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Expanding our Understanding of Intergenerational Exposure to Adversity

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Abstract

The present study examined the intergenerational continuity of adverse childhood experiences (ACEs) for parents and their adolescent offspring. Data were from a longitudinal study of the effects of maltreatment on adolescent development. Only biological parents (n=185) and one adolescent per parent (n=164) were included in the analytic sample. Self-reported retrospective data on childhood adversities was obtained at the 3rd wave for parents and the 4th wave for adolescents (M_{age}=18.16). For siblings in the study, one was randomly chosen to be included. Latent class analysis was used to examine 1-4 class solutions for parents and adolescents separately and crosstabs were used to show the concordance between assignment to similar classes for the parent and child. Results indicated 2 class solutions for both the parent and child: a high ACEs class characterized by witnessing intimate partner violence and all maltreatment types and a low ACES class characterized by no adversities. Concordance was highest for both parent and child being assigned to the low ACEs class (52% of the dyads). There were 9% of the dyads who were concordant for being assigned to the high ACEs class, indicating less continuity of adversity than expected. Overall the findings show some intergenerational continuity of adversity, but further work should be done to characterize the different patterns of concordance/discordance between parent and child ACEs.

Keywords

ACEs; maltreatment; intergenerational

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Author statement

Sonya Negriff is the sole author of this paper. She conceptualized the study, completed the data analyses and wrote all parts of the manuscript.

Conflict of Interest Statement:

There are no conflicts of interest to disclose.

1. Introduction

Adverse Childhood Experiences (ACEs) encompass a range of adversities including maltreatment experiences such as sexual abuse, physical abuse, emotional abuse, and neglect, as well as other indications of household or family dysfunction such as parental substance abuse, parental mental illness, parental criminal justice involvement (Felitti et al., 1998; Finkelhor et al., 2015). Data from the Behavioral Risk Factor Surveillance Survey (BRFSS), a nationally representative telephone survey of retrospectively reported ACEs, indicates that 61% of adults report at least one childhood adversity and 14% report 4 or more (Merrick et al., 2018). Additionally, significantly higher ACES exposure is reported by black, Hispanic, or multiracial youth (Merrick et al., 2018), demonstrating the disproportionate burden carried by minority populations. The impact of ACEs on physical and mental health has been widely reported among both white and racial minority participants (Bright et al., 2016; Hughes et al., 2017; Kalmakis & Chandler, 2015; Merrick et al., 2017), and likely contributes to lifelong risk for disease. However, there is also concern that the risk for ACEs may be transmitted across generations thus perpetuating systemic disparities. Intergenerational effects of child maltreatment have been shown across multiple studies (Madigan et al., 2019), yet only a few have expanded this intergenerational model to include ACEs more generally and find similar rates of intergenerational exposure to ACEs (Narayan et al., 2017). To enhance our understanding of intergenerational experiences of adversity, the current study examined the association between parent-reported childhood ACEs and their offspring's self-reported ACEs in late adolescence among a primarily racial minority sample.

Intergenerational experiences of adversity have primarily focused on maltreatment experiences (Assink et al., 2018; Madigan et al., 2019; Thornberry et al., 2012). While there are a number of identified risk factors for child maltreatment that are liked with the parent (e.g., domestic violence, parenting behaviors, mental illness, criminal behavior) (Assink et al., 2019; Mulder et al., 2018; Stith et al., 2009; Zhou et al., 2006), the evidence consistently points to parental experiences of childhood maltreatment as being critical for risk of offspring maltreatment (Assink et al., 2019; Madigan et al., 2019; Mulder et al., 2018). A recent meta-analysis of 142 studies found a modest association ($d = .45$) between parents' experience of childhood maltreatment and their offspring's exposure (Madigan et al., 2019). However, few studies have expanded this model of intergenerational risk to examine exposure to adversities more generally. This literature also often frames intergenerational effects as transmission versus continuity, with parental perpetration being a condition for transmission but not for continuity (Berlin et al., 2012; Valentino et al., 2012). However, the concept of parental perpetration does not apply to all ACEs, as such the framing of intergenerational continuity is most relevant to examining ACEs more generally. One study showed a higher number of parental ACEs was associated with higher number of child ACEs in a sample of women who were experiencing homelessness (Narayan et al., 2017). Although, this concordance may have been due in part to the parent reporting ACEs for both themselves and their child. Similarly, in a rural white sample in Iowa, an increase of 1 ACE for the parent was associated with a .34 increase for the child (Schofield et al., 2018). However, it is unclear if these associations hold in a racially/ethnically diverse urban sample.

It is well established that minority populations experience ACEs at higher levels than white youth, and this likely contributes to the persistence of racial inequities in physical and mental health (Merrick et al., 2018), yet there has been minimal focus on attempting to disrupt this cycle of exposure to adversity.

