Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

HHS Public Access

Author manuscript

Psychiatry Res. Author manuscript; available in PMC 2026 October 28.

Published in final edited form as:

Psychiatry Res. 2025 December ; 354: 116814. doi:10.1016/j.psychres.2025.116814.

Forced immigration-related family separation and adverse childhood experiences: effects on mental health among Latinx immigrant youth in the United States

John P. Salerno[a,b,*], **Yecenia Castillo**[c], **Angie Castro**[c], **Bradley O. Boekeloo**[d], **Carmela Alcántara**[b]

[a]Department of Prevention and Community Health, Milken Institute School of Public Health, George Washington University, Washington, DC, USA

[b]School of Social Work, Columbia University, New York, NY, USA

[c]La Clínica Del Pueblo, Hyattsville, MD, USA

[d]School of Public Health, University of Maryland, College Park, MD, USA

Abstract

Introduction: First-generation Latinx immigrant youth face risks for experiencing unique immigration-related traumas, which could exacerbate their mental health. This study aimed to investigate the potential influence of forced immigration-related family separation on the association between traditional adverse childhood experiences (ACEs) and mental health (i.e., depression, anxiety, and PTSD symptoms) among Latinx immigrant youth from the Northern Triangle (NT; El Salvador, Guatemala, and Honduras).

Methods: Primary surveys assessing forced immigration-related family separation, ACEs, and mental health were administered to a sample of NT immigrant youth ($N = 172$). Multiple linear regression was conducted to examine the study aim.

Results: In main effects analysis, forced immigration-related family separation was significantly associated with depression ($B = 2.11$, CI = [0.11, 4.11], $p = .039$) and PTSD ($B = 4.01$, CI = [0.63, 7.40], $p = .021$) symptoms. ACEs were significantly associated with depression ($B = 1.34$, CI = [0.86, 1.81], $p < .001$), anxiety ($B = 1.05$, CI = [0.63, 1.47], $p < .001$), and PTSD ($B = 2.17$, CI = [1.37, 2.97], $p < .001$) symptoms. In moderation effects analysis, the association of ACEs on depression ($B = -1.21$, CI = [−2.18, −0.25], $p = .014$), anxiety ($B = -1.00$, CI = [−1.86, −0.13],

*Corresponding author at: 950 Hampshire Avenue, NW, 3rd Floor, Washington D.C. 20052, USA. John.salerno@gwu.edu (J.P. Salerno).

Declaration of competing interest

The authors declared that there were no conflicts of interest to declare.

Contributors statement

John P. Salerno: Conceptualization, Data Curation, Funding Acquisition, Investigation, Visualization, Methodology, Formal analysis, Writing – original draft, Writing – review & editing. **Yecenia Castillo:** Conceptualization, Funding Acquisition, Methodology, Writing – review & editing, Resources. **Angie Castro:** Conceptualization, Funding Acquisition, Methodology, Writing – review & editing, Resources. **Bradley Boekeloo:** Conceptualization, Funding Acquisition, Methodology, Writing – review & editing, Resources, Supervision, Software. **Carmela Alcantara:** Conceptualization, Methodology, Writing – review & editing, Resources, Supervision.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

p = .024), and PTSD (B = −2.23, CI = [−3.84, −0.62], p = .007) symptoms was significantly attenuated among youth who experienced forced immigration-related family separation.

Conclusion: Study findings may underscore the need to consider the inclusivity of immigration-related trauma in ACE assessment tools.

Keywords

Intersectionality; Minority stress; Life course; Northern Triangle; Childhood trauma; Family separation; Adolescents; PTSD; Anxiety; Depression

1. Introduction

Between 68% and 90% of all unaccompanied immigrant youth apprehended at the United States (U.S.)-Mexico border between 2019 and 2023 made the migration journey from the Northern Triangle (NT; El Salvador, Guatemala, Honduras; USCBP, 2023). In 2023 alone, approximately 94,000 out of the 140,000 (68%) unaccompanied immigrant youth who made the migration journey to the U.S.-Mexico border hailed from the NT (USCBP, 2023). Even though the proportion of first-generation Latinx immigrant youth from the NT in the U.S. has been on the rise for decades, this population remains severely underrepresented in public health research and service, due to the structurally racist systems that have rendered certain immigrant populations invisible (Ataiants et al., 2018; Berger Cardoso et al., 2019; Linton et al., 2018). Immigrant youth from the NT face significant risk for experiencing trauma and stress across the phases of migration, which can harm their mental health (Ataiants et al., 2018; Berger Cardoso et al., 2019; Linton et al., 2018). Therefore, it is of grave urgency to focus public health research on the mental health of first-generation Latinx immigrant youth from the NT to identify and prevent the risk factors driving mental health inequity in this population.

