally, the ACS sociodemographic factors and district crime incidents were not significantly correlated with CPSS symptom severity or functional impairment as measured by the Ohio Sales ($p > 0.05$ for all; see Table A5).

Discussion

The results from our study indicate that youth seeking evidence-based trauma treatment in community mental health agencies across the city of Philadelphia live in neighborhoods with considerable socioeconomic adversity and community violence. PACTS youth live in contexts with significantly greater poverty, lower educational attainment, and lower incomes in comparison to youth living in the average Philadelphia neighborhood. Moreover, these youth live in some of the poorest and most disadvantaged neighborhoods in the country. Compared to the city and nation, youth receiving TF-CBT in Philadelphia community mental health agencies are overwhelmingly racial/ethnic minorities. The results from our study confirm qualitative data from community therapists that they perceive the youth they serve to face barriers exceeding those faced by participants in efficacy trials (Frank et al., 2018). These results may explain why these youth demonstrated attenuated decreases in PTSD symptoms after a course of TF-CBT, as we previously reported in our effectiveness trial study (Rudd et al., 2019). Indeed, that these youth's PTSD symptoms significantly improved at all, despite living in contexts of socioeconomic adversity, is remarkable. These results point to the importance of understanding the settings in which effectiveness and implementation trials are conducted to be able to contextualize the findings.

As an exploratory aim, we examined the association between youth's sociodemographic characteristics and psychopathology and did not discover a significant relationship. This finding is unsurprising and likely due to several factors. First, the absence of a significant association may be due to the large number (47%) of the youth in our study that met criteria for severe PTSD according to the CPSS cut-offs (Foa et al., 2001). This is striking in comparison to RCT samples where, on average, only 5-15% of the sample met CPSS criteria for severe PTSD (Gilboa-Schechtman et al., 2010; Jensen, Holt, & Ormhaug, 2017; Smith et al., 2007). This indicates that most youth participating in PACTS experienced significant PTSD symptoms and the limited variability in their scores constrained the ability to detect an effect of sociodemographic characteristics on their symptom severity, despite previous studies suggesting an association between these characteristics and symptom severity. Second, even though there was variability in the range of neighborhood socioeconomic context, almost of all of the neighborhoods where PACTS youth lived when presenting for treatment were in the bottom half of the nation's statistics according to most metrics (i.e., median household income, percentage of individuals living below the poverty line, and educational attainment). Third, and relatedly, all PACTS youth were Medicaid recipients, and therefore even PACTS youth living in relatively better resourced neighborhoods were still living in poverty on an individual household level. This may suggest that more distal sociodemographic indicators, such as neighborhood poverty, are less associated with clients' clinical symptoms (Shavers, 2007). In sum, the lack of a significant association between the

sample's sociodemographic characteristics and presenting symptoms is inconclusive given the limited variance in both dimensions.

These findings provide evidence that youth in this effectiveness trial likely experience greater levels of socioeconomic adversity and community violence compared to those of most efficacy trials. These types of characteristics are inconsistently reported in efficacy trials (see Table A1). When trials do report these variables, they often reveal that participants have greater access to resources and are more likely to be of the majority race/ethnicity compared to youth seeking mental health treatment in community agencies (Kennedy-Martin, Curtis, Faries, Robinson, & Johnston, 2015; Weersing & Weisz, 2002). Some notable exceptions include TF-CBT trials conducted in recent years where researchers have investigated the treatment in high poverty and psychosocially complex settings (Bass, Bearup, Bolton, Murray, & Skavenski, 2017; Cohen, Mannarino, & Iyengar, 2011; O'Callaghan, McMullen, Shannon, Rafferty, & Black, 2013). TF-CBT developers have recently led the charge to evaluate the effectiveness of treatment in real-world settings; less is known about the generalizability of other EBPs in high poverty settings where youth experience significant adversity.