The persistence of ACEs across generations may occur via the impact on brain development, epigenetics, and physiological reactivity, which impair the ability to achieve salient developmental tasks that are critical to healthy parenting (Buss et al., 2017; Stenz et al., 2018). Insecure attachment, social skill deficits, low-self-esteem, low cognitive abilities, and poor emotion regulation in infancy and childhood set the stage for experiencing more general adversities and emotional stress in adulthood (Cicchetti, 2016). Additionally, the presence of stressors and challenges, including adversities such as economic hardship, leads to a difficulty meeting basic needs, influences parental emotional health and thereby the quality of parenting practices (Masarik & Conger, 2017) that might increase the likelihood of offspring experiencing ACEs generally, and maltreatment in particular (MacKenzie et al., 2011). Yet, the available evidence indicates that parental experience of ACEs are not fully deterministic for the child experiencing ACEs, suggesting that the possibility exists to disrupt this intergenerational risk (Narayan et al., 2017). Enhancing our understanding of the concordance between specific patterns of ACEs for parents and children will help delineate if certain types of adverse experiences are more likely to occur across generations.

The general approach to studying ACEs has been to use the sum score to characterize a dose-response relationship with outcomes (Balistreri & Alvira-Hammond, 2016; Greeson et al., 2014; Mersky et al., 2013). While the evidence supports higher scores being more detrimental, this approach discounts the potential variability in severity between individual items. For example, a score of 4 ACEs could represent a person who has experienced four types of maltreatment versus someone who reported one type of maltreatment and three types of family dysfunction. These experiences are substantively different in terms of trauma exposure and would likely necessitate different approaches to treatment or social service referral. A number of studies show that maltreatment experiences generally drive the effects of the ACEs total score (Atzl et al., 2019; Finkelhor et al., 2015; Ryan et al., 2000). Therefore, ignoring the items on the ACES scale and combining into a sum score will likely leave a gap in our understanding of which types of services might be most critical for someone scoring high on adversity.

An alternative to the sum score approach is the use of latent class analysis (LCA) to identify heterogeneous groupings of individual with similar patterns of ACEs. A number of studies have used LCA to categorize individuals based on their co-occurring adversities. However, the difficulty in this approach is that the results of an LCA on a specific sample cannot be extrapolated to a different study. As such, there have been a variety of solutions found in the existing literature ranging from three to seven classes (Brown et al., 2019; Lanier et al., 2018; Logan-Greene et al., 2016; Menard et al., 2004). However, despite the limited generalizability of this approach, there is utility in the ability of LCA to capture meaningful patterns of co-occurring ACEs which may give better insight into the clustering of adversity and heterotypic versus homotypic intergenerational exposure. Such evidence will lend a

clearer understanding to the patterns of ACEs that are most likely to carry across generations.

1.1 The Current Study

To enhance our understanding of the intergenerational exposure to ACEs, the current study examined concordance between latent classes of ACEs experiences for parent-adolescent dyads. Our goal was to clarify the utility of using a sum score to represent intergenerational continuity of adversity versus a latent class approach among a primarily racial minority sample. These questions were examined in an ongoing longitudinal study of the effects of maltreatment on adolescent development. Adversity data was obtained for both our maltreated and comparison group allowing a better approximation of the strength of intergenerational exposure to adversity among both child welfare involved and community youth.

2. Methods

2.1 Participants

Data were from the third and fourth assessments (M=2.7 and 7.2 years after baseline, respectively) of an ongoing prospective longitudinal study examining the effects of maltreatment on adolescent development (for full study design and methods see Negriff et al. (in press). Recruitment occurred from 2002-2005 and enrolled 454 adolescents aged 9–13 years (242 males and 212 females; 303 maltreated, 151 comparison) and their caregivers. Time 1 was followed by three additional assessments with the full sample. Time 2 (2003–2006; M = 12.11, SD = 1.19); Time 3 (2005–2008; M = 13.69, SD= 1.39); and Time 4 (2009–2012; M = 18.24,SD = 1.47) occurred approximately 1 year, 1.5 years, and 4.4 years following each prior assessment. Of the original sample, 71% completed the Time 3 (T3) assessment (N=322) and 78% completed the Time 4 (T4) assessment (N=352). At T4 the participants were approximately evenly split between males and females, and primarily African American (43%) or Latino (34%). Sample demographics for the analytic sample can be found in Table 1.

