Supportive relationships in childhood: Does it have a long Reach into health and depression outcomes for immigrants from Latin America? ☆

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ABSTRACT

This study examines how social support during childhood and adolescence is associated with self-rated good health and the incidence of depression among Latin American immigrants in the U.S. We focus on those who immigrated under age 18 (childhood arrivals) to understand the interplay between early social support and adult health outcomes. Data are from the 2012–2013 iteration of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III), which included a sample of 3441 immigrant respondents born in Latin America. Multivariable binomial logistic regression analyses indicated that childhood and interpersonal support in adulthood were negatively associated with lifetime major depressive disorder (LMDD) episodes. These associations differed between childhood arrival and adult arrival immigration samples. Findings from this study highlight the role that social support in critical developmental periods has on immigrant health and depression outcomes. Continued and more nuanced investigations are warranted to examine social resources across life-spans and their roles in mitigating adverse health outcomes among immigrants from Latin America.

Social support during the formative years of childhood can lower risks for depression, hypertension, and other adverse physical and mental conditions in adulthood (Auerbach et al., 2010; Barrera & Garrison-Jones, 1992; Beautrais, 2000; Yang et al., 2016). Despite the large body of empirical research documenting the value of early supportive relationships, immigrants are frequently missing from studies of childhood support and adult health outcomes. Immigrants account for nearly 14% of the U.S. population, and the 25.4 million immigrants from Latin America represent more than half of all immigrants in the United States (McAuliffe & Triandafyllidou, 2021; UNESDA, 2021). While immigrants experience normative adaptation processes, they may also confront social, economic, and political barriers that make it challenging to integrate into U.S. society. These differences may be experienced differently in childhood and have lasting effects into adulthood. Anti-immigrant legislation, for example, creates environments wherein immigrants fear utilizing healthcare services (Vernice, Pereira, Wang, Demetres, & Adams, 2020), placing them at higher risk for adverse health outcomes (Martinez et al., 2015). Despite these transitional difficulties and systemic obstacles, available evidence suggests that,

overall, immigrants do well by many health measures like depression and self-rated health (NASEM, 2015; Zhang, Bo, & Lu, 2021). Studies demonstrate that social support among immigrants is a protective factor against acculturative stress (Panchang, Dowdy, Kimbro, & Gorman, 2016), adverse education outcomes (Kilpi-Jakonen & Heath, 2012), and migration-related stress (Marta, 2001; Oppedal, Røysamb, & Sam, 2004). What is less known about Latin American immigrants in the U.S. is how support mechanisms may be associated with better adult health later in life, especially before adulthood or in child immigrants.

This paper examines the relationships between childhood emotional support and adult social support and how differences in immigration age influence self-rated health and depression among Latin American immigrant adults in the U.S. We pay particular attention to childhood arrival status (immigrating before age 18) as a critical factor in understanding the interplay between early social support and adult health outcomes. The present study builds on prior studies of immigrants to examine how early childhood support interactions and immigrating during childhood may be linked to positive health outcomes in adulthood. Two types of adult health measures, meeting criteria for lifetime

episodes of major depressive disorder (LMDD) and self-rated health, are examined to assess this association. We expect that immigrants who arrive during childhood or adolescence and lack social support in their youth may be more likely to encounter adversities that impact their well-being than immigrants who come later in life and report positive foundational childhood experiences. Conversely, we expect immigrants who arrive as children and report supportive relationships in childhood to have increased positive adult health outcomes.

This study will focus on the immigrant population from Latin America to center a group at the forefront of anti-immigrant rhetoric practices. Immigrants from Latin America originate from over 25 countries, each with different racial and socio-political histories that shape immigration experiences and health trajectories (Borrell & Crawford, 2009; Alcantara et al., 2017; Portes & Rumbaut, 2014; Villarruel et al., 2009.) Critical Race Theory (CRT) highlights differences in experiences of identity through the social construction of race (Delgado & Jean, 2017; Stefanic, 1998). Latino Critical Race Theory, a subset of CRT, stresses the need to understand Latinos as multifaceted and intersectional within identities of race, gender, culture, ethnicity, and language (Hernández-Truyol & Esperanza, 1997; Stefanic, 1998). The terms Latine/Latinx were not used throughout this paper because the data collected was categorized differently. "Hispanic" was not used to be inclusive of non-Hispanic Latin American Black and Indigenous respondents. Due to how data was collected racial identities of respondents may become conflated with ethnic identities and misrepresent their experiences navigating racialized hierarchies in the United States. This paper focuses on specific migration locations to limit conflating narratives of Latinidad and Hispanic identity that exclude intersectional identities. However, we recognize that "Latin American" does not encompass the nuances of racial hierarchies that further shape inequity within immigrant groups. Furthermore, respondents entered the U.S. before 2012 and come from countries with vast and complex socio-political histories that have shaped immigration patterns and reactive immigration policies in the United States during their arrival (Massey et al., 2012).

This investigation aims to engage a strengths-based lens for conceptualizing immigrant risk and protective factors that may inform how we approach immigrants' physical and behavioral health (Hamby, 2022). Findings may highlight differences in the effect of supportive relationships in childhood in mitigating adverse childhood and adult stress and provide insight into potential intervention and long-term implications for immigrants from Latin America who lack social support.