In these under-resourced contexts, our data and that of others (Spinazzola et al., 2017) suggest that youth are not only coping with the initial traumatic event that brought them to treatment, but also are more likely to be re-victimized. Moreover, youth are at increased risk for further exposure to other types of traumatic events such as neighborhood violence, and chronic stressors associated with their socioeconomic position (Evans & Kim, 2010; Santiago, Wadsworth, & Stump, 2011). The high prevalence of chronic and ongoing trauma poses significant challenges for therapists who must address not just the trauma that brought youth into treatment, but the continued stressors and traumatic events that their clients are faced with. In response to this, TF-CBT developers have written on how to adapt the treatment to chronic and ongoing trauma (Cohen, Mannarino, Kliethermes, & Murray, 2012; Cohen, Mannarino, & Murray, 2011).

Limitations

There are several study limitations. First, the youth participating in our study were not entirely representative of all youth presenting for trauma treatment at community mental health agencies across Philadelphia. As mentioned previously, not all community mental health agencies participated in PACTS, and not all youth receiving TF-CBT through the PACTS initiative participated in our evaluation. Thus, it is possible that there may be something systematically different about youth evaluated versus those youth that were not. In addition, according to data collected by DBHIDS on the characteristics of youth receiving treatment through the PACTS initiative, by 2016, 27% of youth were involved with the Department of Human Services (DHS) and an additional 11% were involved in the Juvenile Justice system. Due to ethical and logistical challenges of consenting these youth to treatment, they were not able to participate in our study. These youth are even more likely to experience more socioeconomic adversity and more severe and chronic traumatic events (Burns et al., 2004; Greeson et al., 2011), which suggests that our findings may be an underestimation of the socioeconomic and psychosocial challenges of youth receiving

treatment in mental health agencies across Philadelphia. Given that our analyses revealed that PACTS youth are already experiencing significant adversity, the fact that we are not capturing the most vulnerable clients is further evidence for the need for more pragmatic treatment trials.

While we were able to assess the neighborhoods where youth participating in PACTS live and that they all receive public mental health services paid for by Medicaid, we were limited in our ability to collect individual sociodemographic measures. While there is no definitive measure of socioeconomic status, there is evidence that each proxy of socioeconomic status tends to predict a distinct set of health behaviors and psychological variables (Braveman et al., 2005). Moreover, there is some evidence to suggest that in models where neighborhood and individual socioeconomic contexts are considered, neighborhood effects are more moderate when compared with individual measures, likely because the mechanism by which they affect psychological functioning is more distal (Pickett & Pearl, 2001). While neighborhood measures of socioeconomic status tend to be good predictors of behavior, our study would be enhanced by including individual measures of socioeconomic status, providing our investigation with greater explanatory power of the mental health functioning in youth seeking evidence-based trauma treatment in the community.

Future Directions

Given the discrepancy between the sociodemographic presentations of youth in efficacy trials versus youth served in the community, several solutions are proposed. First, as TF-CBT treatment developers have modeled recently in their work, future researchers and trauma-informed treatment programs should use pragmatic trials, i.e., trials designed to test the effectiveness of interventions in routine clinical settings (Patsopoulos, 2011), to ensure the interventions are effective for all populations who are likely to receive treatment. Second, researchers and behavioral health systems should continue to decrease barriers and provide support for families to participate in TF-CBT (e.g., enhancing case management, increasing caregiver engagement, etc.; McKay & Bannon Jr, 2004; Ziguras & Stuart, 2000). Third, given that neighborhood context and the sociodemographic factors of youth participating in efficacy and effectiveness trials largely are inconsistently reported, we recommend that researchers systematically collect data on these factors, and report on them in publications, to better understand how they influence symptom severity when patients present for treatment, and how they may moderate treatment trajectories when conducting efficacy and effectiveness trials. The Consolidated Standards of Reporting Trials (CONSORT) guidelines do not currently require researchers to report on the sociodemographic characteristics of their samples; we recommend that the CONSORT Group require this reporting. Finally, to more systematically address the barriers youth face, policy makers must develop comprehensive, evidence-based redistributive policies that address the root causes of trauma, such as inequality and crime. Reforms such as a universal child allowance (Marr, Huang, Sherman, & Debot, 2015; Shaefer et al., 2018), universal cash transfers (Slater, 2011), universal healthcare (Asaria et al., 2016; Bruenig, 2019), and quality universal childcare (Van Huizen & Plantenga, 2015) have all been shown to cut poverty and have long-term beneficial consequences for children's health and well-being.