2.1.1 Recruitment.—Youth classified to the maltreatment group (N = 303) were recruited from active cases in the Children and Family Services (CFS) agency of a large US west coast city. The inclusion criteria were: (1) a new substantiated referral to CFS during the preceding month for any type of maltreatment (e.g., physical neglect, physical abuse, sexual abuse, emotional abuse); (2) age of 9–12 years (some turned 13 between first contact and actual study visit); (3) identified as Latino, African American, or Caucasian (non-Latino); and (4) residing in 1 of 10 zip codes in a designated county at the time of referral to CFS. With the approval of CFS, the juvenile court, and the Institutional Review Board of the affiliated university, potential participants were contacted and asked to indicate their willingness to participate.

Youth classified to the comparison group (n =151) were recruited using names from school lists of children aged 9–12 years residing in the same 10 zip codes as the maltreated sample. With approval of the Institutional Review Board of the affiliated university caretakers of

potential participants were contacted and asked to indicate their interest in participating. To ensure the fidelity of the comparison sample, caretakers were asked about involvement with CFS and none indicated prior or current contact with CFS.

Upon enrollment in the study, youth in the maltreatment and comparison groups were compared on demographic variables. The youth in the two groups were similar in age (M = 10.93 years, SD = 1.16), gender (53% male), race (38% African American, 39% Latino, 12% biracial, and 11% Caucasian), and neighborhood characteristics (based on census tract information) (Negriff et al. in press). However, they differed in terms of living arrangements; 93% of the comparison group lived with a biological parent compared to 52% of the maltreatment group. At T4 56% of the youth in the maltreated group lived with a biological parent, whereas 85% of those in the comparison group did.

Attrition analyses indicated participants not seen at T3 were more likely to be Latino (OR = 3.37, p<.01) and in the maltreatment group (OR = 5.36, p<.01), and those not seen at T4 were more likely to be in the maltreatment group (OR=2.45, p<.01) and male (OR=l.86, p<.01).

Because parents only reported on ACEs at T3 and the adolescents at T4, the total possible sample for the current analyses was parents with ACEs data at T3 (n=258) and adolescents with data at T4 (n=352), which was then restricted by the two following criteria: a) biological parents and b) one child per caregiver. Because we were interested in examining the intergenerational transmission of ACEs, we chose only biological parents, but allowed either mothers or fathers to be included. If the parent had more than one child enrolled in the study, we randomly selected one of the siblings for inclusion. This excluded 33 siblings (some parents had 3 children enrolled in the study). Based on these selection criteria the final analytical sample was 185 biological parents (5% fathers), 164 adolescents (87 comparison and 77 maltreated; 48.6% male). Some parents with data at T3 did not have an adolescent with ACEs data at T4 which is why the parent sample is larger than the adolescent sample.

2.2 Procedure

Assessments were conducted at an urban research university under approval by the Institutional Review Board of the affiliated university. After assent and consent were obtained from the adolescent and caregiver, respectively, they were shown to separate rooms where each completed questionnaires and tasks during a 4-hour protocol. The measures used in the analyses represent a subset of the questionnaires administered during the protocol. Both children and caregivers were paid for their participation according to the guidelines of the National Institutes of Health standard compensation for healthy volunteers.

2.3 Measures

2.3.1 Self-Reported Maltreatment, Violence Exposure, and Adversities.—

The Comprehensive Trauma Interview (CTI; (Noll et al., 2003) was used at T3 for parents and at T4 for adolescents to assess self-reported maltreatment, violence exposure, and adversities. This self-report instrument was used for the parent because it was the only source of

information about parental exposure to maltreatment and adverse experiences. It was also used for the adolescent as it was the most comprehensive approach to capture complete information about the entire period of adolescence (information obtained from the child welfare case records was limited to experiences prior to study enrollment) as well as unreported maltreatment for the entire sample, not just the maltreatment group. The CTI is administered via interview by a trained research assistant and assesses 19 different adverse experiences. Those included in the present study were: parental divorce, parental incarceration, witnessing intimate partner violence (IPV), household substance use, death of parent, foster care placement or other parental separation, sexual abuse (2 items), physical abuse, emotional abuse (2 items), emotional neglect (1 item), and physical neglect (4 items). Each stem question is answered yes/no, and for each question answered affirmatively further follow-up questions are asked including the age at all event(s) that correspond to that experience and a description of what happened. For those constructs with more than one question, the item was coded "yes" if it was endorsed for any one of the questions. For the parent, only items that occurred under age 18 were coded as ACEs. Other studies have shown test-retest reliability of the CTI ranging from .45-.76 depending on the maltreatment type (Barnes et al., 2009; Fergusson et al., 2000).

