

**Improving the way that we conceptualise adverse childhood experiences –
a commentary on Sisitsky et al. (2023)**

Abstract:

Research on adverse childhood experiences (ACEs) has traditionally relied on cumulative ACE scores, which prevents understanding about the effects of distinct adversities and their mechanistic pathways. Dimensional and person-centred approaches have been proposed as alternative methods to conceptualise ACEs which address limitations of the cumulative ACE score. In this issue, Sisitsky and colleagues (2023) apply these approaches to identify dimensions of ACEs and profiles of children with distinct patterns of early exposure in a large racially diverse cohort from the US. The authors also examine the longitudinal associations between profiles of early adversity in early childhood with later mental health and telomere length. In this commentary, we discuss key findings from the study and recommend future avenues for improving the conceptualisation of ACEs.

Keywords:

adverse childhood experiences; person-centred approaches; factor analysis; psychopathology

Adverse childhood experiences (ACEs) are well-established risk factors for mental health problems. However, the ACEs literature has been heavily criticised, in part because of the field's approach to conceptualising ACEs (Lacey & Minnis, 2019). In particular, the majority of previous research has conceptualised ACE exposure through a cumulative risk score known as an "ACE score", indexing the number of different adversities experienced by an individual. While this conceptual approach is easy to apply in practice and has shown a dose-response relationship between the number of ACEs with the risk of mental and physical health problems (Felitti et al., 1998), it is limited in two key ways. First, it assumes that different adversities have equivalent effects, which may not be the case (e.g., sexual abuse may have a different impact than parental separation). Second, it does not enable investigation of the potentially distinct mechanisms underlying the effects of different types of ACEs. To provide more nuanced insights into the effects of childhood adversities, alternative approaches to conceptualising ACEs are needed.

Two alternative approaches to conceptualising ACEs include dimensional models and person-centred methods (amongst others; Lacey & Minnis, 2019). In brief, the dimensional approach groups ACEs together according to shared underlying characteristics, to examine whether distinct dimensions of adversities have different effects and mechanisms. For example, the Dimensional Model of Adversity and Psychopathology (DMAP; McLaughlin, Sheridan, & Lambert, 2014) proposes that ACEs involving threat (e.g., abuse) and deprivation (e.g., neglect) impact psychopathology to a similar extent but via different mechanisms. In contrast, the person-centred approach groups together people with similar exposures to adversities, to identify subgroups of individuals exposed to different ACE combinations in a given population. However, little is known about the associations between

dimensions and person-centred clusters of childhood adversity with psychobiological outcomes.

To help address this research gap, Sisitsky and colleagues (2023) examined the associations between person-centred clusters of ACEs with mental health and telomere length in later childhood. Participants were children from the Future of Families and Child Wellbeing Study (FFCWS), a large population-based, birth cohort of majority racial and ethnic minority youth born between 1998 and 2000 in the United States. ACEs were prospectively assessed when children were aged 3 and included mother-reports of physical and emotional abuse, physical and emotional neglect, and an absence of cognitive and social interactions with the primary caregiver, as well as county-level crime records indexing indirect and direct exposure to neighbourhood crime. Outcomes assessed at age 9 included internalising and externalising behaviours, and telomere length, an indicator of cellular aging. In this commentary, we discuss four key findings made by the study, and provide recommendations for future research.

First, the authors identified four dimensions underlying measures of ACEs at age 3 (namely, home threat, community threat, lack of stimulation, and neglect), via confirmatory factor analysis. These four dimensions appear to conflict with the DMAP theory, which proposes two dimensions of threat and deprivation underlying experiences of adversity. However, this finding should be interpreted cautiously for two reasons. First, the study examined a relatively small number of adversities at a single time point, and did not assess commonly considered ACEs (e.g., sexual abuse, parental mental illness, parental substance abuse, parental separation, and bullying victimisation). Second, the four dimensions mapped onto different assessments and/or informants (with the exception of home threat and neglect,

which were both assessed using mother-reports on the Conflict Tactics Scale). Rather than representing distinct adversity constructs, this suggests that different dimensions may capture shared method variance. As such, it will be important for future research to identify dimensions of adversity across a wide range of ACEs assessed at multiple time points, applying approaches to account for shared method variance.