1. Theoretical framework

1.1. Social support in childhood

Childhood adversity, including abuse and neglect, have a lasting impact on the health of immigrants and their children. Adversity refers to negative contexts and experiences that can disrupt or challenge adaptive function or development (Obradović, Shaffer, & Masten, 2012). Adversity may be acute—a one-time significant disruption in daily life (e.g., immigration, natural disasters)—or it may be chronic—an ongoing, systemic issue rooted in poverty, racism, and other forms of current and historical oppression. While immigration is not always a negative experience, it is generally disruptive and varies by context. Emerging data suggests that positive interpersonal experiences in childhood can have protective effects on physical and mental health of children facing adversity into adulthood (Chen, Brody, & Miller, 2017; Fryers & Brugha, 2013).

In assessing the lasting effect of childhood experiences, ecological developmental theories may be helpful to better understand protective characteristics of social support during periods of stress and adversity such as immigration. These frameworks provide insight into the mechanisms by which relationships in childhood, trauma, and disruptions can impact physical and mental health. A key component of these theories is

the identified need for children to develop healthy bonds with primary caregivers and how these experiences in a child's system have lasting implications for physical and socioemotional health (Payne, 2014; Bronfenbrenner, 1994). Developmental contexts (e.g., caregiver well-being, trauma, and family resources) are significant in shaping coping behaviors into adulthood (Bowlby, 1969, 1980; Bronfenbrenner, 1994; Payne, 2014). In line with this theoretical framework, parental relationships and social support in childhood can provide the foundation for future social engagement and belonging and shape later coping mechanisms (Auerbach et al., 2010; Bhugra, 2004; Caxaj & Berman, 2010; Kumar, Seay, & Karabenick, 2015; Lee et al., 2012; Melkman & Rami, 2018; Stanton & Campbell, 2014; Spigner & Coifman, 2012). Adverse outcomes may be mitigated by strong relational foundations in childhood and have lasting effects across the lifespan.

1.2. Childhood immigration status

Another important developmental factor to consider when examining immigrant health trajectories is the age of immigration. Childhood arrival status may be a critical factor that shapes access to resources, social connections, and mental health trajectories within a new country. Previous research has consistently found that the age of immigration to a new country impacts an individual's ability to learn a new language and influences the process of negotiating culture, identity, and peers in U.S. contexts such as schools (Arévalo, Tucker and Falcón, 2014; Benet-Martinez et al., 2002; Fuligni, 2005; Leu et al., 2008). The nature of the relationship between child migration is nuanced with mixed findings in the literature. Myers and Scott (1999) argued that child immigrants could obtain assets because they can have access to skills and resources that allow them to better integrate and transition to adulthood (Myers & Scott, 1999; Chen, Guo, & Liu, 2021). Perreira and India (2011), found that foreign-born immigrant children have better self-reported health and lower morbidity risks than U.S. children born to immigrant parents (Perreira & Ornelas, 2011). Lam, Yip, & Gee, 2012 also found that those who immigrated later in life had worse health outcomes than those who arrived in childhood. Among immigrant adults, Jang, Pilkauskas, & Tang (2022) found direct relationships between the age of immigration and clinical depression, specifically finding that immigrating later in life was associated with lower levels of depressive symptoms.

In contrast, Alegría, Sribney, Woo, Torres, and Guarnaccia (2007) found that Latinx-identified immigrants who spent more time in their country of origin had a lower prevalence of psychiatric disorders. Studies have also found that immigrants who arrive in the U.S. during childhood may experience additional stress across developmental stages because of cultural changes and the need to integrate into new communities (Leu et al., 2008). Childhood arrivals have to navigate experiences of discrimination from race and immigration status and learn a new language while navigating post-immigration contexts which may negatively impact healthy interpersonal development (Perreira & Ornelas, 2011). In addition to immigrant youth, the same stressors are experienced by their caregivers who shape children's developmental environments (Bronfenbrenner, 1994; Leon, 2014). More nuanced analyses have found variations in health effects among the "1.5" generation (Portes & Rumbaut, 2014). Analyses from subsample from the NLAAS of immigrants from Latin America found no differences in prevalence of depression if the immigrated at age 7 or younger (Alegria et al., 2008). However, immigrating later was linked to higher prevalence of depressive symptoms in immigrant men (Alegria et al., 2017). These findings suggest differences in mental health outcomes and mechanisms associated with the age of immigration for immigrants entering the United States, although the direction of association may further vary depending on various exogenous factors such as interpersonal contexts in childhood among young immigrants.

1.3. Social support and immigrant health

Literature on immigrant integration highlight the role interpersonal relationships and social networks have on the health outcomes of immigrants in the United States (Andrade, Ford, & Alvarez, 2020; Dunn, apos, & Brien, 2009; Ruiz et al., 2016). Strong social support among immigrants has proven to be a protective factor that is linked to positive health outcomes, positive mental health, access to healthcare, and the acquisition of health information crucial to well-being and belonging (Andrade et al., 2020). Conversely, difficult, and stressful interpersonal relationships can have the opposite effect and may contribute to declining health and well-being (Chen, Bordy & Miller, 2017; Repetti, Taylor, & E Seeman, 2002). Ruiz, Sbarra, and Steffen (2018) describe the role larger social networks within Latino immigrants in the United States can have buffering effects of stress on overall health. Adverse outcomes may be mitigated by strong relational support and have lasting effects across the lifespan. Social support and network theories stipulate the mechanisms by which interpersonal relationships impact health (Heaney et al., 2002; Singh, McBride, & Kak, 2015).