Researchers must work collaboratively with policy makers to develop broad-based reforms that ameliorate the social conditions of youth seeking trauma treatment.

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Appendix A

Table A1.

Racial/ethnic and socioeconomic characteristics of samples in prior trauma-focused cognitive behavioral therapy randomized controlled trials

Study	Sociodemographic characteristics reported	N	Country	Race & Ethnicity (n/%)	Socioeconomic Status (SES)
(Deblinger, Lippmann, & Steer, 1996)	Race/ethnicity	90	USA	Caucasian = 72% African American = 20% Hispanic = 6% Other = 2%	
(Cohen & Mannarino, 1996)	Race and Hollingshead Index of Socioeconomic Status, Parental occupation only ^a	67	USA	Caucasian = 54% African-American = 42% Other = 4%	Mean Hollingshead = IV (out of 9)
(Cohen & Mannarino, 1998)	Race/ethnicity and Hollingshead Index of Socioeconomic Status ^a	49	USA	Caucasian = 59 African American = 37 Hispanic = 2 Biracial = 2	Hollingshead Index: Range = 22-69 Mean = 46.77
(King et al., 2000)	Parental occupation ^b	36	Australia		Australian Index of Occupation: Mean = 6.08/9
(Deblinger, Stauffer, & Steer, 2001)	Race/ethnicity and total annual household income	44	USA	White = 28 (64%) Black = 9 (21%) Hispanic = 1 (2%) Other = 6 (14%)	Total annual household income: > \$20,000 = 24 (55%) =< \$20,000 = 20 (45%)
(Cohen, Deblinger, Mannarino, & Steer, 2004)	Race/ethnicity and family annual income	203	USA	Caucasian = 122 (60%) African American = 56 (28%) Hispanic American = 9 (4%) Biracial = 14 (7%) Other = 2 (1%)	Family annual income: < \$25,000 = 99 (52%) > 25,000 = 90 (48%)
(Cohen, Mannarino, Perel, & Staron, 2007)	Race	22	USA	White = 17 (77.3%) African American = 5 (22.7%)	
(Jaycox et al., 2010)	Race and participation in free/reduced lunch	Total N = 1,215	USA	School 1 African American = 74%	School 1 = 75% School 2 = 11%

Study	Sociodemographic characteristics reported	N	Country	Race & Ethnicity (n/%)	Socioeconomic Status (SES)
	program (in three schools) ^c	School 1, <i>n</i> = 158 School 2, <i>n</i> = 796 School 3, <i>n</i> = 261		School 2, Caucasian = 90% School 3 African American = 97%	School 3 = 80%
(Cohen, Mannarino, & Iyengar, 2011)	Race	124	USA	White = 69 (55.6%) Black = 41 (33.1%) Biracial = 14 (11.3%)	
(Deblinger, Mannarino, Cohen, Runyon, & Steer, 2011)	Race/ethnicity and parental employment status	179	USA	Caucasian = 65% African American = 14% Hispanic = 7% Other = 14%	Parent employed either full-or part-time = 60%
(O'Callaghan et al., 2013)	Not reported	52	Democratic Republic of Congo		
(McMullen, O'callaghan, Shannon, Black, & Eakin, 2013)	Not reported	50	Democratic Republic of Congo		
(Dorsey et al., 2014)	Race	47	USA	Multiracial = 25 (53.2%) Caucasian = 11 (23.4%) African American = 9 (19.1%) Native American = 1 (2.1%) Asian = 1 (2.1%)	
(Jensen et al., 2014)	Race/ethnicity and mean annual household income in U.S. Dollars ^a	156	Norway	Norwegian = 115 (73.7%) Asian = 17 (10.9%) One parent Norwegian = 13 (8.3) Western European countries = 2 (1.3%) Eastern European countries = 2 (1.3%) African countries = 3 (1.9%) South/Central American countries = 2 (1.3%) Nordic countries = 1 (0.6%) Other = 1 (0.6%)	Mean annual household income in USD: <\$35,000 = 20 (15.6%) [\$35,000, \$87,000) = 49 (38.3%) [\$87,000, \$174,000) = 38 (29.7%) \$174,000 = 9 (7.0%) Do not know = 12 (9.4%)
(O'Donnell et al., 2014)	No Race/ethnicity or SES Available	64	Tanzania		
(Webb, Hayes, Grasso, Laurenceau, & Deblinger, 2014)	Race/ethnicity and median annual household income	72	USA	White = 46% African-American = 40% Hispanic/Latino = 10% Biracial = 4%	Median annual household income = \$37,085
(Diehle, Opmeer, Boer,	Ethnicity	48	The Netherlands	Dutch ethnicity = 73 (77%)	

