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Abstract

Among the 90% of adolescents involved in juvenile justice who have experienced traumatic victimization, a sub-group may be at highest risk due to histories of multiple types of interpersonal and non-interpersonal trauma, termed polyvictimization. Person-centered analyses, such as latent class analysis, have identified polyvictimized subgroups in several studies of adolescents and adults, but only one person-centered study of traumatic victimization has been conducted with justice-involved youth. The current investigation replicates and extends that study's findings using latent class analysis in order to assess a wider range of victimization- and nonvictimization-related adversities and additional potential sequelae, including emotion dysregulation, *DSM*-5 symptom clusters of posttraumatic stress disorder (PTSD), and behavioral health problems such as substance use, anger, depression, somatic complaints, and suicide ideation. Latent class analysis with a large sample of juvenile detainees yielded three discrete classes: mixed adversity ($N = 327$; 22.3% girls), violent environment ($N = 337$; 12.8% girls), and polyvictimization ($N = 145$; 64.8% girls). Youth in the polyvictimization class were more likely than all other youth to report exposure to traumatic events, emotion dysregulation, all PTSD symptom clusters, depression symptoms, somatic complaints, and suicidality. Youth in the violent environment class reported higher levels of emotion dysregulation and psychological problems than mixed adversity youths. Findings suggest that most justice-involved youth have experienced substantial adversity, but sub-groups who are polyvictimized or violence-exposed should be identified and targeted for services addressing emotion dysregulation and complex comorbid PTSD symptoms.

Keywords: polyvictimization, latent class analysis, emotion dysregulation, PTSD, MAYSI-2, juvenile justice, adolescents

Polyvictimization, Emotion Dysregulation, Symptoms of Posttraumatic Stress Disorder, and

Behavioral Health Problems Among Justice-Involved Youth: A Latent Class Analysis

Studies examining youths' exposure to victimization and other potentially traumatic

events have identified a sub-group who are polyvictimized, i.e., youth with histories of exposure

to multiple types of maltreatment, violence, and other adversities (Finkelhor, Ormrod, & Turner,

2007a, 2007b; Ford, Elhai, Connor, & Frueh, 2010). Polyvictimization has been conceptualized

in two ways, one that uses an *a-priori* operational criteria that includes specific number of

victimization types (Finkelhor et al., 2007a) or a percentile level with some events types (e.g.,

sexual abuse) weighted higher for adversity (e.g., Finkelhor, Ormrod, & Turner, 2009). A second

method identifies mutually exclusive groups of individuals with similar profiles of victimization

types using person-centered analytic techniques (e.g., latent class analysis; Ford et al., 2010).

To date, only one person-centered study (i.e., latent class analysis) of victimization and

behavioral health sequelae has been conducted with justice-involved youth (Ford, Grasso,

Hawke, & Chapman, 2013). Although the study assessed symptoms of posttraumatic stress

disorder (PTSD) and related behavioral health problems, it was limited to the *DSM*-IV PTSD

symptoms, rather than the more extensive symptom set for PTSD in *DSM*-5 and did not

investigate the potentially core impairment of emotion dysregulation. Additionally, the study did

not assess adversities related to impaired caregiving, which have been linked to developmental

and psychosocial problems (D'Andrea, Ford, Stolbach, Spinazzola, & van der Kolk, 2012). The

present study therefore was designed to replicate and extend the Ford et al. (2013) study by

assessing adversities related to impaired caregiving and potential sequelae of polyvictimization

including emotion dysregulation and *DSM*-5 PTSD symptoms.

Examining Polyvictimization via a Person-Centered Approach

Recent studies of children and adolescents have used a person-centered approach, namely latent class or profile analysis, to yield discrete groups of individuals with similar patterns or profiles of adverse experiences within each group (e.g., those with experiences of physical, sexual abuse and neglect, or those with experiences of polyvictimization) from a heterogeneous population (e.g., Adam et al., 2016; Berzenski & Yates, 2011; Charak & Koot, 2015; Ford et al., 2013). Among these, studies have found similar profiles of polyvictimization that are consistently associated with the most severe psychosocial and legal problems despite being characterized by different specific types and probabilities of victimization and other adversities (Adams et al., 2016; Charak et al., 2016; Ford et al., 2013; Grasso, Dierkhising, Branson, Ford, & Lee, 2016; Turner, Shattuck, Finkelhor, & Hamby, 2016). For example, Grasso and colleagues (2016) found five mutually exclusive classes based on 17-potentially traumatic experiences when examining clusters of victimization in the developmental period of adolescence (13-18 years). These classes included a high-varied exposure subgroup (i.e., polyvictims), two moderate exposure subgroups (namely, emotional abuse, and community/school violence), and two lower exposure groups (i.e., traumatic loss, and limited or no trauma exposure). Notably, a disproportionate number of adolescents in the high-varied exposure polyvictim subgroup, relative to other subgroups, were living in residential treatment or correctional facilities. Similarly, using data from the National Survey of Children's Exposure to Violence-II, Turner et al. (2016) identified six latent classes of children and adolescents (age 10-17 years) based on 28 types of victimization, including non-victims, those victimized at home, at school, and polyvictims. While the study did not explicitly assess juvenile justice involvement, findings suggested that the polyvictim class had the highest probability of engaging in delinquent behavior, such as property, violent, and drug related problems. Taken together, these studies