Immigrants entering the United States with supportive adult environments or those that are able to create them after immigrating may be afforded the necessary structures that mitigate physical and adverse mental health outcomes of integrating into a new country. Positive social relationships in childhood and adulthood may have lasting effects on the physical and psychological health of immigrants in the United States (Heaney et al., 2002; Ruiz et al., 2018).

The lasting effects of childhood experiences and interpersonal relationships on health outcomes for Latin American immigrants are not without additional context that merit examination. Social support and network theories combined with developmental childhood and immigration contexts provide a framework by which to better understand factors that shape immigrant health in the United States. Based on the theoretical frameworks and literature guiding this analysis, we hypothesize that.

1. Childhood support will have a statistically significant association with positive health and a negative association with depression.
2. Childhood support in childhood will have an effect independent of perceived adult social support on self-reported health and depression scores.
3. Arrival before age 18 (childhood arrival status) will moderate both the association between adult-perceived interpersonal and childhood support and self-reported health and clinical depression.

2. Methods

2.1. Data

Data for this study come from the 2012–2013 iteration of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III), a cross-sectional, nationally representative survey of 36,309 noninstitutionalized U.S. adults aged 18 or older sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Participants were selected via multistage probability sampling design with counties as the primary sampling units, succeeded by Census-defined blocks selected with oversampling in areas with moderate or high representation of ethnic minorities (Grant, 2014). Data were collected via in-person interviews (with a Spanish questionnaire option) through computer-assisted interviewing. Access to NESARC-III data is restricted and controlled by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Approval to use the limited-access data from NESARC-III was received after approval of a data user agreement and a human subject's research exemption issued by the University of Washington's Institutional Review Board.

The original sample consisted of 6404 respondents who reported being born outside the United States. We then restricted our focus on

immigrant who were from Latin America (N = 3450). The sample consisted of respondents who reported being born outside the United States and from Latin America. This sample included immigrants from Mexico, Central America (Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua), South America (Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela) and Latin American-Caribbean nations (Cuba, Haiti, the Dominican Republic). Respondents were also excluded if they did not report a country of immigration or birth (n = 9.) These inclusion criteria reduced the to 3441 for lifetime major depression (LMDD) analyses. For health analyses, two additional respondents were excluded due to non-response (n = 3439). In corresponding analyses comparing childhood arrival status, ten respondents were removed due to non-response, leaving the final analytic sample for health at n = 3429 and n = 3431 for depression (LMDD).

2.2. Measures

Socioeconomic and Demographic Variables. Participants reported demographic variables such as immigration status (born in the U.S. or not), gender (male or female), race and ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic American Indian/Alaska Native, non-Hispanic Asian/Native Hawaiian/Pacific Islander, Hispanic), age (continuous 18–90+), education (less than high school, high school graduate, or some college or higher), annual personal income (0–14,999, 15,000–34,999, 35,000–69,999, 70,000 or more) and marital status (married, never married, divorced/widowed/separated).

Dependent Variables. Self-reported health was measured via the NESARC-III survey question "In general, would you say your health is excellent, very good, good, fair or poor?" and coded as a binary outcome of 1 being good health (excellent, very good, and good) and 0 being fair or poor health in line with other studies that have dichotomized NESARC self-reported measures (Dawson, Grant, Chou, & Stinson, 2007). Lifetime episode of major depressive disorder was measured through the Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5). Questions assessed for past episodes of major depressive disorder (LMDD) as delineated in the DSM-5. The LMDD measure is independent of other conditions and rules out substance-induced and has been validated for clinical validity and internal reliability (Hasin et al., 2018; NIAAA, 2013).

Interpersonal Support *in Adulthood.* Interpersonal support was assessed utilizing the Interpersonal Support Evaluation List (ISEL-12). The ISEL-12 is a 12-item questionnaire designed to measure adult perceived social support and includes questions such as, "If I were sick, I know I would find someone to help me with my daily chores." Items are rated on a scale from 1 (definitely false) to 4 (definitely true), with some items reverse-coded to reflect the presence of support. Scores ranged from 12 to 48, with higher scores indicating greater levels of perceived interpersonal support (Cohen & Hoberman, 1983). The ISEL-12 scale has been validated for use among English and Spanish-speaking Latinos in the United States (Cohen & Hoberman, 1983; Merz et al., 2014.).

Childhood Support. Emotional childhood support was measured with five questions consolidated into one "childhood emotional support" score. Responses to the questions such as "Before age 18, I felt there was someone in my family who wanted me to be a success" were coded such that 1 = "definitely false" and 5 = "definitely true." In previous scoring of this scale, responses were reverse-coded and dichotomized such that individuals with a score of 15 were categorized as experiencing moderate to extreme neglect (Ports, Ford, & Merrick, 2016). Childhood support scores were not reverse coded but instead were kept in alignment with the original questions. Childhood support scores ranged from 5 to 25. We utilized the same cut-off parameters such that people who scored between 5 and 15 were coded as having low emotional childhood support (0), and those who scored between 16 and 25 had high emotional childhood support (1). Sensitivity analyses were conducted on the continuous measure of childhood support childhoods to ensure

the reliability of results.

