



# Patterns of adversity and pathways to health among White, Black, and Latinx youth

Sabrina R. Liu<sup>a,\*</sup>, Maryam Kia-Keating<sup>a</sup>, Karen Nylund-Gibson<sup>b</sup>

<sup>a</sup> Department of Counseling, Clinical, & School Psychology, Gevirtz Graduate School of Education, University of California, Santa Barbara, Santa Barbara, CA 93106-9490, United States

<sup>b</sup> Department of Education, Gevirtz Graduate School of Education, University of California, Santa Barbara, Santa Barbara, CA 93106-9490, United States

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## ABSTRACT

Research has demonstrated the negative impact of Adverse Childhood Experiences (ACEs) on long-term trajectories of mental and physical health. Yet existing literature on this topic is limited in its understanding of outcomes among youth samples, optimal measurement items and methods, and differences in adverse experiences across race/ethnicity. The current study used a person-centered approach to measure ACEs and their impact on youth health outcomes across three different racial/ethnic groups from a large national database. Patterns of exposure to adverse experiences among Black, Latinx, and White youth ( $N = 30,668$ , ages 12–17) were determined empirically using latent class analysis (LCA). Significant differences in class membership by demographic indicators (age, household income, sex) and concurrent health outcomes were identified. Different models emerged for Black (2 classes), Latinx (3 classes), and White youth (3 classes). Older and lower-income youth were more likely to have experienced adversities, but there were no differences in adversity likelihood by sex. Additionally, racial/ethnic minority youth were at greater risk of experiencing higher levels of adversity, poverty, and poor health when compared to their White counterparts. Rather than occurring in meaningful clusters, adverse experiences among youth reflected a cumulative risk model such that classes were defined by the overall intensity of adverse experiences (i.e., low, moderate, high). Findings provide greater knowledge regarding the relationship between ACEs and health and future research directions to inform more targeted and culturally-appropriate screening, prevention, and intervention programs.

## 1. Introduction

Adverse childhood experiences (ACEs) are potentially traumatic childhood experiences, such as abuse (physical, emotional, and sexual), household challenges (incarcerated family member, household substance abuse), and neglect (physical and emotional) that are predictive of long-term physical and mental health outcomes in adulthood, as well as early mortality (Anda et al., 2006). For example, researchers have demonstrated the robust dose-response relationship between ACEs and outcomes such as anxiety, depression, alcoholism, heart disease, cancer, and early death (Anda et al., 2006; Felitti et al., 1998; Trickett, Noll, & Putnam, 2011). Scholars have attributed the linkages between adversity and health to toxic stress, or “exaggerated, frequent, and/or prolonged activation of the physiological stress response systems.” (McLaughlin, 2016, p. 364; Shonkoff et al., 2012). Eventually, repeated wear

\* Corresponding author.

E-mail addresses: [sabrina.r.liu@ucsb.edu](mailto:sabrina.r.liu@ucsb.edu) (S.R. Liu), [MariaKia@ucsb.edu](mailto:MariaKia@ucsb.edu) (M. Kia-Keating), [knylund@education.ucsb.edu](mailto:knylund@education.ucsb.edu) (K. Nylund-Gibson).

and tear on the body's physiological and psychological mechanisms renders the system unable to effectively respond to new stressors, leading to a myriad of poor health outcomes (Johnson, Riley, Granger, & Riis, 2013; Osório, Probert, Jones, Young, & Robbins, 2017).

Correspondingly, the health costs related to child adversity are staggering. According to the Centers for Disease Control and Prevention, one year's national burden of confirmed cases of child maltreatment costs \$124 billion over those children's lifetimes (Centers for Disease Control & Prevention, 2012). In reality, these costs may well be greater, since the numbers reported are based only on confirmed cases of physical, sexual, and psychological abuse and neglect. Another measure of disease burden is years lived with disability, or YLDs, which are calculated by multiplying disability prevalence by its' associated health loss (Murray, 2013). One population-based study in the Netherlands found that having experienced any childhood adversity was associated with approximately 20.7 YLD per 1000 people (YLD/1000), a number much greater than the 12.9 YLD/1000 associated with mental disorders (including mood, anxiety, or substance disorders; Cuijpers et al., 2011).