Adolescent immigrant youth from the NT are in the "*transition-to-adulthood*" life course stage (Elder et al., 2003; Schulenberg et al., 2004), during which they are undergoing several external (e.g., changes in social roles and contexts) and internal (e.g., biological, physical, cognitive, emotional, and identity-related) developmental transitions that situate these youth at an important and precarious point in their developmental process, which can shape their health and mental health across the life course (Braveman, 2014). Specifically, first-generation Latinx immigrant youth from the NT face Intracategorical (McCall, 2005) Intersectionality (Bowleg, 2012; Collins, 2019) due to being situated at a socially neglected point of intersection (i.e., at the intersection of first-generation immigrant, Latinx, youth, and NT origin positionalities and identities), in which experiences can cross the boundaries of unitary minority (e.g., Latinx youth) or majority (e.g., white youth) identity groups. For instance, immigrant youth from the NT are undergoing unique developmental transitions due to being positioned at these intersections, such as migrating to and settling in the U.S., and developing their new identities as Latinx immigrants during a vulnerable developmental period. In addition to these unique developmental transitions, immigrant youth from the NT can face intersectional experiences of minoritized and compounded stress and trauma, which can impede their mental health.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Specifically, the Minority Stress Theory (Brooks, 1981; Meyer, 2003) posits that there are minority identity/status-related traumas that can have a substantial impact on the mental health of minoritized communities, such as immigrant youth from the NT. For instance, studies have documented the negative effects of forced immigration-related family separation on mental health among immigrant youth (Lovato et al., 2018; Roche et al., 2020; Salerno et al., 2024). Further, immigrant youth from the NT are also subject to more general forms of trauma during the life course (Brooks, 1981; Meyer, 2003), such as adverse childhood experiences (ACEs; e.g., violence, abuse, neglect, and household instability), which have been found to negatively impact mental health among Latinx immigrant youth (Grest et al., 2021; LaBrenz et al., 2020; Salerno et al., 2024). However, it is important to investigate how minority identity/status-related traumas, such as forced immigration-related family separation, can intersect with general childhood traumas, such as ACEs, and the nuanced and compounded effect that this could have on mental health among immigrant youth from the NT (i.e., intracategorical intersectionality-related vulnerability). Such investigation is gravely needed to inform public health policy and mental health services and prevention seeking to promote wellbeing among immigrant youth communities.

To address this gap, the current study seeks to understand whether experiencing forced immigration-related family separation moderates the association between ACEs and mental health (i.e., depression, anxiety, and PTSD symptoms) among immigrant youth from the NT. We hypothesize that experiencing forced immigration-related family separation will attenuate the detrimental effect of ACEs on all mental health outcomes. The rationale for our hypothesis is that forced immigration-related family separation alone will have a substantial association with mental health, such that the additional association of ACEs will be weakened due to the presence of a mental health saturation effect. Gained insight on the unique and compounded mental health impact of forced immigration-related family separation and ACEs can influence public mental health and policy, as well as mental health programming and practice seeking to address mental health and wellbeing among immigrant youth from the NT.

2. Methods

2.1. Sample

Average age in the sample (N = 172) was 17.63 years (range = 14 – 21 years; SD = 1.55). The majority of the total sample were either in 9th (35%) or 12th (44%) grade, with smaller proportions in 10th (10%) and 11th (11%) grade. Most of the total sample identified as heterosexual (92%). Over half of the total sample identified as female assigned at birth (63%). Most of the total sample were born in El Salvador (76%), while smaller proportions were born in Guatemala (13%) and Honduras (11%). Average time living in the U.S. was 2.68 years (SD = 2.03), with 29% having lived in the U.S. for 4+ years, and 71% for 0 – 3 years.

2.2. Instrument

2.2.1. Adverse childhood experiences: Adverse childhood experiences were measured using the 10-item binary (yes = 1, no = 0) Pediatric Adverse Childhood

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Experiences Questionnaire (Koita et al., 2018). Face validity and acceptability were established through conducting scientific literature review and cognitive interviews (Koita et al., 2018). The ACE scale was analyzed as continuous using a total score ranging from 0 to 10 (α = .711, M [SD], 1.50 [1.78]). All ACE items, frequencies, and the average total ACE score are found in Table 1.

2.2.2. Forced immigration-related family separation: Forced immigration-related family separation was measured using an adapted version of a previously validated binary item (yes = 1, no = 0): Did you get separated from your primary caregiver because of migration, immigration, or deportation (Koita et al., 2018)? A total of 22% (n = 37) of the sample reported experiencing forced immigration-related family separation.