Childhood Arrival Status. Childhood arrival status was generated by first calculating the age of immigration of each respondent. Age of arrival was calculated by subtracting the response to "how long have you been in the United States?" from respondents' reported age at the time of the survey. Respondents who immigrated to the United States before 18 were coded as childhood arrivals (1), and those who immigrated at age 18 or later were labeled adult arrivals (0).

Adversity in Childhood. In order to control for the effect of adversity in childhood as it relates to emotional support, we utilized a composite score generated from questions about potentially adverse experiences before age 18. Respondents were asked questions regarding maltreatment in 5 categories: physical neglect [five items], emotional neglect [five items], physical abuse [two items], emotional abuse [three items], and sexual abuse [four items] by parents or caregivers. However, because this analysis focuses on supportive relationships in childhood, emotional neglect was excluded from this scale and coded as written (not reverse coded) to measure emotional childhood support. In addition to maltreatment questions, respondents were asked 13 questions regarding potentially traumatic adverse childhood events related to adults living in the home, exposure to domestic violence, and their home environment scored in either yes = 1, no = 0, or never = 0, almost never = 1, sometimes = 2, somewhat often = 3, and very often = 4. Responses of at least "sometimes" were coded as positive adversity responses according to the format of the question. Childhood adversity was coded consistently with previous studies (Vázquez et al., 2019; Fenton et al., 2013; Udo & Grilo, 2016), apart from childhood neglect as defined above. A positive history of ACEs for analyses was coded whenever any childhood maltreatment or other adverse events was reported (1 or more = Yes, 0 = No).

2.3. Analyses

Analyses were conducted on weighted data to account for the complex stratified sampling plan and adjusted to represent the Latin American immigrant population in the U.S. Multivariate logistic regressions were used to examine the relationship between childhood arrival status, childhood emotional support, and adult perceived interpersonal support on health outcomes. Multivariable binomial logistic regression analyses were utilized to test hypotheses one through four and to compute adjusted odds ratios (AOR) with 95% confidence intervals (CI).

Models were run for depression scores and self-reported health to test each of the three hypotheses. First, we ran analyses examining the effects of childhood support and adult support for each outcome variable (Model 1). Second, we incorporated the measure for adult perceived interpersonal support to Model 1 (Model 2). In a third model, we added childhood arrival status to our first model to test for an independent effect of arriving before age 18 while controlling for childhood support and adversity (Model 3). We added adult interpersonal support to test whether emotional childhood support remains associated with the outcome variables independent of adult interpersonal support (Model 4). We tested an interaction effect between childhood arrival and adult interpersonal support in our fifth model (Model 5) and an interaction between childhood arrival and childhood support (Model 6).

To further test differences between childhood and adult arrivals, we ran separate analyses examining the effects of childhood support, adult interpersonal support, and childhood adversity and sociodemographic variables for each outcome variable within arrival status (prior to 18 and after 18). All analyses were conducted using Stata 16.1, utilized appropriate sample weights, and incorporated listed demographic variables.

3. Results

Sample characteristics (weighted) are presented in Table 1. The

Table 1
Descriptive statistics of weighted data for foreign born immigrant respondents from Latin America surveyed between 2012 and 2013.

	Immigrant Origin, % or Mean (SD)				
	Total Latin America (n = 3441)	Mexico (n = 2035)	Central American (n = 558)	South America (n = 436)	Caribbean (n = 412)
Age, years					
18–29	19.82	20.49	21.86	17.43	16.26
30-44	41.06	44.18	42.65	33.72	31.31
45-64	31.07	29.53	28.67	35.09	37.62
>65	8.05	5.80	6.81	13.76	14.81
Sex					
Female	54.81	54.50	54.66	53.90	57.52
Male	45.19	45.50	45.34	46.10	42.48
Educational attainment					
Less than high school	43.62	53.17	46.24	14.22	24.03
High school/ GED	27.11	27.08	25.55	25.23	32.77
Some college	19.01	14.25	20.25	31.88	27.18
College or more	10.26	5.50	8.86	28.67	16.02
Annual family income					
0–19,999	57.92	61.23	56.27	44.27	58.25
20,000–34,999	25.43	25.75	23.84	28.44	22.82
35,000–69,999	13.89	11.40	17.20	20.41	14.81
70,000 or higher	2.76	1.62	2.69	6.88	4.13
Race					
White	1.2	0.29	1.43	5.28	1.46
Black	3.4	0.00	1.25	5.50	20.87
AI/AN	0.1	0.05	0.18	0.69	0.0
AA&PI	0.5	0.00	0.36	3.67	0.0
Hispanic	94.6	99.66	96.77	84.86	77.67
Marital status					
Married or cohabitating	62.19	67.13	56.63	57.80	50.0
Widowed, separated, or divorced	17.99	15.28	18.10	21.33	27.67
Never married	19.82	17.59	25.27	20.87	22.33
Covariates & Outcome Variables					
Childhood Arrival	31.47	34.20	29.75	26.61	25.49
Depression (LMDD)	12.29	11.30	13.08	14.45	13.83
Self-Reported Good Health	80.99	76.79	81.90	87.39	80.54
Childhood Support	89.34	86.14	85.13	93.58	91.26
Childhood Support Continuous [b]	21.47 (5.11)	21.31 (5.03)	21.07 (5.36)	22.53 (4.37)	22.39 (4.62)
Adverse Childhood Experiences [c]	57.45	57.20	62.37	57.34	52.18
Adult Interpersonal Support (ISEL) [d]	40.88 (6.84)	41.14	40.67 (7.24)	40.45 (6.47)	40.33 (6.98)