Study	Sociodemographic characteristics reported	N	Country	Race & Ethnicity (n/%)	Socioeconomic Status (SES)
Mannarino, & Lindauer, 2015)					
(Murray et al., 2015)	Ethnicity	257	Zambia	Ngoni = 55 Bemba = 81 Other = 119	
(Cohen et al., 2016)	Race/ethnicity	81	USA	Caucasian = 48 Black = 6 American Indian = 4 Pacific Islander = 3 Asian = 1 Unreported = 27 Hispanic/Latino = 7	
(Goldbeck, Muche, Sachser, Tutus, & Rosner, 2016)	Country of birth and parental education	159	Germany	Country of birth: German native = 143 (89.9) Non-German native = 11 (6.9) Missing information = 5 (3.1)	Parental education: < 9 years' schooling = 4 (2.5%) 9-11 years' schooling = 82 (51.6%) >= 12 years' schooling = 39 (24.5%) Missing information = 34 (21.4%)
(Salloum et al., 2016)	Race/ethnicity, household income and parent employment status	53	USA	Ethnicity: Hispanic/Latino = 24 Not Hispanic = 29 Race: American Indian/Alaskan Native = 1 African American = 14 White = 34 Mixed Race = 4	Household income: \$0-9,999 = 12 \$10,000 -24,999 = 14 \$25,000-34,999 = 12 \$35,000 – 49,999 = 4 \$50,000+ = 11 Parent/Guardian employed = 32
(Salloum et al., 2017)	Race/ethnicity and parent household income	33	USA	Ethnicity: Hispanic/Latino = 9 (27.3) Not Hispanic/Latino = 24 (72.7) Race: African American = 7 (21.2) White = 26 (78.8)	Parental household income: \$0-\$9,999 = 8 (24.2%) \$10,000 - \$24,999 = 5 (15.2%) \$25,000 - \$34,999 = 4 (12.1%) \$35,000 - \$49,999 = 6 (18.2%) \$50,000 and above = 10 (30.3%)
(Love & Fox, 2019)	Race/ethnicity and parental Education ^e	32	USA	African American: 31.3% Multiracial: 34.4% Latina/o: 21.9% European American: 12.5%	Mother finished 12 th grade: 84.0% Father finished 12 th grade: 76.5%

Note. Studies were only included if they were the main/first publication of a randomized controlled trial (RCT) evaluating the efficacy or effectiveness of TF-CBT. We did not include follow-up studies of the same RCT.

^a Socioeconomic rating from (Hollingshead, 1975). Raw scores range from 8 to 66, with higher scores reflecting higher SES. Range listed by article may be a typo. Parental occupation index classifies jobs along a spectrum from I-IX, with jobs increasing in income and prestige.

^b Socioeconomic rating derived from (Castles, 1990).

^c Those with incomes between 130 percent and 185 percent of the poverty level are eligible for reduced-price meals.

^d Mean household income in Norway for 2010 was \$75,000 USD.

^eFamilies explicitly recruited based on the fact that family received public assistance, indicating that the household income was below the federal poverty level.

Table A2.