3. Data Analyses

Latent class analyses (LCA) was used to examine heterogeneous subgroups of participants with similar patterns of adverse experiences. Using Mplus 8.2, we fit models from 1 to *k* class solutions, adding classes until the fit statistics did not improve. We then compared the fit statistics of the various class solutions to determine the best fitting model that fit our substantive interpretation. Smaller values of the negative two log likelihood (−2LL), Akaike Information Criteria (AIC), Bayesian Information Criteria (BIC), and the sample size adjusted Bayesian Information Criteria (aBIC) all indicate better model fit. In addition, we tested the significance of a *k - 1* model fit using the Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR), Lo-Mendell-Rubin adjusted likelihood ratio test (LMR), and the bootstrapped likelihood ratio test (BLRT). A non-significant value for any of these indices indicates the fewer class solution is a better fit to the data. We also used the criteria of class homogeneity and separation which allows for meaningful interpterion of the classes. Specifically, for class homogeneity we used only items with high (>.70) or low (<.30) probability of endorsement to describe class characteristics. Additionally, class separation was assessed by items with high (>5.0) or low (<.20) odds of endorsing a particular item.

To examine the similarity in intergenerational experiences of adversity we used chi-square tests to determine if the parent's class membership was associated with their child's class membership. To compare sum scores of ACEs for the parent and child we regressed the child score on the parents score controlling for child's age, race, and sex.

4. Results

4.1 Descriptives

Descriptive statistics can be found in Table 2 (prevalence of ACEs items). The most prevalent type of adversity for parents was witnessing IPV (28.6%), followed by household

substance use (26.4%). For adolescents, the most prevalent type of ACE was also witnessing IPV (40.9%) followed by emotional neglect (39%). The bivariate correlation between parent and child ACEs sum score was $r = .18$ ($p<.05$), indicating parents with high ACE have children with high ACEs (a low to moderate effect size (Cohen, 1988)).

4.2 Latent Class Analysis

4.2.1 Parent.—

One to 4 classes were fit for the parent ACEs. According to the model fit indices (Table 3), the VLMR and LMR indicated a 3 class solution whereas the BLRT indicated a 2 class solution. For the 2 class solution, class separation was achieved for all items except divorce, parental incarceration, and parental death, which had low probability of endorsement for either class 1 or 2 (likely due to low frequency of endorsement of these items; see Figure 1a). Class 1 (n=31) was characterized by endorsement of witnessing IPV, household substance use, parental separation, and all types of child maltreatment. Class two (n=153) was indicated by low occurrence of ACEs. For the three class solution (Figure 1b), class 1 (n=24) was characterized by the same items as in the previous solution (witnessing IPV, household substance use, parental separation, and all types of child maltreatment). Class 2 (n=8) was characterized by physical abuse and emotional neglect. Class 3 (n=147) was indicated by low occurrence of ACEs.

4.2.2 Adolescent.

As with the parent, 1 to 4 classes were examined. The VLMR and LMR indicated that a 2 class solution was a better fit whereas the BLRT indicated a 3 class solution (Table 4). Similar to the parent results, class 1 (n=65) was characterized by endorsement of witnessing IPV, and all maltreatment items (Figure 2a). Class 2 (n=99) was indicated by low occurrence of ACEs. For the three class solution, class 1 (n=37) was characterized by reports of witnessing IPV, household substance use, emotional abuse and physical and emotional neglect (Figure 2b). Class 2 (n=92) was the low ACEs class, and class 3 (n=35) was indicated by household substance use and emotional abuse.

4.3 Continuity Between Parent and Child ACEs

Given the low number assigned to class 2 for the parent 3 class solution and fit statistics indicating that the 2 class was a better fit for the adolescent, we chose to only investigate the continuity in class membership for the 2 class solutions. Logistic regression showed that parents of those in the maltreated group were 2.6 times more likely (95% CI=1.16-5.95; Cohen's d =.53) than those in the comparison group to belong to class 1 (high ACEs) than class 2 (low ACEs). For the adolescent, those in the maltreated group were 5.3 times more likely (95%CI=2.68-10.51; Cohen's d =.92) than comparison youth to be assigned to the high ACEs class (class 1), than the low ACEs class (class 2). In terms of concordance between parent and child class membership, 52.1% were both in the low ACEs class, for 31% the parent was in the low ACEs class but the child was in the high ACEs class, 9% were both in the high ACEs class, and for 8% the parent was in the high ACEs class but the child was in the low ACES class. We further examined the frequencies for each ACE for dyads (see Table 5). For the dyads with the parent in the low ACEs class and the adolescent in the higher ACEs class (low/high), 26% of parents reported witnessing IPV, 16%

household substance use, and 14% physical abuse. Of the children in the low/high dyad, 82% reported emotional neglect, 76% emotional abuse, and 72% reported witnessing IPV. For the dyad with both parents and children in the high ACEs class (high/high), 100% of parents reported parental death, separation from a parent, and physical neglect. For children in the high/high dyad 100% reported divorce and parental incarceration. Finally, for the dyad with parents in the high ACEs class and children in the low ACEs class (high/low), 84.6% of parents reported emotional abuse and witnessing intimate partner violence. For the children in the high/low dyad, 23% reported household substance use and 15% emotional neglect.