As the popularity of measuring ACEs in research and practice continues to grow, there are several pressing measurement issues that need to be addressed. First, there is the question of what adversities are (and are not) being assessed, and whether these items are best at capturing individuals' adverse experiences. This question is particularly pertinent to more diverse populations, as the original ACEs study (conducted in the mid-1990s at Kaiser Permanente) sample of 17,337 was made up of approximately 75% White, college-educated, employed, and insured participants (Felitti et al., 1998; Health Federation of Philadelphia, 2017).

Recently, scholars have worked to improve the predictive capacity (regarding health) of the original ACEs scale through conducting research with more diverse populations. For example, after conducting focus groups with young adults from low-income Philadelphia neighborhoods, Wade and colleagues concluded that the standard ACEs scale does not cover several adversities more common among low-income urban youth, including community violence, discrimination, and economic hardship, all of which have been linked to poor health outcomes (Wade, Shea, Rubin, & Wood, 2014). Additionally, after conducting a nationally representative study of 1949 children, Finkelhor and colleagues proposed the addition of questions regarding peer victimization, peer isolation/rejection, community violence exposure, and low socioeconomic status (Finkelhor, Shattuck, Turner, & Hamby, 2015). In line with this work, Cronholm et al. (2015) completed a study of ACEs and health in a socioeconomically and racially diverse urban adult population ( $N = 1785$ ) and found higher rates of ACEs among less affluent, non-White, male participants. Finally, several studies have found higher rates of ACEs among Black and Latinx populations as compared to White populations, except in low income brackets (Mersky & Janczewski, 2018; Slopen et al., 2016). These results suggest that both frequency and type of adversity experienced by ethnic minority youth differ from those of their White counterparts, highlighting the need to examine ACEs separately across different population subgroups and income levels.

The second measurement issue involving the ACEs scale is how to quantify the information collected. It is now well established that childhood adversities co-occur and are related to later health issues, therefore researchers generally approach them through a cumulative risk model, assuming that outcomes are best predicted by examining the overall accumulation of risk factors rather than singular indicators (Doan, Fuller-Rowell, & Evans, 2012). Cumulative risk models gained notoriety after Rutter's seminal Isle of Wight Study, which concluded that the accumulation of various risk factors was a much stronger predictor of child psychiatric disorders than any single one on its own (Rutter, 1979). To explain his results, Rutter proposed the chain of risk model, which suggests one adverse exposure tends to lead to another and so on, forming a sequence of linked adversities (Kravitz-Wirtz, 2016; Kuh, Lynch, & Power, 2003).

Therefore, in line with a cumulative risk model, ACEs researchers typically measure *number* of adverse childhood experiences and relate them to developmental outcomes (Cronholm et al., 2015), thus assuming that all adversities influence outcomes equally and through the same mechanisms (Hagan, Sulik, & Lieberman, 2016). Researchers have debated for over forty years whether this is the best method for summarizing adversity, with some arguing that a single composite score oversimplifies experiences and leaves out important details regarding nature and context of childhood adversity (Ford et al., 2014), and some suggesting that adversities may actually occur in meaningful clusters (Berzenski & Yates, 2011; Dunn et al., 2011; Hagan et al., 2016; Shevlin & Elklit, 2008), rather than chains of risk.

A finite mixture modeling approach, such as latent class analysis or latent profile analysis, can provide information about how adverse experiences occur that may be obscured by the typical additive count measure of ACEs. Specifically, mixture modeling can illustrate how different events may work together or separately, or occur together or distinctly, to possibly influence outcomes. Mixture modeling groups individuals into latent "classes" based on response patterns to a set of indicator variables (in this case, adversities) that exist in the data. After classes are determined, analyses can be performed to explore how an individual's class membership is associated with other variables, for example, health.

### 1.1. Current study

The current study was designed with an understanding that racial and ethnic disparities exist not only in health, but in severity and type of adverse experiences. Results allow for a more in-depth examination of factors that might contribute to these disparities through examining these relationships from a latent variable modeling framework in a large, diverse sample of youth from across the United States. The current study addresses several research gaps through answering the following exploratory research questions: First, what are the underlying latent classes of indicators of childhood adversity among youth, and how do these classes vary across self-reported race/ethnicity? Based on current literature, it was expected that classes would differ by racial/ethnic group, both by type of patterns of the emergent classes, and in the proportion of individuals in each of the emergent classes. The second research question asks whether adversity classes are significantly associated with demographic variables. Specifically, are there differences in age, sex, or income across latent classes? The third research question explores whether adversity classes are significantly linked to

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