2.2.3. PTSD symptoms: Child PTSD symptoms were measured using the previously validated Child PTSD Symptom Scale (Foa et al., 2001), which is comprised of 17-items measured on a past month, 4-point scale from never to almost always. The Child PTSD Symptom Scale was analyzed as continuous using a total score ranging from 0 to 51 (α = .932, M [SD], 10.71 [9.94].

2.2.4. Depression symptoms: Depression symptoms were measured using the previously validated Patient Health Questionnaire 9 (PHQ-9; Kroenke & Spitzer, 2002), which is comprised of 9-items measured on a past 2-week, 4-point scale from no days to almost every day. The PHQ-9 was analyzed as continuous using a total score ranging from 0 to 27 (α = .875, M [SD], 7.29 [5.93].

2.2.5. Anxiety symptoms: Anxiety symptoms were measured using the previously validated Generalized Anxiety Disorder 7 (GAD-7; Spitzer et al., 2006), which includes 7-items measured on a past 2-week, 4-point scale from no days to almost every day. The GAD-7 was analyzed as continuous using a total score ranging from 0 to 21 (α = .896, M [SD], 5.34 [5.13].

2.3. Design

The PI [first author] recruited Latinx immigrant youth from a public high school, who were enrolled in a culturally tailored mental health promotion program. The program includes culturally relevant group psychoeducational sessions, individual-level mental health therapy, and case management services targeting first-generation Latinx immigrant youth. On predetermined days (Spring 2019 - Spring 2022) during which youth were convened for program activities, the study PI was present at the high school and program classroom space (or online Zoom meeting room) to conduct recruitment and data collection. The 30–45-minute-long survey was implemented fully in Spanish, on paper, and in a classroom type setting (Spring 2019 - Spring 2020), or online via Zoom platform using electronic Qualtrics surveys (Spring 2022). A total of N = 188 Latinx immigrant high school students completed the survey. This specific analysis is limited to participants who are first-generation Latinx immigrant youth from the NT (N = 172). University of Maryland Institutional Review Board approval was obtained prior to beginning study recruitment, and informed consent or assent was obtained prior to commencing data collection.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

One-way ANOVA and simple linear regression were used to examine the bivariate associations of sociodemographic characteristics, forced immigration-related family separation, and ACEs with mental health symptoms. Multiple linear regression was used to examine the multivariable main and interaction effects of forced immigration-related family separation and ACEs on mental health symptoms. Alpha was set to 0.05 for all analyses, which were conducted using SPSS version 29. Due to modest sample and cell sizes, multivariable models were not adjusted for sociodemographic characteristics to protect against committing a Type II error, but their associations with mental health are examined in bivariate analyses. The full study design has been previously described (Salerno et al., 2023, 2024).

3. Results

A correlation matrix of key study variables can be found in Table 2. Bivariate associations with mental health are reported in-text below, and multivariable associations with mental health are reported in Table 3 and in-text below. Fig. 1 provides a visual of the moderation effect of forced immigration-related family separation on the association between ACEs and mental health outcomes.

In bivariate analysis, forced immigration-related family separation was significantly and positively associated with depression ($F = 7.18$, $p = .008$), anxiety ($F = 5.55$, $p = .020$), and PTSD ($F = 8.77$, $p = .004$) symptoms. ACEs were significantly and positively associated with depression ($B = 1.41$, CI = [0.94, 1.88], $p < .001$), anxiety ($B = 1.10$, CI = [0.69, 1.52], $p < .001$), and PTSD ($B = 2.32$, CI = [1.51, 3.12], $p < .001$) symptoms. Sex assigned at birth was significantly associated with anxiety symptoms (girls suffered more; $F = 6.95$, $p = .009$), and time living in the U.S. was significantly associated with anxiety ($F = 8.37$, $p = .004$) and depression ($F = 4.65$, $p = .033$) symptoms, with those who lived in the U.S. for longer having suffered more.

In multivariable main effects analysis, forced immigration-related family separation was significantly and positively associated with depression ($B = 2.11$, CI = [0.11, 4.11], $p = .039$) and PTSD ($B = 4.01$, CI = [0.63, 7.40], $p = .021$) symptoms, but not anxiety ($B = 1.62$, CI = [−0.16, 3.40], $p = .074$) symptoms. Adverse childhood experiences were significantly and positively associated with depression ($B = 1.34$, CI = [0.86, 1.81], $p < .001$), anxiety ($B = 1.05$, CI = [0.63, 1.47], $p < .001$), and PTSD ($B = 2.17$, CI = [1.37, 2.97], $p < .001$) symptoms.