5. Discussion

Exposure to adversity in childhood is concerning not only for the effects on the individual, but also for the potential risk to their offspring. In our sample, the majority of both parents and children were assigned to latent classes indicated by low levels of ACEs, however there was also a subset that both had high ACEs indicating continuity in exposure to adversity.

The use of latent class analysis has advantages over a sum score approach in that information about the co-occurrence of individual ACEs can be obtained. For the parent, both 2 and 3 class solutions were a good fit, with the 2 class solution separating into a low ACES class and a high ACEs class (indicated by witnessing IPV, household substance use and all maltreatment types). In the 3 class solution there was an additional class indicated by physical abuse and emotional neglect. The presence of a low ACEs class is similar to other studies using LCA to examine clusters of ACEs (Lanier et al., 2018; Logan-Greene et al., 2016; Menard et al., 2004). These studies diverge in the characterization of high ACEs classes, while in our study we found one high ACEs class indicated by witnessing IPV, household substance use, and all maltreatment types, and a second only characterized by physical abuse and emotional neglect, other studies have found combinations of ACES including a) emotional abuse and parental substance abuse, b) emotional abuse, alcohol abuse, and witnessing IPV (Barboza, 2018), c) emotional and physical abuse (Merians et al., 2019), and d) emotional abuse and emotional neglect (Shin et al., 2010). Our results and others indicate that certain ACEs may co-occur while others do not. Importantly, the differences between ACEs items included in latent class solutions depends on the items in the questionnaire as well as the characteristics of the sample. For example, in a study of adolescents all investigated for maltreatment no ‘low ACEs’ class was found (Brown et al., 2019). Therefore, the particular combination of ACEs may be very much dependent on the rates of ACEs within the sample. Because we combined the maltreated and comparison groups in our analyses and used self-reported ACEs we did capture some of this group categorization in our latent classes. However, not all of the comparison group were assigned to the low ACEs class, and not all the maltreated group were assigned to the high ACEs class. This indicates that self-reported maltreatment may capture different information than child welfare referrals regarding adversity.

The adolescent LCA was very similar to the parent. The 2 class solution was included a low ACES class and high ACES class (indicated by witnessing violence and all maltreatment types). The main difference between the parent and child ‘high ACEs’ class was that household substance use was in the parent high ACEs but not in the child. This is interesting

given the rate of household substance use was similar for both parent (26.4%) and adolescent (27.4%). However, the overall similarity in class profiles indicates some degree of replication of the LCA for this sample. That is, the particular ACEs seemed to cluster similarly for both the parent and adolescent sample. While we acknowledge that these are not independent samples, the replication does add a degree of rigor to our results (Merians et al., 2019).

A disadvantage of the 2 class solution is that there may not be a meaningful difference between using categories of a high versus low ACEs class and using a sum score approach in characterizing intergenerational continuity. While the correlation between the ACES sum score for the parent and adolescent was significant, there was far less concordance when using the LCA solutions for those in the 'high ACEs' class. The majority of both parents and offspring were assigned to the low ACEs class and there was a good degree of continuity (52%), likely reflecting our comparison group. Interestingly, there was a large proportion of parents in the low ACEs class, but the child was in the high ACEs class (31%). This represents a substantial degree of discordance and indicates that parental ACEs are not an unequivocal risk for child ACEs. The highest frequency adversity reported by the parent in the low ACEs class whose child was in the high ACEs class was witnessing IPV. This further supports the 'cycle of violence' hypothesis (Widom & Wilson, 2015) and highlights the need for parenting interventions to teach and reinforce positive parenting (Dixon et al., 2005). There were far fewer who were concordant for being in the 'high ACEs' class (9%), yet the presence of this subgroup provides support for the intergenerational continuity of ACEs. Interestingly, the highest frequency ACE differed for the parent and the child who were both in the high ACEs class. This indicates there may not be homotypic continuity of high ACEs. As only one study has examined the concordance between parent and child ACEs (Narayan et al., 2017) via correlation of sum scores, the present study adds to our knowledge of the prevalence and type of continuity/discontinuity. Perhaps most importantly, there were some parents in the 'high ACEs' class with children in the 'low ACEs class'. These parents reported highest frequencies for emotional abuse and witnessing IPV, with physical neglect close behind, yet somehow this did not translate into adversities for their child. Further examination of these parents and children may help enhance understanding of how potentially break the cycle of intergenerational continuity of adversity.