highlight the presence of three to six latent classes based on exposure to a variety of types of victimization or traumatic exposure, with severity ranging from no victimization to polyvictimization, and demonstrated that polyvictims were at highest risk of being involved with delinquency and the juvenile justice system.

Polyvictimization Among Justice-Involved Adolescents

Studies consistently show that 80-90% of juvenile justice-involved youth have experiences of childhood trauma (see Kerig & Becker, 2012, for a review), often with multiple types of traumatization, which would be consistent with the concept of polyvictimization. In a study on a large sample of youth in an urban juvenile detention facility, Abram and colleagues (2004) found that 84% had more than one traumatic experience with over half reporting exposure to six or more trauma types. This study further indicated that male and older adolescents were more likely to report a higher number of traumatic events. However, this study inquired about only eight separate types of traumatic events and did not explicitly examine polyvictimization.

To date, only one study with juvenile justice-involved youth has specifically examined polyvictimization via a person-centered approach (Ford et al., 2013). On the basis of 19 different types of traumatic events, including victimization and non-victimization, such as traumatic accident, illness, natural disaster, Ford et al. (2013) uncovered three unique latent classes among 1,959 adolescents. These classes included a polyvictim class who reported having experienced an average of 11.4 different types of traumatic events, a moderate adversity class ($M = 8.9$ trauma types), and a lower adversity class ($M = 7.4$ trauma types). Girls were disproportionately likely to be polyvictims. However, this study did not take into account potentially traumatic events related to impaired caregiving (e.g., parental threats of or actual abandonment, parental drug use,

arrest/jail, psychological abuse within the family) nor the association of polyvictimization with

the core problems of emotion dysregulation that underlie many types of psychopathology.

Polyvictimization, Behavioral Health Problems, and Emotion Dysregulation

Prior attempts to examine the adverse effects of childhood victimization have utilized

varied theoretical approaches. Based on the Isle of Wight study (Rutter, 1979), the *cumulative*

risk model posits that increasing number of adverse childhood experiences is associated with

elevated psychopathology as compared to any single experience (Anda, Butchart, Felitti, &

Brown, 2010; Charak, Koot, Dvorak, Elklit, & Elhai, 2015; Finkelhor et al., 2007a). Informed by

this model, studies examining polyvictimization using a person-centered approach suggest that

polyvictimized adolescents are at highest risk of exhibiting an array of psychological problems,

including PTSD, substance use, depression, anger, suicidal behavior, and presence of comorbid

mental disorders (Adams et al., 2016; Ford et al., 2010, 2013; Grasso et al., 2016; Turner et al.,

2016). For example, Adams and colleagues (2015) examined latent classes of victimization

among a clinical sample of adolescents and found that those in a polyvictim class, whose

members reported an average of 10 types of traumatic experiences during their lifetime, were at

greatest risk for internalizing, externalizing, and DSM-IV PTSD scores in the clinical range

(measured via UCLA-PTSD-RI; Steinberg, Brymer, Decker, & Pynoos, 2004), and substance use

problems and suicidal behavior. In a large sample of juvenile detainees, Ford and colleagues

(2013) found that polyvictims reported more severe DSM-IV posttraumatic stress symptoms,

emotional and behavioral problems, suicide risk, and alcohol and drug use problems compared to

other latent classes of justice-involved youth who had less extensive histories of adversity.

Fewer studies have investigated the association between exposure to multiple childhood

traumatic events and emotion dysregulation (e.g., Bennett, Modrowski, Chaplo, & Kerig, 2016;

Weiss, Tull, Lavender, & Gratz, 2013). Focusing on emotion dysregulation is warranted due to

its role underlying diverse psychopathological sequelae (Gratz, Weiss, & Tull, 2015). A

multifaceted construct, emotion regulation encompasses the awareness, understanding, and

acceptance of emotions, ability to control behaviors when experiencing distress, and the ability

to use contextually appropriate emotion regulation strategies flexibly to modulate emotions

(Gratz & Roemer, 2004). The capacity for emotion regulation begins to develop early in life

when interactions between the caregiver and child, help build the child's repertoire of emotion

regulation skills (Calkins & Howse, 2004). Disruptions in these early relationships (e.g., through

child maltreatment, lack of safety in a violent neighborhood), in the absence of other protective

factors, can increase risk of severance in emotion regulatory abilities (Cicchetti, Ganiban, &

Barnett, 1991; Cole, Michel, & Teti, 1994). Supporting this premise, research shows that

survivors of early childhood victimization exhibit poorer emotion regulation skills than their

non-maltreated counterparts (D'Andrea et al., 2012).