SD standard deviation, GED general educational development.
[a] Childhood Support split at the median and coded 0-low 1-high.
[b] Continuous score for childhood support from 5 to 25.
[c] Childhood adversity core coded as a binary variable where any exposure to trauma is equal to 1.
[d] Interpersonal Social Evaluation List from 0 to 48.

sample of immigrants from Latin America is largely Mexican immigrants, accounting for 59% of the total sample. Self-reported health and childhood support scores were comparable among immigrant ethnic groups from Latin America, with South American immigrants reporting the highest prevalence of childhood support at 94%. Good self-reported

health was highest for immigrants of South American origin (87%) and lowest for immigrants of Mexican origin (77%). Central Americans reported the highest prevalence of reported exposure to at least one childhood adverse experience at 62%. In contrast, immigrants from the Caribbean had the lowest, with only 52% reporting childhood adversity of any kind. Most of the sample identified as Hispanic; however, there were differences in race/ethnicity of participants between regions, with 21% of respondents from the Caribbean sample and 5% of the South American sample identifying as Black. The distribution across all regions was primarily the Hispanic categorization; it is important to note that while Hispanic was coded under a race category, those within Hispanic labels may also identify as Black, White, Asian, and Indigenous (Mazzotti, 2018).

Table 2 presents the multivariate binomial logistic regression results from our initial model examining the effects of childhood support and adversity on health and depression scores (Model 1). When controlling for exposure to childhood adversity, childhood support was associated with higher adjusted odds of self-reported "good health" (AOR, 1.36 95% CI, 1.02–1.83). As expected, childhood support was associated with significantly lower adjusted odds of LMDD (AOR, 0.60; 95% CI, 0.44–0.81). These findings support hypothesis 1, that childhood support has a significant effect on adult health and meeting criteria for LMDD independent of childhood adversity. The effect of childhood support on depression appears slightly stronger (40% change) than the effect on health (36% change).

When looking at the effect of childhood support and adult social support on the health outcome, the inclusion of adult social support in the model reduces the effect of childhood support to 1.16, and exposure to trauma remains approximately the same at 0.86 (Model 2) albeit both are no longer statistically different from 1.0. However, including adult interpersonal support in the second model provides evidence for the protective effect adult social support has on reported good health among immigrants (AOR, 1.04; 95% CI, 1.02–1.06). Including adult social support does not impact the effect of trauma on LMDD; the odds ratio of reporting a diagnosis of major depression AOR is basically unchanged from model 1 (AOR 2.25; 95% CI, 1.68–3.02). Perceived social support in adulthood was statistically associated with decreased odds of LMDD (AOR 0.97; 95% CI, 0.95–0.98), and childhood support remains statistically associated with decreased likelihood of lifetime major depressive disorder (AOR 0.70; 95% CI 0.51–0.96) (Model 2). These results provide

Table 2
Association between past-year self-reported health and lifetime major depressive disorder and childhood emotional support, childhood adversity and adult perceived interpersonal support for Latin American immigrants, 2012–2013.

	Model1		Model 2	
	Health	Depression (LMDD)	Health	Depression (LMDD)
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Childhood Support	1.36* (1.02–1.83).	0.60*** (.44-.81)	1.16 (0.87–1.56)	0.70* (0.51–0.96)
Adverse experiences	.82* (0.69–0.98)	2.31*** (1.73–3.09)	0.86 (0.71–1.03)	2.25*** (1.68–3.02)
Adult Interpersonal Support			1.04*** (1.02–1.06)	.97*** (0.95–0.98)

Notes. All models utilized sample weights and adjusted for sociodemographic characteristics (i.e., sex, age, educational attainment, family income, and race/ethnicity). *Abbreviations.* AOR, adjusted odds ratios, CI, confidence interval. Models regress self-reported health and lifetime major depressive disorder individually on childhood support status, childhood adversity status, childhood arrival status and/or adult interpersonal support and sociodemographic characteristics.

*p < 0.05; **p < 0.01; ***p < 0.001.

partial support for hypothesis 2. While the effects of interpersonal support in adulthood eliminated the protective effects of childhood support in health outcomes, both adult interpersonal support and childhood support significantly decreased the likelihood of meeting criteria for LMDD.