PACTS Baseline Clinical Measure Descriptive Statistics

	Mean	SD	% with Score in Clinically Significant Range
CPSS Symptom Severity	23.82	11.66	85.00%; (n = 85/100)
CPSS Functional Impairment	2.84	2.11	-
Ohio Functioning	56.23	13.82	50.98% (n = 52/102)

Notes.

SD (Standard Deviation)

Scores on the CPSS Symptom Severity Scale that are equal to or greater than 11 are considered clinically significant. There are no clinical guidelines for ascertaining clinical significance on the CPSS Functional Impairment scale. The clinical cut-off for the Ohio Functioning Scale is 50 by parent report and 60 for child report, with higher scores indicating better functioning.

Table A3.

Housing Variables and Symptom Measures

Housing Variable	CPSS Problem Severity			OHIO Functioning Scale		
	<i>df</i>	<i>F</i>	<i>p</i>	<i>df</i>	<i>F</i>	<i>p</i>
Normative Housing	1	0.43	0.51	1	0.32	0.58
Ever Experienced Housing Instability?	1	0.13	0.72	1	1	0.32

Note.

Significance values correspond to the following values: $p < 0.5 = *$; $p < 0.01 = **$; $p < 0.001 = ***$

Table A4.

Race/Ethnicity and Symptom Measures

Race/Ethnicity Variable	CPSS Problem Severity			OHIO Functioning Scale		
	<i>df</i>	<i>F</i>	<i>p</i>	<i>Df</i>	<i>F</i>	<i>p</i>
Race	4	1.66	0.17	4	0.77	0.55
Ethnicity	1	0.34	0.56	1	3.26	0.07

Note.

Significance values correspond to the following values: $p < 0.5 = *$; $p < 0.01 = **$; $p < 0.001 = ***$

Table A5.

Correlation of ACS Measures, Police Crime Data and Symptom Measures

	Symptom Measures		American Community Survey SES Measures				Philadelphia Police Crime Data				
	CPSS	OHIO	Edu	Income	Occupancy	Poverty	Assault	Homicide	Rape	Robbery	Total Crime
CPSS	1										
OHIO	-0.42**	1									
Edu	-0.17	-0.04	1								
Income	0.08	0.08	-0.76**	1							

	Symptom Measures		American Community Survey SES Measures				Philadelphia Police Crime Data				
	CPSS	OHIO	Edu	Income	Occupancy	Poverty	Assault	Homicide	Rape	Robbery	Total Crime
Occupancy	0.03	0.06	-0.05	0.34	1						
Poverty	-0.11	-0.09	0.63**	-0.86**	-0.53**	1					
Assault	-0.01	-0.01	0.41**	-0.48**	-0.14	0.40**	1				
Homicide	-0.03	-0.09	0.46**	-0.53**	-0.18	0.45**	0.71**	1			
Rape	-0.01	-0.05	0.43**	-0.54**	-0.22	0.51**	0.79**	0.55**	1		
Robbery	0.03	0.04	0.39**	-0.36*	-0.12	0.31*	0.56**	0.56**	0.67**	1	
Total Crime	-0.02	0.16	0.31*	-0.29	-0.13	0.23	0.78**	0.58**	0.53**	0.75**	1

Note.

Significance correspond to the following values:

* $p < 0.5$

** $p < 0.01$

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Table 1.Demographic Characteristics (*N* = 114)