The Current Study

To address these gaps in the literature, the current study examined the association among

polyvictimization and emotion dysregulation, *DSM-5* PTSD symptoms, and related behavioral

health problems, including alcohol/drug use, anger-irritability, depression and anxiety, somatic

complaints, and suicide ideation. The present study hypothesized that, among 26 potentially

traumatic events, there would be mutually exclusive classes of adolescents with varying

experiences of traumatic events, with at least one class endorsing multiple types of traumatic

events or polyvictimization (Ford et al., 2010, 2013; Grasso et al., 2016; Turner et al., 2016).

Second, based on the cumulative exposure theory, members of a polyvictim class were predicted

to report more severe emotion dysregulation as well as symptoms in all *DSM*-5 PTSD symptom

clusters and related behavioral health problems, including alcohol/drug use, anger/irritability, depression, somatic complaints, and suicide ideation (Ford et al., 2013).

Method

Participants

Participants were 809 youth (210 girls, 599 boys) recruited from a short-term juvenile detention center located in the Western United States. Youth were between the ages of 12 to 19 years old ($M = 16.08$, $SD = 1.30$). The ethnic composition of the sample was consistent with the ethnic composition of the justice-involved population in the geographic region; 53.6% were White/Caucasian, 25.8% Hispanic/Latino, 5.7% multi-racial, 3.8% Pacific Islander/Native Hawaiian, 4.9% Black/African American, 3.7% Native American/Alaskan Native, and .9% Asian American.

Procedure

Study procedures were approved by the Institutional Review Boards of the University of [edited out for blind review] and the [edited out for blind review] Department of Human Services. Legal guardians were approached by research staff during the detention center's visiting hours and were asked if they were interested in participating in the study and if they would provide permission for a research assistant to approach their child about participating in the study. If the legal guardian was interested in participating in the study, research staff obtained signed informed consent, along with identifying information about the youth (name, date of birth, and pending court dates). After informed consent was obtained, youth were approached on a separate day and asked if they would be interested in participating in the study. If the youth agreed, they provided signed assent, after which they completed study measures in the presence of a with an advanced research assistant or graduate student on a laptop computer in a private

room at the detention center. Legal guardians and youth were not offered any incentive for their

participation to eliminate any perception of coercion.

Measures

  Trauma exposure and posttraumatic stress symptoms. Youth completed the UCLA

Posttraumatic Stress Disorder Reaction Index—Adolescent Version (PTSD–RI) for *DSM–5*

(Pynoos & Steinberg, 2014). The first set of questions asks youth about their lifetime exposure

(yes/no) to 14 potentially traumatic events in accordance with Criterion A. In addition, youth

also reported on 12 additional types of adversity, such as prolonged separation from a caregiver

or experiences of neglect, that are not categorized as potentially traumatic events by the current

*DSM-*5 criteria.

  The second set of questions on the PTSD-RI asks youth to report on the extent to which

they have experienced past-month PTSD symptoms. Items are presented on a Likert scale

ranging from 0 (*none of the time*) to 4 (*most of the time*). Total scores for each symptom cluster

were calculated. In the current sample, subscale Cronbach's alpha (α) were .83 for Criterion B

(Reexperiencing), .68 for Criterion C (Avoidance), .86 for Criterion D (Negative Alterations in

Cognitions and Mood), and .72 for Criterion E (Alterations in Arousal and Reactivity).

  Emotion dysregulation. The Difficulties in Emotion Regulation Scale (DERS; Gratz &

Roemer, 2004) is a well-validated self-report measure that assesses multiple dimensions of

emotion regulation and consists of 36 items. Items are rated on a 5-point scale ranging from 1

(*almost never*) to 5 (*almost always*), with higher scores indicating more difficulties with emotion

regulation. The DERS has demonstrated good psychometric properties in clinical and community

samples (e.g., Fowler et al., 2014; Gratz & Roemer, 2004). In the present study, the DERS

subscale internal consistencies ranged from α = .73 to .86.