There are limitations of this study that should be considered when interpreting the findings. First, as with most ACEs studies, the data were self-report which may result in over-reporting in comparison to those indicated by child welfare reports. The advantage of self-report is that there are several ACEs that do not rise to the level of child welfare referral and thus we are able to capture a more complete assessment of adversity. Second, as mentioned previously, LCA is specific to the sample and cannot be extrapolated to other populations. While LCA can give a more nuanced picture of co-occurrence of ACEs, a 2 class solution indicating high versus low ACEs may not be useful for further characterizing outcomes and does not seem to be an improvement over the sum score approach. However, LCA was useful for understanding the type of concordance/discordance between parent and child class membership, which is not possible with a continuous score. Finally, we recognize that using a sample of maltreated and comparison youth we are likely capturing this study design in our LCA solutions. Only using the maltreated group may have yielded different class

solutions. Yet, we did find that there were some parents and children in the comparison group assigned to the high ACEs class. Perhaps indicating un-reported maltreatment or ACEs that were not reportable to child welfare.

5.1 Conclusions

The results of the current study point to a large degree of intergenerational continuity of low ACEs and a small amount of continuity of high ACEs. While not a large association, it does indicate there should be concern that parental ACEs may be a risk for child ACEs. Assessment of parental ACEs is not standard in clinical practice, yet might help identify children at risk for ACEs. On the other hand, nearly the same amount of discontinuity occurred with parents in the high class with children in the low class indicating that parental adversity is not deterministic for child adversity. However, most concerning is that there were a high percent of parents with low ACEs but had children with high ACEs. There are other risk factors for adversity such as poverty, maternal age, multiple children in the home, low educational attainment, and single parent household (Sidebotham et al., 2006; Wu et al., 2004; Zhou et al., 2006), which should be investigated in further research as a means through which intergenerational exposure to adversity may be propagated. In addition, any clinical or therapeutic response should take into account all the sources of adversity for the parent and child and aim to mitigate or prevent the causes, many of which are likely linked to a dearth of resources for the parent. Bolstering positive parenting practices and providing social service programs to fill other needs (e.g., food or housing insecurity) will be one path toward breaking the intergenerational continuity of adversity. As ACEs are experienced at higher rates by Black and Hispanic youth, understanding the factors that lead to adversity across generations will help stave the multitude of negative outcomes linked with ACEs.

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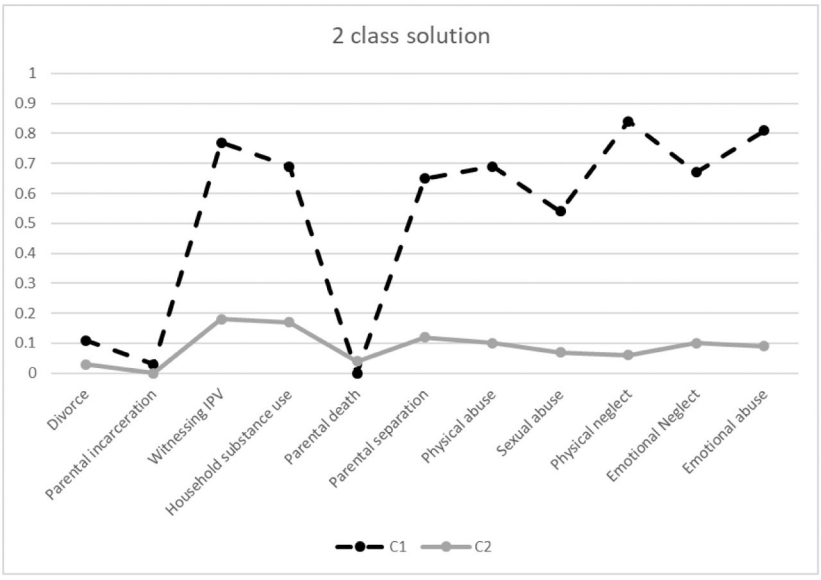
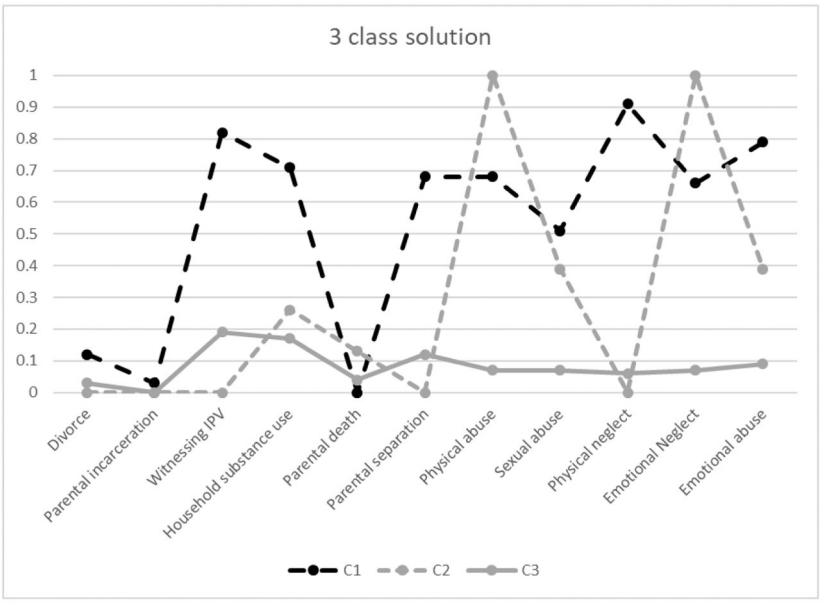
Highlights