In multivariable interaction effects analysis, forced immigration-related family separation moderated the association between 1) ACEs and depression ($B = -1.21$, CI = [−2.18, −0.25], $p = .014$), 2) ACEs and anxiety ($B = -1.00$, CI = [−1.86, −0.13], $p = .024$), and 3) ACEs and PTSD ($B = -2.23$, CI = [−3.84, −0.62], $p = .007$) symptoms, such that experiencing forced immigration-related family separation attenuated the harmful effect of ACEs on all mental health outcomes. See Fig. 1 for a visual representation.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

4. Discussion

Study findings are consistent with existing research, which has documented the detrimental associations of both ACEs (Grest et al., 2021; LaBrenz et al., 2020) and forced immigration-related family separation (Lovato et al., 2018; Roche et al., 2020) on the mental health of Latinx immigrant youth communities. Additionally, our findings add existing knowledge by demonstrating that the harmful mental health associations of ACEs may be attenuated when youth have experienced forced immigration-related family separation. This may suggest a saturation effect, in which NT immigrant youth who have experienced only forced immigration-related family separation (i.e., no ACEs) may already bear such a substantial mental health burden that the additional association of ACEs is diminished, weakening the otherwise expected magnitude of their harmful association. These findings underscore the salient role of forced immigration-related family separation in shaping mental health outcomes, such that its impact when coupled with up to three ACEs—surpasses that of comparable ACE exposure in the absence of forced immigration-related family separation.

If replicated, findings could suggest for a review of inclusivity among ACE measures, particularly around immigration-related trauma. The original ACE study was conducted with a majority white, middle class, and highly educated sample, which impeded the identification of minority-relevant ACEs and development of effective ACE prevention programs for minority groups (Zhen-Duan et al., 2023). In the current study, findings suggest that forced immigration-related family separation may represent such a severe form of adversity that it dominates mental health burden, thereby diminishing the observable additive effects of ACEs—consistent with a possible saturation effect. Experts have suggested that compared to general trauma (i.e., ACEs), immigration-related trauma, such as forced family separation, may function as a form of toxic stress that increases vulnerability to mental health burden (Galvan et al., 2024), which may help to explain this study finding. These findings support the need for expanded and culturally relevant ACE assessment tools, which are able to capture the otherwise missed experiences of immigration-related traumas that can substantially harm mental health, specifically among Latinx immigrant youth communities. Indeed, experts have previously identified that immigration-specific trauma is missed by existing trauma assessments (e.g., ACE tools), and has a substantial bearing on mental health among Latinx immigrant youth (de Arellano et al., 2018). Further, experts have found that Latinx immigrant youth are more likely to report immigration-related ACEs compared to traditional ACEs (Conway & Lewin, 2022), and have called for revision of traditional ACE assessments to be inclusive of immigration-related trauma (Barajas-Gonzalez et al., 2021; Conway & Lewin, 2022). Study findings provide a foundation for further research seeking to examine immigration-related ACEs and their impacts on mental health among immigrant youth communities.

Another intriguing and concerning finding was that the main and interaction associations of forced immigration-related family separation and ACEs similarly influenced all three mental health outcomes (i.e., depression, anxiety, and PTSD symptoms). This finding emphasizes the broad mental health influence of forced immigration-related family separation and ACEs, and gives rise to a potential co-occurrence or sequelae of mental health conditions as a function of forced immigration-related family separation and ACEs. Findings call for

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

future research to investigate the temporality of general and immigration-related traumas and mental health conditions through longitudinal studies, and points to the potential need for tailored trauma and mental health interventions seeking to address multiple mental health outcomes among immigrant youth communities.

5. Limitations and future directions

This study used a cross-sectional study design and non-probability sampling strategy, which prevented our ability to establish temporality and causality, and generalize findings to broader populations of NT immigrant youth. Additionally, sample size limitations may have affected statistical power and our ability to detect a significant main effect of forced immigration-related family separation on anxiety symptoms. Larger probability samples and longitudinal studies are needed to address these limitations and replicate study findings. As in most psychosocial survey research, retrospective self-report data collection increased risk for recall and social desirability biases. Further, youth were recruited from a mental health program; although associations may have been dampened due to partial receipt of this program, statistically significant associations were still detected. Lastly, future research is needed to 1) assess the influence of psychosocial protective and resilience factors on the association between immigration-related/traditional ACEs and mental health, 2) investigate the relationship between immigration-related/traditional ACEs and co-occurring vs. sequential mental health conditions, 3) examine immigration-related ACEs as a form of toxic stress (Galvan et al., 2024), whereby immigration-related adversity occurring during sensitive developmental periods may dysregulate physiological stress-response systems and heighten vulnerability to mental health burden, and 4) identify the most salient immigration-related ACEs for Latinx immigrant youth communities to inform mental health prevention research, programming, practice, and policy.