Behavioral health problems. Behavioral health problems were assessed using the

Massachusetts Youth Screening Instrument (MAYSI-2; Grisso & Barnum, 2006), which is a

brief self-report inventory designed specifically for use in juvenile detention centers and

comprises of seven subscales, namely, alcohol/drug use, anger-irritability, depressed/anxious,

somatic complaints, thought disturbance, suicide ideation, and traumatic experiences. The

MAYSI-2 screens for a wide range of potential mental health problems and is administered to

youth by detention center staff within 24-48 hours of admission to a detention facility. The

MAYSI-2 has good psychometric properties and its factor structure fits well across gender, age

group, race, and offence type (Russell, Marsee, & Ryals, 2017). The following scales were used

in the current study: Alcohol/Drug Use ($\alpha = .84$), Anger-Irritability ($\alpha = .81$), Depressed/Anxious

($\alpha = .75$), Somatic Complaints ($\alpha = .79$), and Suicide Ideation ($\alpha = .88$).

Statistical Analyses

Descriptive statistics were conducted in IBM SPSS v. 23. First, a latent class analysis

(LCA) was carried out to determine the number of heterogeneous groups with homogeneity

within each group based on exposure to 26 different types of traumatic events. LCA estimates

the posterior probabilities of class membership or size of the class (Nylund, Asparouhov, &

Muthén, 2007). Better fitting models are reflected by significant *p* values for the Lo-Mendell-

Rubins likelihood ratio test (LMR; Lo, Mendell, & Rubin, 2001), and the Bootstrap likelihood

ratio test (BLRT; McLachlan & Peel, 2000), lower values on the Akaike Information Criteria

(AIC; Akaike, 1987), the Bayesian Information Criteria (BIC; Schwarz, 1978), and the sample

size adjusted BIC (Adjusted BIC; Sclove, 1987). Higher entropy values indicate clearer

classification (Ramaswamy, DeSarbo, Reibstein, & Robinson, 1993). Further, model fit and the

resultant class solution should be judged based on substantive meaningfulness of the classes, i.e.,

the classes should be distinct and meaningful (Nylund et al., 2007). The LCA analysis was

conducted using M*plus* 7.31 software (Muthén & Muthén, 2015) employing maximum

likelihood estimation with robust standard errors (MLR). After obtaining the latent classes, we

exported them into IBM SPSS version 23.0 for further analysis. Additionally, to examine

differences across the obtained latent classes on endorsement of each trauma types a series of

chi-square difference testing were conducted. Further, the standardized residuals were calculated

to identify latent classes with value $\geq +2$ indicating that observed cell frequency or number of

adolescents endorsing the trauma event is greater than the expected frequency or values ≤ -2

indicating that the number of adolescents endorsing the traumatic event were lesser than the

expected frequency. Second, differences across the latent classes in the six domains of emotion

dysregulation, four symptom clusters of DSM-5 posttraumatic stress disorder, and five

behavioral health outcomes obtained from the MAYSI-2, using three separate MANCOVA's

with age and gender as covariates, and pair-wise comparisons (with Bonferroni corrections) were

calculated.

Results

Missing values on the DERS, MAYSI and PTSD-RI ranged from 5.1-17.9%.

Of all adolescents in the present study, nearly 93% reported experiencing 4 or more trauma

types. On average adolescents reported experiencing 10.3 trauma types ($SD = 5.09$; range 0 to 24

trauma types). Only two participants reported no exposure to any traumatic event inquired in the

present study. Overall, 6.2% ($N = 50$) met criteria for DSM-5 PTSD.

Latent Classes Based on Exposure to Trauma/Victimization Types

A series of LCA models with 2 to 5 class solutions were estimated. A three-class solution

was found to be the best based on a number of goodness-of-fit indices (see Table 1), and

meaningfulness of the classes. One likelihood ratio test, that is, the LMR, and the information

criteria of BIC clearly favored a three-class solution. Entropy was moderate and the average

posterior probability for most likely latent class membership ranged from .91 to .96 for the three-

class solution, which is suggestive of good class determination.

Comparison of the Latent Classes on Demographics and Trauma/Victimization History

The distribution of adolescents across the three latent-classes is presented in Table 2.

Based on chi-square difference test, it was found that the three latent classes were significantly

different based on exposure to each type of trauma/victimization (Table 2). Further, standardized

residuals indicated that Class 1 ($N = 327$; 22.3% girls) had significantly lower number of

adolescents' with exposure to any traumatic events when compared with the other two classes.

However, more than 40% of these youths reported a variety of adversities including a parent

arrested or someone they knew attempted suicide, had severe injury or illness, and physical

abuse, and hence this class was labeled *mixed adversity*. Class 2 ($N = 337$; 12.8% girls) had

significantly more adolescents who were exposed to natural disasters, accidents, war-zone,

physical abuse or assault, witnessing physical violence, unexpected death of a loved one, a dead

body (excluding at funerals), painful medical treatment, and violence acts, and was hence labeled

violent environment. Class 3 ($N = 145$; 64.8% girls) was labeled *polyvictimization* as it had

significantly more adolescents than the other two classes who reported serious injuries,

psychological abuse, domestic violence, family members being badly injured or sick, parental

drug use, unexpected death of someone close, removal from parental custody, or parental threats

of abandonment, neglect, and sexual abuse (see Table 2).