- Examined intergenerational continuity of ACEs for parents and adolescent offspring
- LCA found low and high ACEs classes for both parents and adolescents
- Substantial continuity between parent and child in the low ACEs class (52%)
- Few (9%) dyads where both parent and adolescent were assigned to high ACEs class
- LCA concordance between parent and child indicates low continuity of high ACEs

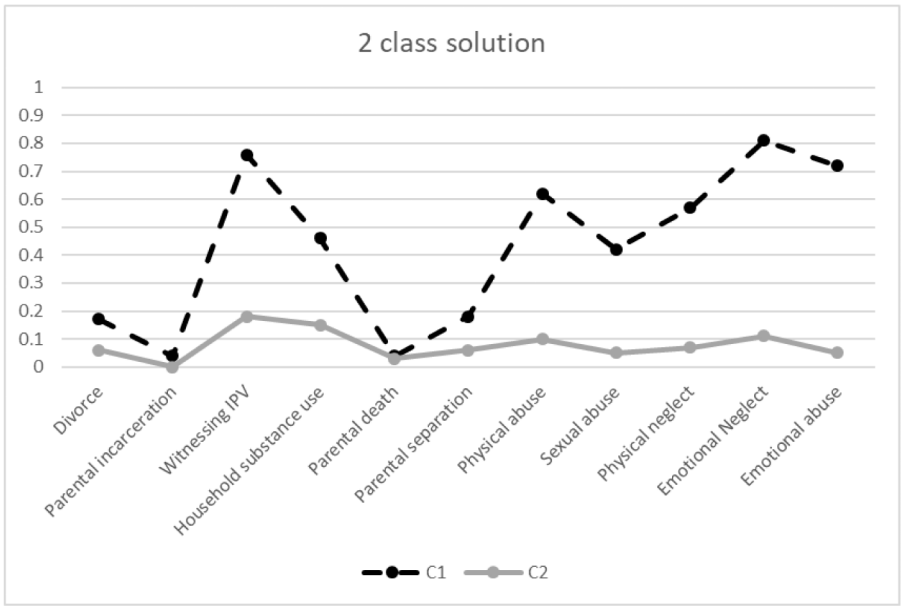


(a)



(b)

Figure 1.
Parent: 2 class (a) and 3 class (b) solutions and predicted probabilities for each ACEs item



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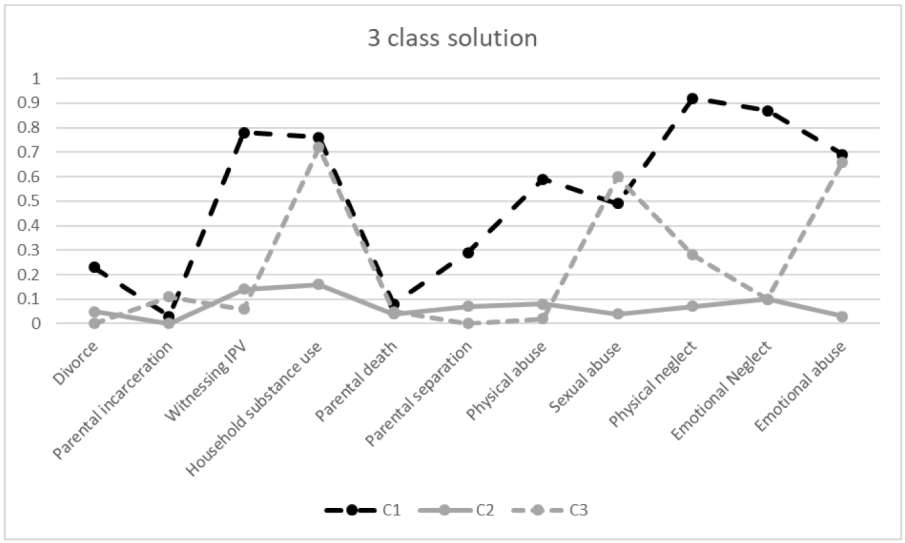

(b)

Figure 2.
Adolescent: 2 class (a) and 3 class (b) solutions and predicted probabilities for each ACEs item

Table 1.