6. Public health implications

First, it is imperative for public and mental health services researchers and practitioners to integrate Life Course, Intersectionality, and Minority Stress framing into their investigation and care of immigrant youth communities. For example, mental health services practitioners and researchers should ensure to screen for youths' multiple marginalized social identities and positionalities (i.e., intersectionality) in addition to more general sociodemographic characteristics (Huang et al., 2020), 2) probe on potential culturally relevant social-developmental transitions (i.e., life course perspective and intersectionality) in addition to considering more general developmental transitions (Augustyn & Jackson, 2017; Braveman, 2014; Schulenberg et al., 2004), and 3) consider potential minority identity/status-related trauma experiences (i.e., minority stress theory) in addition to more general forms of stress and trauma (Brooks, 1981; Meyer, 2003). Utilizing such an approach would allow for a more comprehensive assessment of the experiences of marginalized immigrant youth, which could facilitate a more effective culturally tailored treatment process. Similarly, researchers can utilize this integrated framework in their mental health services and prevention investigations with immigrant youth to increase explanatory power that promotes mental health equity.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Lastly, the majority of unaccompanied immigrant youth, all of whom have experienced immigration-related family separation, do not receive post-release mental health services and follow-up (Berger Cardoso et al., 2019) and do not qualify for federal/state coverage of health and mental health care services (Linton et al., 2018). Thus, based on the current study and previous research documenting severe mental health detriments associated with immigration-related family separation (Lovato et al., 2018; Roche et al., 2020), there is an urgent need for public mental health, immigration, and child welfare policy reform to prevent immigration-related family separation at all costs, and to expand access to federal/state health insurance coverage and post-release mental health services and follow-up for all unaccompanied immigrant youth released from U.S. governmental custody.

Acknowledgements

The authors are grateful to Prince George's County Public Schools and Northwestern High School administration, as well as La Clínica Del Pueblo and Mi Refugio team members for their years long collaboration and commitment to the mental health and wellbeing of Latinx immigrant youth. Lastly, the authors express their deep gratitude to the study youth, who made this important work possible through their brave participation.

The authors declare no potential conflicts of interest with respect to the research, authorship, or publication of this article.

No copyrighted material, surveys, instruments, or tools were used in the research described in this article.

Financial support

Salerno acknowledges support from the National Institute of Mental Health (Award Number 1R36MH123043) of the National Institutes of Health (NIH); and the University of Maryland Prevention Research Center Cooperative Agreement Number U48DP006382 from the Centers for Disease Control and Prevention (CDC). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or CDC. The Mi Refugio Program was originally funded under the Transforming Neighborhoods Initiative of Prince George's County, Maryland, and later sustained by Prince George's County Public Schools.

References

Ataiants J, Cohen C, Riley AH, Lieberman JT, Reidy MC, Chilton M, 2018. Unaccompanied children at the United States border, a human rights crisis that can be addressed with policy change. J. Immigr. Minor. Health 20 (4), 1000–1010. 10.1007/s10903-017-0577-5. [PubMed: 28391501]

Augustyn MB, Jackson DB, 2017. An Intersectional Look at the "Rush to Adulthood": Considering the Role of Gender, Race and SES in the Link Between Precocious Transitions and Adult Antisocial Behavior. Youth Soc. 52 (1), 3–26. 10.1177/0044118X17725245.

Barajas-Gonzalez RG, Ayón C, Brabeck K, Rojas-Flores L, Valdez CR, 2021. An ecological expansion of the adverse childhood experiences (ACEs) framework to include threat and deprivation associated with U.S. immigration policies and enforcement practices: An examination of the Latinx immigrant experience. Soc. Sci. Med. 282, 114126. 10.1016/j.socscimed.2021.114126. [PubMed: 34146987]

Berger Cardoso J, Brabeck K, Stinchcomb D, Heidbrink L, Price OA, Gil-García ÓF, Crea TM, Zayas LH, 2019. Integration of unaccompanied migrant youth in the United States: a call for research. J. Ethn. Migr. Stud. 45 (2), 273–292. 10.1080/1369183X.2017.1404261. [PubMed: 30766444]

Bowleg L, 2012. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. Am. J. Public Health 102 (7), 1267–1273. 10.2105/AJPH.2012.300750. [PubMed: 22594719]

Braveman P, 2014. What is health equity: and how does a life-course approach take us further toward it? Matern. Child Health J. 18 (2), 366–372. 10.1007/s10995-013-1226-9. [PubMed: 23397099]

Brooks VR, 1981. Minority stress and lesbian women. Free Press.

