

# Sexual Risk Behavior and Lifetime HIV Testing: The Role of Adverse Childhood Experiences

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## Background

Despite the success of HIV prevention drugs like pre-exposure prophylaxis (PrEP), HIV incident transmission rates remain a significant problem in the US.

Approximately 1.2 million people are living with HIV/AIDS, while over 36,000 individuals are acquiring HIV each year. A life-course perspective, including experiences of childhood adversity, may be useful in addressing the HIV epidemic. While Adverse Childhood Experiences (ACEs) and their impact on mental and behavioral health is well established, their association with HIV-related outcomes is less well understood.

## Goal

The purpose of this study was to test ACEs as a moderator in the association between HIV risk behaviors and HIV testing.

## Objectives

This study had two main objectives:

1. To test for an association between self-reported HIV risk and ever having been HIV tested.
  - H1: There will be a positive association between HIV Risk and lifetime HIV testing
2. To determine if this association is modified by ACEs.
  - H2: The association between HIV risk and HIV testing will be significantly different across levels of ACEs.

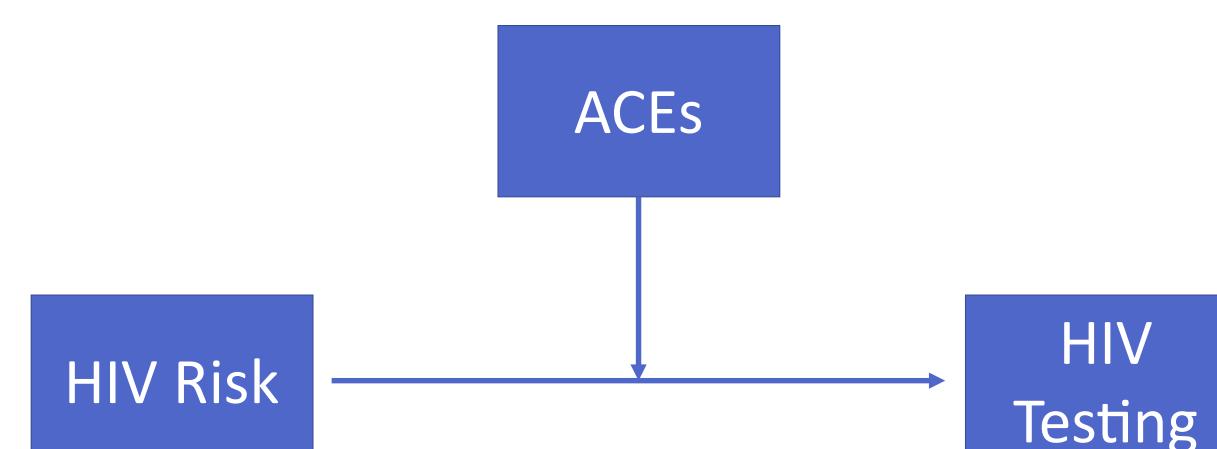


Figure 1. HIV Risk, ACEs, and HIV Testing Conceptual model

## Approach

Data were from the 2019 Behavioral Risk Factor Surveillance System (BRFSS; n=58,258). We tested bivariate associations between individual ACEs, an ACEs index and both HIV risk and HIV testing using a Chi-Square and Cochran-Armitage trend test. We also examined congruence between the difference in ACE-related HIV risk and the difference in ACE-related HIV testing. For multivariate analyses, we constructed modified Poisson regression models with interaction terms for ACEs and HIV risk to generate prevalence ratios reflecting the differences in having been HIV tested between those with and without self-reported HIV risk.

Table 1. Unadjusted and adjusted prevalence ratios (and 95% confidence intervals) for the association between HIV risk, ACEs, their interaction, covariates, and having ever been HIV tested (n=58,258)

	No Interactions		Interactions	
	Unadjusted	Adjusted	Unadjusted	Adjusted
Self-Reported HIV Risk	<b>1.67 (1.58, 1.76)</b>	<b>1.24 (1.17, 1.31)</b>	<b>1.90 (1.74, 2.07)</b>	<b>1.51 (1.38, 1.65)</b>
ACEs Index			<b>2.77 (2.58, 2.97)</b>	<b>2.19 (2.03, 2.37)</b>
Self-Reported HIV Risk* ACEs Index <sup>1</sup>			<b>0.44 (0.37, 0.54)</b>	<b>0.51 (0.42, 0.62)</b>

Significant ( $p < .05$ ) results bolded. Adjusted for age, race, income, education, sexual identity depression, and binge drinking.

<sup>1</sup>Interactions terms can be used to calculate the association between HIV risk and testing among those at the highest levels of the ACEs index ( $aPR = 0.77$ , 95% CI 0.61, 0.98).