Gender distribution differed across the three latent classes (X^2 [2, 809] = 146.77, $p <$

.001) with more girls in the polyvictimization class (Class 3) than boys (standardized residual =

9.2), and greater number of boys than girls in the violent environment class (standardized

residual = 2.8). Violent environment and polyvictimization classes (Classes 2 and 3) had

adolescents older in age as compared to those in the mixed adversity class (M_1 = 15.84, M_2 =

16.28, M_3 = 16.18; F [2, 802] = 9.98, p < .001). There was no difference across the three latent

classes on race/ethnicity (X^2 [14, 809] = 17.44, p = .23).

Comparison of the Latent Classes on Difficulties in Emotion Regulation

The overall MANCOVA (with age and gender as covariates) testing differences between

the three latent classes in the six domains of difficulties in emotion regulation was significant

(Pillai's trace = .06; F [12, 1,514] = 4.06; p < .001; $\eta^2_{partial}$ = .03), as were age (Pillai's trace =

.03; F [6, 756] = 3.60; p = .002; $\eta^2_{partial}$ = .03), and gender (Pillai's trace = .02; F [6, 756] = 2.29;

p = .03; $\eta^2_{partial}$ = .02). Univariate testing indicated class-related differences in all six domains of

emotion dysregulation with Class 3 being higher in non-acceptance of emotional response,

difficulties engaging in goal-directed behavior when distressed, limited access to effective

emotion regulation strategies, and lack of emotional clarity when compared with the other two

classes (Table 3). Class 2 was higher than Class 1 in non-acceptance of emotional response,

difficulties engaging in goal-directed behavior when distressed, and difficulties in controlling

impulsive behaviors when distressed.

Comparison of the Latent Classes on Symptom-Clusters of Posttraumatic Stress Disorder

The overall MANCOVA (with age and gender as covariates) testing differences between

the three latent classes in the four clusters of PTSD was significant (Pillai's trace = .15; F [8,

1,544] = 15.74; p < .001; $\eta^2_{partial}$ = .08). However it was non-significant for age (Pillai's trace =

.01; F [4, 771] = 1.28; p = .27; $\eta^2_{partial}$ = .01), and gender (Pillai's trace = .01; F [4, 771] = 2.01;

p = .09; $\eta^2_{partial}$ = .01). Univariate testing indicated class-related differences on all four clusters of

PTSD (Table 4). In contrast to Classes 1 and 2, Class 3 adolescents scored higher in all four

clusters of PTSD. Class 2 was higher than Class 1 on re-experiencing, avoidance, and arousal

symptom clusters.

Comparison of the Latent Classes on MAYSI-2 Behavioral Health Problems

The overall MANCOVA (with age and gender as covariates) testing differences between

the three latent classes on the five subscales of MAYSI-2 was significant (Pillai's trace = .10; F

[5, 1,306] = 6.86; $p < .001$; $\eta^2_{partial} = .05$), as were age (Pillai's trace = .05; F [5, 652] = 6.27; $p <$

.001; $\eta^2_{partial} = .05$), and gender (Pillai's trace = .06; F [5, 652] = 7.94; $p < .001$; $\eta^2_{partial} = .06$).

Univariate testing indicated class-related differences on all five subscales of MAYSI-2 (Table 5).

Compared to the other two classes, adolescents in Class 3 scored higher in depression/anxiety,

somatic complaints, and suicide ideation. Class 2 was higher than Class 1 in alcohol/drug use,

and anger/irritability.

Discussion

Consistent with hypothesis 1, findings indicated a three class-solution, with three distinct

sub-groups of juvenile justice-involved youth, including those who had histories of mixed

adversity, living in violent environments, and polyvictimization. Two of the three sub-groups,

termed mixed adversity and polyvictimization, are similar to the latent classes found in a

previous study with juvenile detainees (Ford et al., 2013). Hypothesis 2 was also supported, such

that in contrast to youth in the mixed adversity and violent environment classes, polyvictim class

members reported greater difficulties in four domains of emotion dysregulation, on all four

DSM-5 PTSD symptoms clusters, and depression/anxiety, somatic complaints, and suicidality.