Collins PH, 2019. Intersectionality as critical social theory. Duke University Press. 10.1215/9781478007098.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Conway CA, Lewin A, 2022. Development and psychometric properties of the ACE-I: Measuring adverse childhood experiences among Latino immigrant youth. Psychol. Trauma: Theory Res. Pract. Policy 14 (8), 1247–1255. 10.1037/tra0001223.

de Arellano MA, Andrews III AR, Reid-Quiñones K, Vasquez D, Doherty LS, Danielson CK, Rheingold A, 2018. Immigration trauma among Hispanic youth: Missed by trauma assessments and predictive of depression and PTSD symptoms. J. Lat./Psychol. 6 (3), 159–174. 10.1037/lat0000090. [PubMed: 31840010]

Elder GH, Johnson MK, Crosnoe R, 2003. The Emergence and Development of Life Course Theory. In: Mortimer JT, Shanahan MJ (Eds.), Handbook of the Life Course. Springer US, pp. 3–19. 10.1007/978-0-306-48247-2_1.

Foa EB, Johnson KM, Feeny NC, Treadwell KRH, 2001. The Child PTSD Symptom Scale: A preliminary examination of its psychometric properties. J. Clin. Child Psychol. 30 (3), 376–384. 10.1207/S15374424JCCP3003_9. [PubMed: 11501254]

Galvan T, Venta A, Moreno O, Gudiño OG, Mercado A, 2024. Cultural stress is toxic stress: An expanded cultural stress theory model for understanding mental health risk in Latinx immigrant youth. Cult. Divers. Ethn. Minor. Psychol. 30 (4), 863–875. 10.1037/cdp0000680.

Grest CV, Finno-Velasquez M, Cederbaum JA, Unger JB, 2021. Adverse childhood experiences among 3 generations of Latinx youth. Am. J. Prev. Med. 60 (1), 20–28. 10.1016/j.amepre.2020.07.007. [PubMed: 33341179]

Huang Y-T, Ma YT, Craig SL, Wong DFK, Forth MW, 2020. How Intersectional Are Mental Health Interventions for Sexual Minority People? Syst. Rev. 10.1089/lgbt.2019.0328.

Koita K, Long D, Hessler D, Benson M, Daley K, Bucci M, Thakur N, Burke Harris N, 2018. Development and implementation of a pediatric adverse childhood experiences (ACEs) and other determinants of health questionnaire in the pediatric medical home: A pilot study. PLOS ONE 13 (12), e0208088. 10.1371/journal.pone.0208088. [PubMed: 30540843]

Kroenke K, Spitzer RL, 2002. The PHQ-9: A new depression diagnostic and severity measure. Psychiatr. Ann. 32 (9), 509–515. 10.3928/0048-5713-20020901-06.

LaBrenz CA, Panisch LS, Lawson J, Borcyk AL, Gerlach B, Tennant PS, Nulu S, Faulkner M, 2020. Adverse Childhood Experiences and Outcomes among At-Risk Spanish-Speaking Latino Families. J. Child Fam. Stud. 29 (5), 1221–1235. 10.1007/s10826-019-01589-0.

Linton JM, Kennedy E, Shapiro A, Griffin M, 2018. Unaccompanied children seeking safe haven: Providing care and supporting well-being of a vulnerable population. Child. Youth Serv. Rev. 92, 122–132. 10.1016/j.childyouth.2018.03.043.

Lovato K, Lopez C, Karimli L, Abrams LS, 2018. The impact of deportation-related family separations on the well-being of Latinx children and youth: A review of the literature. Child. Youth Serv. Rev. 95, 109–116. 10.1016/j.childyouth.2018.10.011.

McCall L, 2005. The complexity of intersectionality. Signs: J. Women Cult. Soc. 30 (3), 1771–1800. 10.1086/426800.