Second, by conducting person-centred analysis based on the four adversity dimensions, the authors identified eight subgroups of children with distinct patterns of ACEs. These subgroups indexed children with varying levels of multiple dimensions of adversity (i.e., Home Adversity, Low Risk, and Average Risk) or varying levels of a single dimension (i.e., Community Threat, Safe Community, Home Neglect, High Stimulation, and Low Home Threat). As highlighted by the authors, a number of these subgroups have been identified in other samples. For example, the Home Adversity profile is similar to subgroups in other samples with high levels of abuse and neglect but low/average levels of community violence (e.g., in Add Health, the National Data Archive on Child Abuse and Neglect Database, Longitudinal Studies of Child Abuse and Neglect, and the National Survey of Children's Exposure to Violence)(Estrada et al., 2023). Similarly, the Community Threat profile is similar to subgroups with high levels of community violence/victimisation but low/average levels of maltreatment (in the same samples as cited above; Estrada et al., 2021). Similar low risk subgroups (comprising children with minimal exposure to multiple ACEs) have also been identified in other cohorts in the UK (Lacey et al., 2020) and USA (Estrada et al., 2023). However, other subgroups (e.g., Home Neglect, High Stimulation, Low Home Threat) appear to be specific to this sample and/or the particular combination of ACEs included. This highlights a potential limitation of the person-centred approach: that certain subgroups may be sample-specific (particularly when different samples have different measures of ACEs,

and are not population-representative), limiting generalisability. To evaluate the presence of robust subgroups of children exposed to distinct patterns of ACEs, future systematic reviews and meta-analyses of person-centred approaches to conceptualising ACEs are needed.

Third, Sisitsky and colleagues found that children with distinct patterns of adversity exposure at age 3 showed different internalising and externalising outcomes at age 9. In particular, the subgroup of children who experienced “Home Adversity” (characterised by high levels of home threat, elevated neglect, low stimulation, and average community threat) had elevated levels of internalising problems, but not externalising problems. In contrast, the subgroup of children who experienced “Community Threat” (characterised by high levels of community threat, elevated home threat, and average neglect and stimulation) had elevated levels of externalising problems, but only a very small increase in internalising problems. This suggests that adversity within the home may drive risk for internalising problems, while adversity in the neighbourhood may drive risk for externalising problems. As briefly noted by the authors, these person-centred findings were broadly consistent with results from factor analysis (e.g., the home threat dimension was most strongly associated with internalising problems, while community threat was most strongly associated with externalising problems). The findings also support a previous study showing that subgroups of children experiencing high levels of maltreatment only were particularly likely to have internalising problems, while groups of children exposed to community violence were particularly likely to have externalising problems (Estrada et al., 2023). However, the findings differ to a large body of evidence linking adversities in the home (e.g., maltreatment and other ACEs) to elevated risk of internalising and externalising problems (Baldwin et al., 2023; Baldwin, 2023; Bevilacqua, Kelly, Heilmann, Priest, & Lacey, 2021). As such, future studies are needed to evaluate the extent to which these findings replicate in other studies that account

for the co-occurrence of home and community adversities (e.g., using person-centred approaches, factor analysis, and single ACE methods adjusting for other ACEs). Furthermore, given that associations between ACEs and mental health are partly explained by genetic and environmental risk factors (Baldwin et al., 2023; Baldwin, 2023), quasi-experimental methods are needed to disentangle causal effects from confounding.

Fourth, children exposed to high levels of early adversity did not have shorter telomeres at age 9 than children with low levels of adversity exposure. This supports an earlier meta-analysis which did not find an association between early adversity and telomere length in four prospective longitudinal studies (Ridout et al., 2018). However, it conflicts with a more recent meta-analysis of nine prospective studies (Colich, Rosen, Williams, & McLaughlin, 2020) showing that early adversity (in particular, the dimension of threat) was associated with shorter telomere length in adulthood. The discrepancy between Sisitsky and colleagues' null finding with the association between early adversity and telomere length in Colich et al.'s (2020) meta-analysis may be explained by (i) differences in the age of telomere assessment (i.e., the effects of adversity on telomere length may not emerge until adulthood), (ii) differences in the types and/or conceptualisation of ACEs between studies (i.e., Colich et al. [2020] focused on dimensional approaches) and (iii) publication bias, which was found to affect Colich et al.'s (2020) meta-analysis. Therefore, future pre-registered research is needed to clarify the role of ACEs in telomere length, capitalising on longitudinal data with telomere assessments at multiple timepoints across development and comparing different conceptualisations of ACEs. In addition, future research is needed to examine whether person-centred clusters of childhood adversity are differentially associated with other biological outcomes (e.g., inflammation, cortisol).

To advance understanding about the effects of ACEs, it is important to find nuanced ways of conceptualising ACEs which address the limitations of the cumulative ACEs score. Sisitsky and colleagues' study makes an important contribution to this endeavour, by identifying dimensions of ACEs and subgroups of children with distinct patterns of exposure in a unique longitudinal cohort of racial and ethnic minority youth. Their findings suggest that early experiences of home adversity may be particularly important in the development of internalising problems, while community threat may be more influential in the development of externalising problems. Future pre-registered research should examine whether these findings replicate in other samples, (i) focusing on a broader range of ACEs, (ii) using approaches to conceptualise ACEs that account for the interplay between home and community adversities, and (iii) using quasi-experimental methods to strengthen causal inference. In the pursuit of improving measurement and conceptualisation of ACEs, researchers should also be mindful to ensure that such methods are easily usable, so that such research can be implemented in policy and practice.

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