The three latent classes found in the present study parallel findings from past research in

community (e.g., Ford et al., 2010; Grasso et al., 2015) and clinical (e.g., Adams et al., 2016)

samples of adolescents. However, unlike these prior studies there was an absence of a limited or

low exposure sub-group in the present study, which is not surprising considering the prevalence

of trauma/victimization histories among youth in the juvenile justice system (Abram et al., 2004;

Ford et al., 2013; Kerig, Bennett, Chaplo, Modrowski, & McGee, 2016). Relatedly, comparison

of the current latent classes with those found among juvenile detainees by Ford et al. (2013)

suggests that all classes of justice-involved youth were exposed to multiple types of trauma and

victimization. Specifically, the mixed adversity class members identified by Ford and colleagues

(2013) often reported histories of non-interpersonal traumatic stressors (e.g., severe accidents,

traumatic losses), but were less likely than member of the present study's violent environment

class members to report witnessed or direct exposure to violent victimization. Polyvictims in the

current study tended to report not only non-interpersonal and violence-related victimization but

also emotional and sexual maltreatment, and impaired caregivers. One finding in the present

study that contrasts with those of Ford et al. (2013) was the identification of a discrete violent

environment class. Notably, there were more boys than girls in the violent environment class,

which has also been supported in a previous study on justice involved youth (Kerig, Ward,

Vanderzee, & Moedeel, 2009). Future studies should continue examining gender differences

across patterns of victimization and trauma among youth involved with the justice system.

Examining such gender differences is essential for facilitating prevention efforts, and

development and implementation of gender-responsive programs aimed at gender specific

interventions to curb instances of revictimization and violence, and psychological sequelae

(Kerig & Schindler, 2013).

Based on developmental trauma research (D'Andrea et al., 2012) and the cumulative risk

hypothesis, youth in the polyvictimization class thus would be expected to report the widest

range of the most severe PTSD and behavioral health symptoms as well as emotion

dysregulation. This was the case for emotion dysregulation, PTSD symptoms, and internalizing

behavioral health problems (e.g., depression, anxiety, somatic, and suicidality symptoms).

Unexpectedly, youth in the violent environment class were equally as likely as the

polyvictimized youth to report externalizing problems of alcohol and drug use, and

anger/irritability. While the finding of a sub-group characterized by multiple types of violence

exposure differed from the latent class profile of 'moderate adversity' identified in the prior

person-centered study of trauma exposure among juvenile justice-involved youth (Ford et al.,

2013), it is consistent with evidence of substantial violence exposure among youth in juvenile

justice samples (Abram et al., 2004) and of substantial problems with externalizing behavior

among youth exposed to family, community, and school violence (Mrug & Windle, 2010;

Wright, Fagan, & Pinchevsky, 2013).

Polyvictimization class members also reported more severe emotion dysregulation than

the mixed adversity or violent environments class members, as hypothesized. Specifically,

polyvictims reported higher levels of non-acceptance of emotional response, which has been

implicated as a maintaining factor in involvement with the justice system or recidivism,

difficulties engaging in goal directed behavior, and lack of emotional clarity, which are

associated with emotion under-regulation among those with PTSD (Bennett & Kerig, 2014), and

limited access to effective emotion regulation strategies. Again, the violent environment class

members reported more severe emotion dysregulation than the mixed adversity class members

on three domains, including difficulties controlling impulsive behavior highlighting exposed

adolescents compromised ability to inhibit inappropriate (e.g., anger outbursts) or impulsive

behaviors under distress. Polyvictimization class youths differed from youths in the violent

environment class primarily on exposure to pervasive sexual abuse, emotional abuse, and neglect

or parental abandonment (i.e., intrafamilial and betrayal trauma), while the violent environment

class had more adolescents with exposure to physical assault, community violence, and other

non-betrayal traumatic experiences (e.g., natural disaster, accident). Living in violent

environments thus may be associated with emotion dysregulation problems that are related to the

adverse social learning that occurs when adults and peers model the use of violence, which is

associated with risky sexual and anti-social behaviors, and recidivism (Bennett & Kerig, 2014;

Oshri, Sutton, Clay-Warner, & Miller, 2015).

These findings that the polyvictimization class reported more severe DSM-5

posttraumatic stress symptoms across all four clusters, and internalizing problems, namely,

depression/anxiety, somatic complaints and suicidal ideation, than the other two classes, supports

findings from the study by Ford et al. (2013). Findings suggest that experiencing physical assault

and other forms of dangerous family, peer, school, and community environments is sufficient to

lead to serious psychopathology (Finkelhor, Turner, Shattuck, & Hamby, 2015; Turner et al.,

2016)—but that the addition of intrafamilial or other forms of betrayal (Gagnon, Lee, &

DePrince, 2017) or trauma related to primary caregiving (van Dijke, Ford, Frank, & van de Hart,

2015) is likely to increase the severity and breadth of those adverse sequelae, consistent with a

developmental trauma disorder framework (D'Andrea et al., 2012; Ford et al., 2013).