Meyer IH, 2003. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. Psychol. Bull. 129 (5), 674–697. 10.1037/0033-2909.129.5.674. [PubMed: 12956539]

Roche KM, White RMB, Lambert SF, Schulenberg J, Calzada EJ, Kuperminc GP, Little TD, 2020. Association of Family Member Detention or Deportation With Latino or Latina Adolescents' Later Risks of Suicidal Ideation, Alcohol Use, and Externalizing Problems. JAMA Pediatr. 174 (5), 478–486. 10.1001/jamapediatrics.2020.0014. [PubMed: 32176245]

Salerno JP, Getrich CM, Fish JN, Castillo Y, Edmiston S, Sandoval P, Aparicio EM, Fryer CS, Boekeloo BO, 2023. Profiles of Psychosocial Stressors and Buffers Among Latinx Immigrant Youth: Associations with Suicidal Ideation. Psychiatry Res. 330, 115583. 10.1016/j.psychres.2023.115583. [PubMed: 37995421]

Salerno JP, Getrich CM, Fish JN, Castillo Y, Edmiston S, Sandoval P, Aparicio EM, Fryer CS, Boekeloo BO, 2024. Mental Health Risk and Protection Among First-Generation Latinx Immigrant Youth: A Latent Profile Analysis. Health Educ. Behav. 10.1177/10901981241294229, 10901981241294228.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

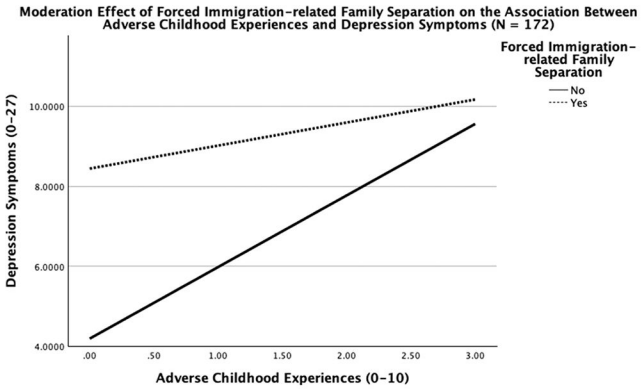
Schulenberg J, Sameroff A, Cicchetti D, 2004. The transition to adulthood as a critical juncture in the course of psychopathology and mental health. Dev. Psychopathol. 16, 799–806. 10.1017/S0954579404040015. [PubMed: 15704815]

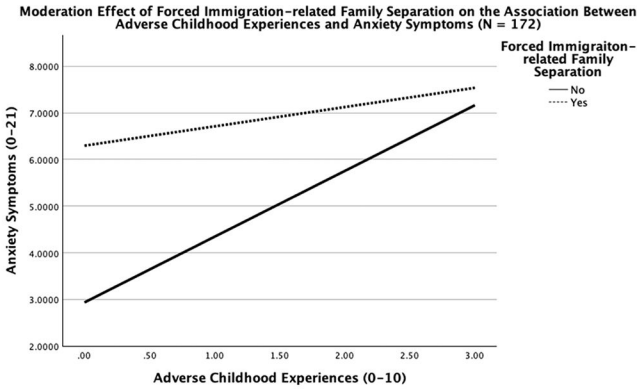
Spitzer RL, Kroenke K, Williams JBW, Lowe B, 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch. Intern. Med. 166 (10), 1092–1097. 10.1001/archinte.166.10.1092. [PubMed: 16717171]

USCBP, 2023. Southwest Land Border Encounters: U.S. Customs and Border Protection. https://www.cbp.gov/newsroom/stats/southwest-land-border-encounters.

Zhen-Duan J, Colombo D, Alvarez K, 2023. Inclusion of Expanded Adverse Childhood Experiences in Research About Racial/Ethnic Substance Use Disparities. Am. J. Public Health 113 (S2), S129–S132. 10.2105/AJPH.2023.307220. [PubMed: 37339415]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript





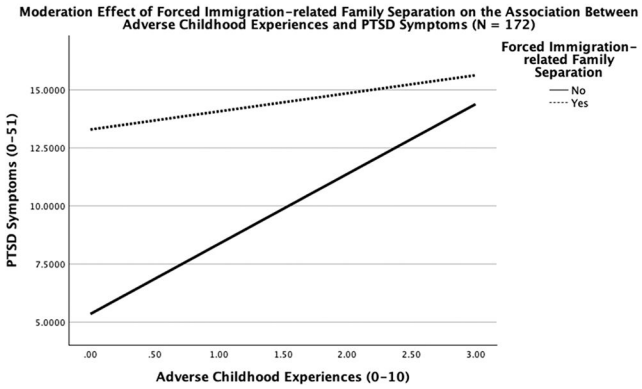


Fig. 1.

Moderation Effect of Forced Immigration-related Family Separation on the Association Between Adverse Childhood Experiences and Mental Health Outcomes ($N = 172$).

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 1

Percentage Responding “Yes” to Adverse Childhood Experiences Items (ACEs; N = 172).