Hypothesis 3 was only partially supported when examining depression outcomes and including childhood arrival status (Table 3). Controlling for childhood arrival status (Model 3), childhood emotional support was only significant in decreasing the odds of LMDD (AOR 0.59; 95% CI 0.43–0.80). Adding adult social support to the health model (Model 4) demonstrated that arriving in the United States in childhood was associated with lower odds of reporting good health (AOR 0.77; 95% CI 0.61–0.99), and adult interpersonal support was associated with greater odds of reporting good health (AOR 1.04; 95% CI 1.03–1.06). In Model 4 for LMDD, both childhood arrival status (AOR 1.43; 95% CI 1.09–1.89) and exposure to adversity in childhood (AOR 2.20; 95% CI 1.64–2.95) increased the likelihood of a lifetime episode of major depressive disorder. Conversely, both childhood support (AOR 0.69; 95% CI 0.50–0.96) and adult interpersonal support (AOR 0.96; 95% CI 0.95–0.98) were associated with lower odds of meeting criteria for major depressive disorder (Model 4). The interaction was not significant between childhood arrival status and adult interpersonal support (Model 5) for either health or LMDD. Only adult interpersonal support remained significant in decreasing the odds of reporting adverse health outcomes (AOR 1.04; 95% CI 1.02–1.06). For LMDD, the interaction effect was not significant, and childhood arrival status was no longer significant (p > 0.638). In this model, childhood support (AOR 0.69; 95% CI 0.50–0.96) and adult interpersonal support (AOR 0.96; 95% CI 0.94–0.98) remained significant in decreasing the odds and childhood adversity (AOR 2.20; 95% CI 1.64–2.95) remained significant at increasing the odds for LMDD (Model 5). Model 6 also failed to support our third hypothesis. The interaction between childhood support and arrival status for LMDD and health. This interaction was not significant in either model. Only childhood adversity (AOR 2.26; CI 1.67–3.04) and adult interpersonal support (AOR 0.96; CI 0.95–0.98) maintained their associations with LMDD.

When running separate models to assess the effect of childhood support by immigration group status (pre- and post-18), childhood support and childhood adversity were significantly associated with LMDD but not with health (Table 4). In the adult arrival sample (Model 7), trauma (AOR, 2.16; 95% CI 1.51–3.10) and adult social support (AOR, 0.96; 95% CI 0.94–0.98) remained significantly associated with decreased odds of meeting criteria for LMDD. Adult interpersonal support also increased the odds of reporting good health (AOR1.04; 95% CI 1.02–1.06). In the childhood arrival group (Model 8), unlike in the adult sample, childhood support (AOR 0.58; 95% CI 0.35–0.96) and adult interpersonal support (AOR 0.96; 95% CI 0.94–0.99) were statistically significant in at decreasing the odds of meeting criteria for LMDD. Much like in previous models, childhood adversity (AOR 2.31; CI 1.44–3.72) was associated with higher odds of major depressive disorder; these effects were remarkably stable in their effect (between 2.1 and 2.3). As in the adult arrival group, adversity was not associated with good health for the childhood arrival group.

We completed sensitivity analyses as an additional measure for childhood adversity wherein the continuous measure was used on all models using childhood support. All findings for childhood support remained consistent with our reported outcomes, except in the case of depression outcomes for the adult group when models were separated. Results from our continuous analyses are in line with our reported results.

4. Discussion

Overall, study findings point to the need for increased attention to sources of support and resilience for immigrants from Latin America. Specifically, findings from this study highlight the role that social

Table 3
Association between past-year self-reported health and lifetime major depressive disorder and childhood emotional support, childhood adversity and adult perceived interpersonal support and childhood arrival status for Latin American Immigrants, 2012–2013.

	Model 3		Model 4		Model 5		Model 6	
	Health	Depression (LMDD)	Health	Depression (LMDD)	Health	Depression (LMDD)	Health	Depression (LMDD)
	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)	AOR (95%CI)
Childhood Support	1.38* (1.03–1.86)	0.59*** (0.43–0.80)	1.17 (0.87–1.57)	0.69* (0.50–0.96)	1.17 (0.87–1.57)	0.69* (0.50–0.96)	1.03 (0.67–1.59)	0.82 (0.49–1.38)
Adverse Experiences	0.83* (0.69–0.99)	2.27*** (1.70–3.02)	0.86 (0.72–1.04)	2.20*** (1.64–2.95)	0.86 (0.72–1.04)	2.20*** (1.64–2.95)	0.85 (0.71–1.03)	2.26*** (1.67–3.04)
Childhood Arrival Status	0.79 (0.62–1.02)	1.38* (1.04–1.81)	0.77* (0.61–0.99)	1.43** (1.09–1.87)	0.73 (0.18–2.97)	1.37 (0.36–0.52)	0.58 (0.27–1.24)	1.89 (0.74–4.85)
Adult interpersonal Support			1.04*** (1.0–1.06)	0.96*** (0.95–0.98)	1.04*** (1.02–1.06)	0.96*** (0.94–0.98)	1.04*** (1.03–1.05)	0.96*** (0.95–0.98)
Interaction								
Childhood Arrival * Adult Interpersonal Support					1.00 (0.97–1.04)	1.00 (0.97–1.03)		
Childhood arrival * Childhood support							1.36 (0.59–3.11)	0.75 (0.30–1.87)

Notes. All models utilized sample weights and adjusted for sociodemographic characteristics (i.e., sex, age, educational attainment, family income). *Abbreviations*. AOR, adjusted odds ratios, CI, confidence interval.
*p < 0.05; **p < 0.01; ***p < 0.001.

Table 4
Association between past-year self-reported health and lifetime major depressive disorder (LMDD) and childhood emotional support, childhood adversity and adult perceived interpersonal support by immigration age group.