The present findings should be considered in the context of some limitations. First,

participants were a convenience sample of consecutive admissions from juvenile detention

centers in a state in the western United States; although relatively ethnoculturally diverse with

substantial representation of Hispanic youth, this was not a nationally representative sample of

youth involved in the juvenile justice system. In addition, only those from whom parental/legal

guardian consent and participant assent were obtained were invited to participate in the study. Second, validity of self-report of sensitive matters, such as trauma history, suicidal behavior, and substance use by adolescents in the juvenile justice system may be affected by the constraints of the legal context (e.g., reluctance to disclose potentially traumatic events or symptoms due to fear of stigma or legal consequences), learning or reading impairments (Jensen, Fabiano, Lopez-Williams, & Chacko, 2006), or dysphoria (Kuyken & Dalgleish, 2011). Justice-involved youth often have had school problems, with reading levels less than their chronological age (Lansing et al., 2014), but nevertheless usually have completed at least the fifth grade and are able to read and validly respond to self-report questionnaires (Bennett, Modrowski, Kerig, & Chaplo, 2015; Kerig, Bennett, Thompson, & Becker, 2012) such as those used in this study. Third, there were fewer female participants limiting data analyses to the whole sample and constraining the examination of gender-specific associations. However, this is consistent with the over distribution of lower number of female in all juvenile justice populations.

        In conclusion, the present findings contribute to existing literature demonstrating varying patterns of traumatic experiences with a polyvictimization class among adolescents in the juvenile justice system. The presence of a polyvictimization and violent environment classes in a relatively homogeneous sample of high-risk adolescents, with deficits in emotion regulation strategies, greater posttraumatic stress symptoms, and emotional and behavioral problems, including suicidal ideation, has implications for criminal justice and mental health services and policy. Findings suggest the importance of thorough screening and assessment in order to identify polyvictimized youth, as well as case planning that involves the use of evidence-based clinical and educational services targeting emotion regulation and behavioral health problems as well as PTSD symptoms. This could lead to a more cost-effective implementation of trauma-

informed services to those most in need of evidence-based educational and rehabilitative

interventions (Ford, Kerig, Desai, & Feierman, 2016). Such practices assist polyvictimized

adolescents in ameliorating the negative effects of trauma and victimization, and creates safer

communities for youth and their families, and for juvenile justice staff and law enforcement

personnel (Kerig, 2013).

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Table 1

Table 1

Fit Indices for the Latent Class Models With Two to Five Classes of Childhood Traumatic

Experiences with a Three-Class Solution Being the Optimal

Number of classes	LMR (*p* value)	Entropy	AIC	BIC	Adjusted BIC
2	1,32.22 (.001)	.78	17,209.51	17,458.39	17,290.08
3	394.87 (.04)	.83	16,866.45	17,242.12	16,988.07
4	167.17 (.18)	.81	16,752.35	17,254.81	16,915.02
5	104.86 (.17)	.77	16,700.92	17,330.16	16,904.63

Note: LMR = Lo-Mendell-Rubin test. AIC = Akaike's Information Criterion. BIC = Bayesian

Information Criterion

Table 2

Table 2

Total Percentage, Number, Standardized Residuals of Adolescents Across the Three Classes of Exposure to Traumatic Events

Trauma events	Class 1	Class 2	Class 3	Chi-Square
	%/N/Std.Residual	*%/N/Std.Residual*	*%/N/Std.Residual*	
Disaster	16.2/53/-3.1	31/105/2.38	28.8/42	21.64***
Been in a bad accident	15.5/51/-7.13	36.9/215/6.61	43.9/64	160.48***
Been in a war zone	4.8/16/-4.06	20/67/3.52	15.3/22	33.76***
Seriously hurt you	40.2/132/-5.21	73.5/248/2.38	91/132/4.2	137.38***
Mean things to you	34.7/114/-3.45	44.4/150	86.2/125/6.62	109.04***
Parents physically fight	22.7/74/-4.98	47.8/161/2.24	61.1/89/4.06	77.18***
Seen family being hurt	22.4/73/-6.1	55.3/186/2.81	72/104/4.89	125.23***
Been beaten	31.3/102/-7.79	92.8/313/6	83.6/121/2.54	305.81***

up/shot/threatened

Seen someone beat up/shot/killed	32.3/106/-7.68	95.3/321/6.27	80.6/117	312.0***
Some close committed suicide	26.0/85/-8.2	88/297/6.22	80.2/116/2.83	296.17***
Badly injured or sick	46.1/151/-4.4	74.9/252/2.48	83.6/121/2.93	94.65***
Someone you know died (not due to old age)	40.9/134/-5.55	83.4/281/3.96	81.4/118/2.3	151.64***
Seen parents use drugs	7.2/24/-5.65	27.9/94/2.31	41.1/60/4.97	79.51***
Someone you knew tried to kill themselves	41.8/137/-4.89	72.6/245/2.14	90.5/131/4.07	123.11***
Parents arrested/jailed	49.4/162/-2.43	64.7/218	72.5/105	27.29***
Taken away from parents	37.3/122/-3.23	56.2/189	64.2/93/2.42	37.65***
Parent(s) left/went away	28.6/94/-3.62	45/152	63/91/3.94	50.64***