Sample Characteristics at T3 (Parent) and T4 (Adolescent)

	Time 3	Time 4
	Parent	**Adolescent**
N	185	164
Age (std deviation)	39.48 (7.08)	18.16 (1.32)
Sex (%)		
Male	4.9	46.3
Female	95.1	53.7
Ethnicity (%)		
African American	37.8	39.6
Latino	40.5	39.0
White	16.2	10.4
Mixed/Biracial	13.0	11.0
Asian/Pacific Islander	2.7	n/a
Other	1.1	n/a
Average individual yearly income (%)		
<$14,999	48.5	n/a
$15,000-$29,999	23.3	n/a
$30,000-$59,999	23.3	n/a
over 60,000	4.9	n/a
Level of education		
No high school diploma/equivalent	26.5	n/a
High school diploma/equivalent	20.5	n/a
Some college	36.8	n/a
College diploma or advanced degree	16.2	n/a

Note: Parent trauma interview data only available at T3; adolescent trauma interview data obtained at T4

Table 2.

Items comprising the ACEs scale and prevalence (%) of each item

	Parent n=185	Adolescent n=164
Divorce	4.4	9.2
Parental incarceration	0.5	1.6
Witnessing intimate partner violence	28.6	40.9
Household substance use	26.4	27.4
Death of a parent	3.3	3.7
Separation from parent	20.8	11.0
Physical abuse	20.8	30.5
Sexual abuse/assault	15.4	19.5
Physical neglect	19.8	26.8
Emotional neglect	20.3	39.0
Emotional abuse	22.0	31.7

Table 3.

Parent: Model fit indices for Latent Class Analysis

No. classes	−2 LL	AIC	BIC	aBIC	Entropy	VLMR	*p*	LMR	*p*	BLRT	*p*
1 class	822.69	1667.38	1702.74	1667.9							
2 class	700.11	1446.22	1520.16	1447.32	0.92	245.15	0.00	241.30	0.00	245.15	0.00
3 class	687.40	1444.81	1557.33	1446.48	0.95	25.40	0.02	25.01	0.02	25.40	0.12
4 class	675.56	1445.12	1596.22	1447.36	0.86	23.69	0.09	23.32	0.10	23.69	0.26

Note: −2LL = negative 2 log likelihood; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size adjusted Bayesian Information Criteria; LMR = Lo-Mendell-Rubin test; BLRT = Bootstrapped log-likelihood ratio test; VLMR= Vuong-Lo-Mendell-Rubin likelihood ratio test.

Table 4.

Child: Model fit indices for Latent Class Analysis

No. classes	−2 LL	AIC	BIC	aBIC	Entropy	VLMR	*p*	LMR	*p*	BLRT	*p*
1 class	848.66	1719.32	1753.42	1718.59							
2 class	738.44	1522.88	1594.18	1521.36	0.83	220.43	0.00	216.89	0.00	220.43	0.00
3 class	718.45	1506.91	1615.41	1504.60	0.83	39.97	0.17	39.33	0.17	39.97	0.00
4 class	706.38	1506.77	1652.46	1503.66	0.82	24.13	0.28	23.75	0.28	24.13	0.37

Note: −2LL = negative 2 log likelihood; AIC = Akaike Information Criteria; BIC = Bayesian Information Criteria; aBIC = sample size adjusted Bayesian Information Criteria; LMR = Lo-Mendell-Rubin test; BLRT = Bootstrapped log-likelihood ratio test; VLMR= Vuong-Lo-Mendell-Rubin likelihood ratio test.

Table 5.

Percent reporting each ACE for dyads in low/high, high/high, and high/low ACE classes

	Parent low ACEs/ Child high ACEs (*n*=50)		Parent high ACEs/ Child high ACEs (*n*=15)		Parent high ACEs/ Child low ACEs (*n*=13)	
	Parent	**Child**	**Parent**	**Child**	**Parent**	**Child**
Divorce	6	24	6.7	100	15.4	0
Parental incarceration	0	6	6.7	100	0	0
Witnessing intimate partner violence	26	72	80	86.7	84.6	7.7
Household substance use	16	44	73.3	53.3	69.2	23.1
Death of a parent	2	4	100	6.7	0	0
Separation from parent	8	20	100	13.3	46.2	7.7
Physical abuse	14	60	73.3	73.3	69.2	0
Sexual abuse/assault	4	38	60	60	53.8	0
Physical neglect	10	56	100	60	76.9	7.7
Emotional neglect	12	82	66.7	86.7	69.2	15.4
Emotional abuse	12	76	80	60	84.6	7.7