Characteristic	N (%)	Mean (SD)
Age (<i>N</i> = 112)*		
5-10	43(38.40)	12.01(3.93)
11-15	44 (39.29)	
16-19	25(22.32)	
Gender (<i>N</i>=113)*		
Female	64 (56.67)	
Male	49 (43.36)	
Race (<i>N</i> = 114)		
African-American or Black	55 (48.25)	
American Indian	4 (3.51)	
Asian	0 (0)	
Native Hawaiian or other Pacific Islander	0 (0)	
Alaska Native	0 (0)	
White	17 (11.81)	
Two or More Races	23 (20.18)	
Other Race/No Response	15 (10.42)	
Ethnicity (<i>N</i> = 114)		
Hispanic	43 (37.72)	
Non-Hispanic	71 (62.28)	
Housing at Baseline (<i>N</i> = 114)		
Living with Primary Caregiver	100 (87.72)	
Living in Residential Treatment Facility, Homeless, or other Non-normative Housing	14 (12.28)	
Neighborhood Socioeconomic Status* (<i>N</i> = 104)		
Median Household Income		\$31,135 (12,991.98)
Percent of People Living Below the Poverty Line		38.50% (7.03)
Percent of People over Age 25 with a High School Education/Equivalent or Less		63.16% (13.39)
Percent of Owner-Occupied Housing Units		51.77 (13.32)
District Crime Incidents (<i>N</i> = 86)		
Total Crime Incidents		5206.34 (1326.78)
Homicides		9.55 (4.68)
Rape		41.25 (14.88)
Robbery		203.91(61.61)
Aggravated Assault		236.77(77.51)

Table 2.

Racial/Ethnic Composition of PACTS, the City of Philadelphia, and the U.S.

Race/Ethnicity	PACTS (%)	Philadelphia (%)	US (%)
Race			
White	11.8	41.3	73.3
Black/African American	48.3	42.9	12.6
American Indian	3.5	0.4	0.8
Asian	0	6.9	5.2
Native Hawaiian/other Pacific Islander	0	0.1	0.2
More than one Race	20.2	2.8	3.1
Other	10.4	5.7	4.8
Ethnicity			
Hispanic	37.7	13.8	17.3
Non-Hispanic	62.3	86.2	82.7

Table 3.

Statistical Comparison of Differences in the Racial/Ethnic Composition of the PACTS Sample, the City of Philadelphia, and the U.S.

Characteristic	PACTS vs Philadelphia	PACTS vs Philadelphia	PACTS vs US	PACTS vs US
	<i>z</i>	<i>p</i>	<i>Z</i>	<i>p</i>
Race				
% of Non-Whites	5.12	< 0.0001 ***	13.44	< 0.0001 ***
Ethnicity				
% of Hispanics	7.40	< 0.0001 ***	5.76	< 0.001 ***

Note. Significance values correspond to the following values:

* $p < 0.5 =$;

** $p < 0.01 =$;

*** $p < 0.001 =$

Table 4.

Neighborhood Socioeconomic Status of PACTS, Philadelphia, and U.S. Neighborhoods

Characteristic	Neighborhood Socioeconomic Status, Mean (SD)	Philadelphia Socioeconomic Status, Mean (SD)	US, Socioeconomic Status, Mean (SD)
Median Household Income	\$31,134.62 (12,991.98)	\$57,426.00 (25,767.72)	\$58,810.83 (29,669.53)
Percent of People Living Below the Poverty Line	38.50% (7.03)	14.6% (12.62)	14.76% (11.45)
Percent of People over Age 25 with a High School Education/Equivalent or Less	63.16% (13.39)	47.02% (16.60)	42.04% (17.75)
Percent of Owner- Occupied Housing Units	51.77% (13.32)	60.13% (20.60)	63.04% (22.74)

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Table 5.

Statistical Comparison of Socioeconomic Status of PACTS, Philadelphia, and U.S. Neighborhoods

Characteristic	PACTS vs Philadelphia	PACTS vs Philadelphia	PACTS vs US	PACTS vs US
	<i>z/t</i>	<i>p</i>	<i>z/t</i>	<i>p</i>
Median Household Income	<i>t</i> = -20.64	<0.001 ***	<i>t</i> = -21.72	<0.001 ***
Percent of People Living Below the Poverty Line	<i>z</i> = 7.23	< 0.001 ***	<i>z</i> = 7.15	< 0.001 ***
Percent of People over Age 25 with a High School Education/Equivalent or Less	<i>z</i> = 3.45	= 0.0006 ***	<i>z</i> = 4.57	< 0.001 ***
Percent of Owner- Occupied Housing Units	<i>z</i> = -1.82	= 0.07	<i>z</i> = -2.49	= 0.01 *

Note. Significance correspond to the following values:

*
p < 0.5

**
p < 0.01

p < 0.001