Parent(s) threatened to leave	37.1/121/-3.64	51.1/172	84.7/123/5.61	92.01***
Did not have the right care	8.9/29/-4.76	23.3/79	42.2/61/5.58	69.28***
Parents fight over where child should live	7.0/23/-4.04	12.8/43	43.4/63/8.29	103.76***
Seen dead body (not at a funeral)	8.7/29/-6.8	46.2/156/5.82	34.8/51	115.57***
Unwanted touching of your private parts	3.8/12/-5.17	0/0/-7.01	72.9/106/18.45	487.37***
Forced touching/sex	4.4/14/-5.28	0/0/-7.33	79/115/19.11	531.5***
Violent death/injury of a loved one	27.0/88	69.5/234	58.1/84	124.29***
Painful medical treatment	23.2/76/-3.49	42.8/144/2.53	41.4/60	31.43***
Forced to do something violent to others	3.8/12/-7.29	37.9/128/5.74	31.8/46/2.19	117.97***

Note: Class 1 = Mixed Adversity (*N* = 327). Class 2 = Violent Environment (*N* = 337). Class 3 = Polyvictimization (*N* = 145) [§]
Standardized residual variance is reported only if it had a value ≥ +2 or ≤ -2.
****p* < .001.

Table 3

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Table 3

Estimated Mean Scores and Pair-Wise Comparisons for the six Dimensions of Emotional Regulation Difficulties Across the Latent

Classes Controlling for age and Gender

Difficulties in Emotion Regulation	Class 1	Class 2	Class 3	Comparisons
Non-acceptance of emotional responses	10.20 (4.10)	11.29 (4.43)	13.17 (5.11)	C3 > C2 > C1
Difficulties engaging in goal-directed behavior when distressed	13.31 (4.49)	14.45 (5.04)	16.25 (4.82)	C3 > C2 > C1
Difficulties controlling impulsive behaviors when distressed	12.36 (5.07)	13.52 (5.36)	15.11 (5.59)	C3, C2 > C1
Limited access to effective emotion regulation strategies	15.72 (5.92)	16.73 (6.43)	20.38 (7.34)	C3 > C2, C1
Lack of emotional awareness	17.39 (5.66)	17.13 (5.33)	17.36 (5.52)	C3 = C2 = C1
Lack of emotional clarity	10.18 (3.54)	10.40 (3.72)	11.76 (3.87)	C3 > C2, C1

Note: Class 1 = Mixed Adversity (*N* = 327). Class 2 = Violent Environment (*N* = 337). Class 3 = Polyvictimization (*N* = 145).

Table 4

Table 4

Mean, Standard Deviation, and Pairwise Comparisons of the Four Criteria of Posttraumatic Stress Disorder Across the Latent

Classes Controlling for age and Gender

PTSD	Class 1	Class 2	Class 3	Comparisons
Reexperiencing	5.12 (4.77)	7.25 (5.24)	10.32 (5.39)	C3 > C2 > C1
Avoidance	5.03 (4.33)	6.42 (4.74)	9.62 (4.39)	C3 > C2 > C1
Negative alterations in cognitions and mood	4.71 (4.92)	5.26 (4.93)	9.0 (4.56)	C3 > C2, C1
Alterations in arousal and reactivity	7.39 (4.37)	9.48 (4.56)	12.04 (4.49)	C3 > C2 > C1

Note: Class 1 = Mixed Adversity ($N = 327$). Class 2 = Violent Environment ($N = 337$). Class 3 = Polyvictimization ($N = 145$).

Table 5

Table 5

Estimated Mean Scores and Pairwise Comparisons for the Mental Health Symptoms Across the Latent Classes Controlling for age

and Gender

MAYSI	Class 1	Class 2	Class 3	Comparisons
Alcohol/drug use	2.01 (2.28)	3.39 (2.43)	3.44 (2.78)	C3, C2 > C1
Anger/irritability	2.55 (2.52)	3.12 (2.66)	3.88 (2.69)	C3, C2 > C1
Depression/anxiety	1.63 (1.87)	1.91 (2.10)	3.19 (2.32)	C3 > C2, C1
Somatic complaints	2.24 (1.89)	2.45 (1.99)	3.78 (2.01)	C3 > C2, C1
Suicide ideation	.63 (1.37)	.69 (1.38)	1.32 (1.82)	C3 > C2, C1

Note: Class 1 = Mixed Adversity (*N* = 327). Class 2 = Violent Environment (*N* = 337). Class 3 = Polyvictimization (*N* = 145).