Scale and Items	*n* (%)[a]
Average Total ACEs Score [range = 0–10; *M* (*SD*)]	1.50 (1.78)
1. Did your parents or guardians get separated or divorced?	76 (44.40)
2. Did you live with a household member who served time in jail or prison?	10 (5.90)
3. Did you live with a household member who was depressed, mentally ill, or attempted suicide?	15 (8.8)
4. Did you see or hear parents physically hurting each other or threatening to physically hurt each other?	17 (9.90)
5. Did a household member (parent or other) swear at, insult, humiliate, or put you down in a way that scared you OR act in a way that made you afraid that you might be physically hurt?	29 (17.00)
6. Did someone touch your private parts OR ask you to touch their private parts in a sexual way OR try to/actually have sex with you that was unwanted, against your will, or made you feel uncomfortable?	19 (11.20)
7. Did you go without food, clothing, a place to live, or no one to protect you more than once OR were your parents too drunk or high to take care of you?	10 (5.90)
8. Did a household member (parent or other) push, grab, slap or throw something at you OR hit you so hard that you were injured or had marks?	14 (8.30)
9. Did you live with someone who had a problem with drinking or using drugs?	26 (15.20)
10. Did you often feel unsupported, unloved and/or unprotected OR like your family didn’t look out for each other or support each other?	41 (24.10)

Response options: yes, no

[a]Column sample sizes and percentages are based on participants who responded “yes” to the items

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 2

Correlation Matrix of Key Study Variables.

	Forced Family Separation	Adverse Childhood Experiences	Depression Symptoms	PTSD Symptoms	Anxiety Symptoms
Forced Family Separation	1	.160	.207	.233	.182
Adverse Childhood Experiences	.160	1	.423	.422	.383
Depression Symptoms	.207	.423	1	.700	.780
PTSD Symptoms	.233	.422	.700	1	.792
Anxiety Symptoms	.182	.383	.780	.792	1

Psychiatry Res. Author manuscript; available in PMC 2026 October 28.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 3

Multiple Linear Regression Models Testing the Main and Interaction Effects of Adverse Childhood Experiences and Forced Immigration-related Family Separation on Mental Health Outcomes (N = 172).

	B	**95% CI**	***SE***	***β***	**t – value**	***p*-value**
Depression Symptoms - Main Effects Model						
Adverse Childhood Experiences	1.34	0.86, 1.81	0.24	0.40	5.56	< .001
Forced Immigration-related Family Separation	2.11	0.11, 4.11	1.01	0.15	2.08	.039
No Forced Immigration-related Family Separation	ref					
Depression Symptoms - Interaction Effect Model						
Adverse Childhood Experiences	1.79	1.20, 2.38	0.30	0.54	5.99	< .001
Forced Immigration-related Family Separation	4.25	1.65, 6.85	1.32	0.30	3.23	.002
No Forced Immigration-related Family Separation	ref					
Forced Family Separation X Adverse Childhood Experiences	−1.21	−2.18, −0.25	0.49	−0.28	−2.49	.014
Anxiety Symptoms – Main Effects Model						
Adverse Childhood Experiences	1.05	0.63, 1.47	0.21	0.37	4.97	< .001
Forced Immigration-related Family Separation	1.62	−0.16, 3.40	0.90	0.13	1.80	.074
No Forced Immigration-related Family Separation						
Anxiety Symptoms - Interaction Effect Model						
Adverse Childhood Experiences	1.41	0.89, 1.92	0.26	0.49	5.40	< .001
Forced Immigration-related Family Separation	3.36	1.05, 5.67	1.17	0.28	2.87	.005
No Forced Immigration-related Family Separation						
Forced Family Separation X Adverse Childhood Experiences	−1.00	−1.86, −0.13	0.44	−0.26	−2.28	.024
PTSD Symptoms – Main Effects Model						
Adverse Childhood Experiences	2.17	1.37, 2.97	0.40	0.40	5.37	< .001
Forced Immigration-related Family Separation	4.01	0.63, 7.40	1.71	0.17	2.34	.021
No Forced Immigration-related Family Separation	ref					
PTSD Symptoms – Interaction Effect Model						
Adverse Childhood Experiences	3.01	2.02, 4.00	0.50	0.55	6.00	< .001
Forced Immigration-related Family Separation	7.94	3.57, 12.31	2.21	0.34	3.59	< .001
No Forced Immigration-related Family Separation	ref					
Forced Family Separation X Adverse Childhood Experiences	−2.23	−3.84, −0.62	0.82	−0.31	−2.73	.007