	Model 7		Model 8	
	Adult Arrival Group (n = 2348)		Childhood Arrival Group (n = 1083)	
	Health	Depression (LMDD)	Health	Depression (LMDD)
	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)	AOR (95% CI)
Main Effects				
Childhood Support	0.96 (0.68–1.37)	0.77 (0.51–1.16)	2.04* (1.67–3.59)	0.58* (0.35–0.96)
Adverse Childhood Experiences	0.91 (0.72–1.14)	2.16*** (1.51–3.10)	0.74 (0.50–1.12)	2.31*** (1.44–3.72)
Adult Interpersonal Support	1.04*** (1.02–1.06)	0.96*** (0.94–0.98)	1.04* (1.00–1.07)	0.96* (0.94–0.99)

Notes. All models utilized sample weights and adjusted for sociodemographic characteristics (i.e., sex, age, educational attainment, family income). *Abbreviations*. AOR, adjusted odds ratios, CI, confidence interval.
*p < 0.05; **p < 0.01; ***p < 0.001.

support in critical developmental periods has on immigrant health and depression outcomes, more so on the latter than the former. In line with previous research, findings from this study demonstrate the need for continued and more current investigations that investigate essential social resources across the lifespan and their role in shaping immigrant health.

Findings may provide insight into interpersonal mechanisms that may shape health outcomes for newly arrived immigrants and childhood arrivals and offer opportunities for intervention (Auerbach et al., 2010). This line of inquiry is particularly relevant in the context of punitive measures designed to increase fear and decrease participation in healthcare services for immigrants in light of continued separation practices that impact those vulnerable due to their documentation status (Barofsky, Vargas, Rodriguez, & Barrows, 2020).

4.1. Childhood emotional support

Results from this study highlight the role that a supportive childhood environment may play in preventing adverse physical and behavioral health across the lifespan among immigrants in the United States. Our findings align with attachment-based developmental theories of social support, resilience, and belonging, suggesting that supportive relationships provide resources that protect from adverse mental health outcomes (Caxaj & Berman, 2010; Kumar et al., 2015). Specifically, respondents who reported support in childhood were less likely to meet criteria for lifetime depressive disorder, and the effect of childhood support was stronger on depression than physical health outcomes. This may be due to differences in self-reported perceptions of well-being and less subjective criteria such as meeting criteria for major depressive disorder. For example, reports of well-being rely on respondent recall of general health. In contrast, criteria for lifetime major depressive disorder may seem more concrete, unrelated, and temporally distant since they are scored as composite scores rather than a one-time response (i.e., respondents may not be aware that questions are part of a depression scale). Emotionally supportive environments are especially important for understanding how ongoing family separation practices such as deportation and family detention may have a lasting effect on the well-being of immigrants (Wood, 2018). Although a more nuanced examination of immigrants' childhood and adult social support is needed, findings shed light on the importance of continued advocacy for family maintenance. Policies that separate families not only sever caregiver attachments and impact supportive environments but may also be additional traumas that negatively impact well-being.

4.2. Adult interpersonal support

We also examined the role of perceived interpersonal support in adulthood on self-reported health and depression outcomes. Across models that included measures of adult perceived interpersonal support (ISEL measure), social support in adulthood was consistently associated with lower odds of meeting criteria for lifetime depression and greater odds of reporting good health. This finding complements the literature demonstrating social support's importance in promoting resilience and well-being (Stewart et al., 2008; Marta, 2001; Oppedal et al., 2004). Immigrants from Latin America who develop supportive adult networks have greater odds of having better health outcomes, which may affect their ability to navigate U.S. systems despite an anti-immigrant

backdrop (Morey, 2018). Interpersonal support has been extensively documented as a factor that promotes the well-being of immigrants, and findings from this study provide further support for the importance of relationships in immigrant integration in the United States.

Although this study does not explicitly examine differences among people with different documentation statuses, these findings may be relevant to the health of newly immigrated undocumented immigrants in detention facilities. Lack of documentation status in the United States continues to be a barrier to accessing supportive services and seeking healthcare and directly limits a person's ability to challenge punitive practices. Isolation may have increasingly detrimental impacts on the health of immigrants and their families. Separating immigrants from their social relationships can have lasting detrimental effects on their health. Policies and practices that impact immigrant communities, especially those from relational communities, should consider interpersonal support's protective effect across the lifespan.

4.3. Childhood immigration status & health outcomes

Our findings demonstrated that childhood arrival status was consistently associated with decreased odds of depression. Our work alludes to differences in immigration trajectories for immigrants who enter the United States before age 18 versus those who enter as adults. The differences are heightened in the presence of interpersonal adult support. When models were run for separate groups (adult arrival vs. childhood arrivals), differences between childhood arrival status and health outcomes were apparent. These results are perhaps not surprising considering buffering models of positive childhood experiences (Chen et al., 2017). Findings allude to the protective effects of childhood support on immigrant children for both health and major depressive disorder in adulthood.

Results from this study also indicate that adverse outcomes in the childhood arrival group may be mediated by positive relationships in childhood that provide mechanisms for healthy coping during stressful life events. This finding is crucial to consider in assessing mental health trajectories of childhood arrivals, especially in light of continued family separation practices, and further research is needed to identify critical developmental periods wherein children may be more vulnerable to the lasting effects of separation.