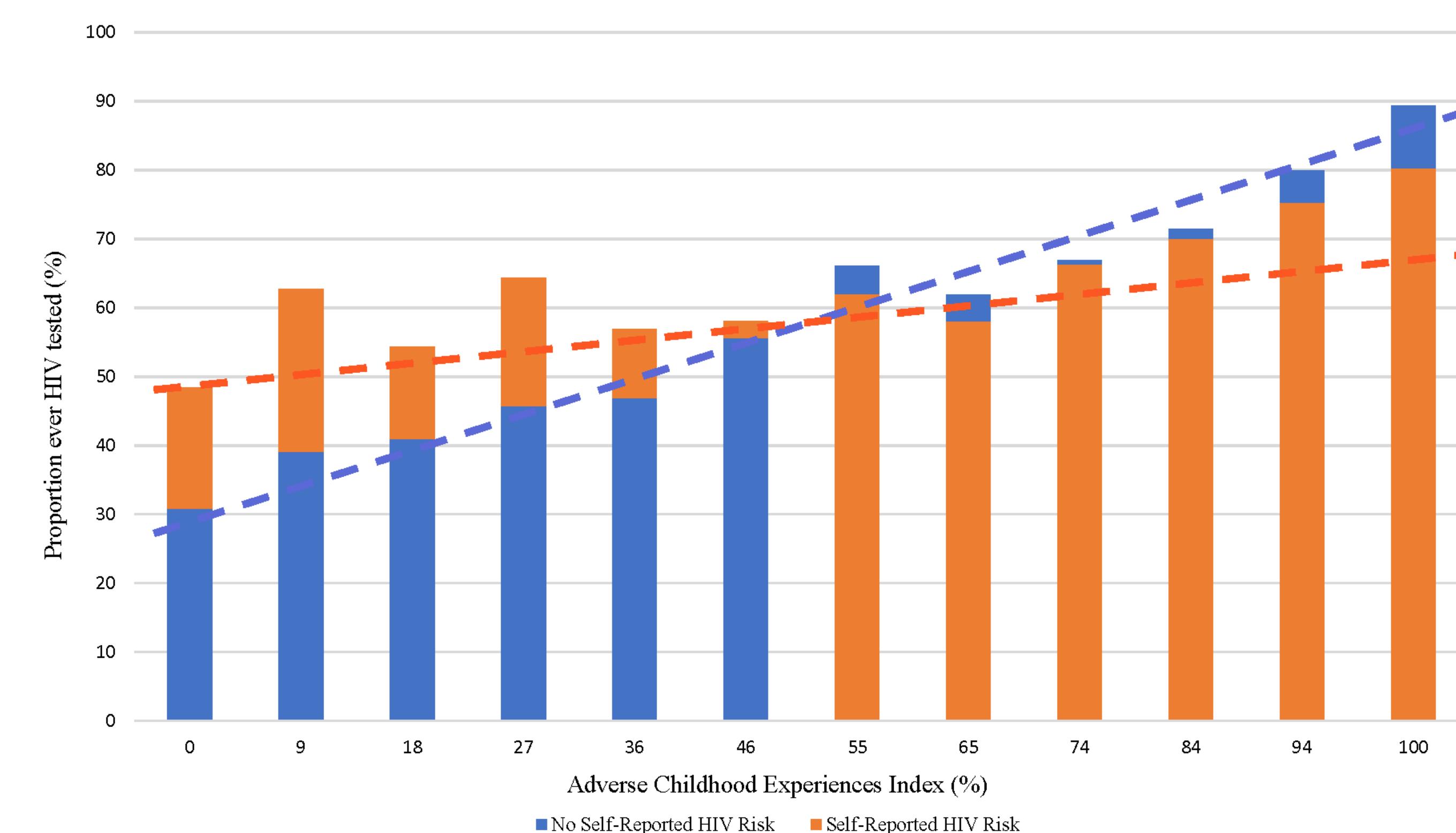


Figure 2. Adjusted Proportions of having been HIV tested stratified by self-reported HIV Risk and Adverse Childhood Experiences Index (n=58,258).

## Results/Conclusions

Overall, both HIV risk and ACEs were positively associated with having been HIV tested. When examining their interaction however, there was a strong negative interaction between ACEs and HIV Risk (Interaction  $aPR=0.51$ , 95% CI 0.42, 0.62). At a higher number of ACEs, the positive association between HIV risk and HIV testing ( $aPR 1.51$ , 95%CI 1.38, 1.65), was greatly attenuated (Calculated  $aPR = 0.77$ , 95%CI 0.61, 0.98). These findings are also evident in adjusted proportions of HIV testing across ACEs and HIV risk (Figure 2). Results were slightly attenuated, but consistent after adjustment for covariates. ACEs related to poor mental health and substance abuse of a household member, and experience of verbal/emotional abuse were the most impactful to the relationship between HIV risk and testing and accounted for about half of risk-testing incongruence.

## Importance to public health

Findings from this study:

- Show that at higher levels of ACEs, the relationship between HIV risk and testing was weakened.
- Suggest that perceived or actual HIV risk may be insufficient in terms of motivating individuals with a history of childhood adversity to utilize HIV testing, particularly those that experience household dysfunction and emotional abuse during childhood.
- Highlight the urgent need for new programs and interventions that target high risk groups, promote testing benefits, and encourage increased testing among individuals with a history of ACEs.
- Underscore the need to address the social determinants of health within HIV prevention research and the need for targeted interventions to increase HIV knowledge, promote HIV prevention practices, and improve access and linkage to affordable health care with marginalized populations and at-risk groups.