These findings were not replicated in the adult arrival group, wherein childhood support did not affect either health or depression outcomes. This may be partially explained by the strength of adult relationships, as perceived interpersonal support in adulthood was generally consistent. Differences between adult immigrants and child immigrant groups may be associated with additional factors not captured in the data that may have had positive and negative effects on the well-being of adult immigrants, such as English proficiency, acculturation stress, racial identities, financial capital, or documentation status (Cano et al., 2021; Cheong, Edwards, Goulbourne, & Solomos, 2007). Additionally, trauma not encapsulated by the adversity scale, such as home-country conflict, political persecution, and parental contexts, may overshadow any potential protective effect of childhood support. The differences in relationships and outcomes require additional attention to better identify supportive policies, strategies, and interventions that promote immigrant well-being in adversity (Auerbach et al., 2010).

Lastly, we included additional analyses to test the interaction between childhood arrival and adult perceived social support on health and depression outcomes. Despite mixed findings in the literature regarding the health trajectories of child immigrants, we expected that childhood arrivals with supportive relationships might have more time and access to resources that better prepare them to have greater access to supportive networks (Beiser, Hou, Hyman, & Tousignant, 2002; Zhang et al., 2021); however, this was not supported in our analyses. Potential alternative explanations for this finding include that childhood migrants may experience stress within family systems, such as financial

strain, documentation limitations, racialized experiences, and ongoing fear of social and political persecution and parental context, which was not intentionally measured in the data and may shape the direction of these relationships (Beiser et al., 2002; Delgado & Jean, 2017; Lorenzo-Blanco et al., 2016; Lorenzo-Blanco et al., 2017).

Although characteristics of these relationships and their effect may vary, as will the need of children across development, overall findings indicate that similarly to adversities in childhood, positive childhood experiences can have buffering effects on stress and adversity (Chen et al., 2017; Alegría et al., 2008). Additional information is needed to better understand factors that shape immigrant health and the formation of supportive social ties. These findings support the need for further studies that examine other mechanisms, such as time in the US, identity, and social resources through more nuanced measures that better encapsulate immigrant socialization experiences and better grasp the heterogeneity in experiences.

5. Limitations

Limitations of this study include using dichotomous measures of trauma and childhood social support. In addition, we are unable to make causal claims from cross-sectional data. Childhood support was not intentionally measured; instead, it was a subset of reverse-coded questions within the ACES scale and thus may vary slightly in its interpretation. We also note that any recall bias in the data limits our ability to assess childhood factors comprehensively. Similarly, measures of sex were asked in such a way that people were limited to a gender binary or reduced to the interviewer's perception.

Additionally, our sample of immigrants was limited by racial categories that may not align with people's experiences of their identities. In the NESARC-III questionnaire, for example, Hispanic ethnicity is included under racial categorizations, which leaves individuals to identify as one versus the other when they may exist at the intersection of identities. This limited our ability to understand how different intersectional identities navigate different systems of oppression that, in turn, directly impact their health. Lastly, documentation status was not assessed, and as such, while we expect many of these relationships to be similar, prevalence estimates of relationships may be over or underestimated for undocumented immigrants.

Data from this study was collected between 2012 and 2013; since data was collected on adults, the most recent immigrant would have had to have immigrated between 1995 and 1996. Immigration during this time was impacted by the ongoing destabilization of Latin American countries, such as those from the Central American region (Batalova & Babich, 2021), and continued changes in immigration policies (Massey & Pren, 2012). Because analyses were not conducted on immigration year specifically, we cannot assess the effects of social and political context on respondents' health. Policies like the Illegal Immigration Reform and Immigrant Responsibility Act in 1996 (IIRIA), the Patriot Act in 2001, and aid legislation like the 1997 Nicaraguan and Central American Relief Act not only changed immigration patterns of immigration but also helped fuel anti-immigrant rhetoric across the United States (Massey & Pren, 2012). In line with epidemiological studies that have established better health outcomes among immigrants, there are still many variations due to immigrants' different positionalities and highlight the need to incorporate socio-political contexts in immigrant health research (Alegria et al., 2017; Lee & Zhou, 2020). Despite these limitations, the findings provide an empirical foundation for future work on the social and developmental factors associated with immigrants' health and highlight the importance of investigating the heterogeneity within immigrant groups.

6. Conclusion

Findings from this study highlight the protective value of positive childhood experiences and supportive adult relationships on immigrant

physical and mental well-being. This study suggests that policies separating immigrants from sources of support in childhood and adulthood may have adverse short- and long-term effects on individual physical and mental health. In order to better understand factors that shape immigrant children's health, additional information is needed, including immigration status, whether they traveled alone, sociopolitical contexts in both sending and receiving contexts and their access to pre-existing connections in the United States. These contexts would allow for a more nuanced understanding of the health trajectories of immigrant children and their families. These findings support the need for further studies that examine other mechanisms, such as time in the U. S., identity, and social resources through more nuanced measures that better encapsulate immigrant socialization and better grasp the heterogeneity in experiences.

Further work is needed to understand how immigration can be integrated into health analyses as a social determinant of health (Castaneda et al., 2015). Differences in racial identities are crucial factors to consider in future iterations of data collection due to immigrants' differential outcomes and experiences as they encounter U.S. systems founded on white and colonial frameworks that disproportionately impact Black and Indigenous immigrants. This study provides preliminary guidance into potential ways in which researchers and healthcare professionals may focus on approaches to address health disparities within the Latin American Immigrant community.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors do not have permission to share data.

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