

Adverse Childhood Experiences Among Hispanic Children in Immigrant Families Versus US-Native Families

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abstract

OBJECTIVES: To examine the prevalence of child and family characteristics associated with adverse childhood experiences (ACEs) in Hispanic children in immigrant families compared with Hispanic children in US-native families.

METHODS: Data were from the nationally representative 2011–2012 National Survey of Children's Health. Parent-reported child ACE exposure was classified as no ACEs (0), low ACEs (1), or high ACEs (≥ 2). By using multinomial logistic regression, we evaluated the odds of low or high ACE exposure versus no ACE exposure by immigrant family status and child and family characteristics (eg, insurance status, child health status, or household-to-income ratio).

RESULTS: The study sample included 12 162 Hispanic children. More children in immigrant families lived $\leq 200\%$ of the federal poverty level compared with children in US-native families (80% vs 47%, respectively; $P < .001$). Thirty percent of children in US-native families reported high ACEs compared with only 16% of children in immigrant families ($P < .001$). The odds of high ACE exposure versus no ACE exposure for children in immigrant families compared with US-native children was 0.46 (95% confidence interval: 0.34–0.61). Child and family characteristics did not explain the difference in odds of ACE exposure by immigrant family status.

CONCLUSIONS: Children in immigrant families had significantly lower odds of ACE exposure despite higher prevalence of poverty. This may not reflect a true health advantage in this population. There may be unmeasured factors that buffer children in immigrant families from ACE exposure, or ACE questions may not capture the adverse experiences specific to immigrant families.



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WHAT'S KNOWN ON THIS SUBJECT: Poor child and adult health outcomes are linked to poverty and adverse childhood experiences (ACEs). The relationship between ACEs and Hispanic immigrant family status is unknown.

WHAT THIS STUDY ADDS: Hispanic children in immigrant families had lower odds of ACEs, but child or family characteristics did not explain this finding. Study findings reveal that ACE domains may need expansion to adequately account for the immigrant experience.

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Hispanic children currently make up a quarter of all children in the United States and are projected to remain the largest ethnic minority group among children.¹ Although 90% of Hispanic children are US-born, Hispanic children in immigrant families (foreign-born children with at least 1 foreign-born parent, or US-born children with at least 1 foreign-born parent) comprise over half of all immigrant children in the United States.² Children in immigrant families are more likely to be uninsured, to live in poverty, and to experience food insecurity than white children.^{3–5}

Adverse childhood experiences (ACEs), broadly defined as abuse, violence exposure, and family dysfunction, have lifelong negative effects on health and contribute to health disparities.^{6–9} ACEs disproportionately affect low-income children who are already at risk for poor long-term health secondary to poverty.^{9,10} However, parent-reported ACE exposure among Hispanic children is lower than among African American children, despite similarly high rates of childhood poverty.^{11,12}

Contrasts in expected health outcomes in Hispanics have been previously described as an epidemiologic paradox referred to as the “healthy immigrant phenomenon.”¹³ Despite higher poverty, lower education, and decreased health care access, Hispanic immigrants have similar or better outcomes in certain health parameters than whites and US-born Hispanics.^{13–15} Evidence in support of the healthy immigrant phenomenon is mixed, and many Hispanic immigrant families experience risk factors for poor health outcomes.^{13,16} One reason Hispanics in previous empirical work may appear particularly healthy is related to selection, specifically underrepresentation or exclusion of at-risk Hispanic populations in

research: the undocumented, those with unstable housing, and the uninsured, many of whom are from immigrant families.

The evidence in favor of the healthy immigrant phenomenon could, in part, reflect differences in exposure to ACEs among immigrant families. Data on the prevalence of ACEs in Hispanic children, and particularly children in immigrant families, remain sparse. Although many researchers have explored racial and ethnic disparities in the prevalence of individual ACEs (food insecurity, domestic violence exposure, or substance abuse exposure), no researchers that we know of have explored ACE exposure by immigrant family status.^{17–21} Thus, our aims in this study were to examine the association between ACE exposure and immigrant family status for Hispanic children and whether factors such as children’s demographic characteristics, family structure, or family health outcomes were related to ACE exposure.

METHODS

Data Source

Data for this study were from the 2011 to 2012 National Survey of Children’s Health (NSCH), from the Child and Adolescent Health Measurement Initiative. The NSCH is a nationally representative landline and mobile phone survey of households with at least 1 resident child 0 to 17 years old, sponsored by the Maternal and Child Health Bureau. The 2011 to 2012 NSCH included 95 677 children. Sixty eight percent of survey respondents were mothers, 24% were fathers, and 7% were guardians. A weighting strategy was employed such that survey participants are reflective of the demographic composition of noninstitutionalized children 0 to 17 years old in each state and the District of Columbia, with an overall response rate of 38.2%.

Detailed NSCH survey methodology is available elsewhere.²² This study was exempt from institutional review board review because the data set is deidentified and publicly available.

Sample

The analytic sample was restricted to Hispanic children of any race with nativity information available for at least 1 parent ($n = 12\ 162$). This reflected 12% of the unweighted NSCH sample.

Measures

ACE Exposure

The primary outcome variable of interest was ACE exposure category. The NSCH includes 9 ACE questions modified from those used in studies of adults and validated for use by parents and guardians.²³ The number of ACEs parents could report ranged from 0 to 9 (Supplemental Table 3). Following other analyses in which this data set was used,¹⁸ we categorized ACE exposure as: no ACE exposure (0 ACEs), low ACE exposure (1 ACE), and high ACE exposure (≥ 2 ACEs).

Immigrant Family Status

The primary independent variable was immigrant family status. Foreign-born children composed only 6.8% of the total sample and were combined with US-born children with at least 1 immigrant parent. Consistent with previous literature, we defined a child in an immigrant family as a foreign-born or US-born child with at least 1 foreign-born parent.^{13,24} A child in a US-native family was defined as a US-born child with US-born parents.²⁴

Family and Child Characteristics

Family and child characteristics included as covariates were: mean age of index child, household income-to-poverty ratio ($\leq 200\%$, $201\%–400\%$, or $\geq 401\%$ of federal poverty level [FPL]), highest parental educational attainment (less than

TABLE 1 Characteristics of Sample From the 2011–2012 NSCH by Immigrant Family Status (N = 12 162)

Family and Child Characteristics Weighted %	Children in Immigrant Families, N = 6863 (66%)	Children in US-Native Families, N = 5299 (34%)	P
Sociodemographics			
Mean child age, y	8	8	—
Household income, % of FPL			
≤200% of FPL	79.0	46.9	—
201%–400% of FPL	13.4	31.0	<.001
≥401% of FPL	7.6	22.1	—
Highest household education			
<High school	43.7	11.2	—
High school	27.4	23.8	<.001
>High school	28.9	65.0	—
Family structure			
Single woman	15.8	31.4	<.001
Nonsingle woman	84.2	68.6	—
Maternal mental health			
Fair or poor	10.7	8.6	<.12
Good or excellent	89.3	91.4	—
Supportive family environment			
No	31.8	11.5	<.001
Yes	68.2	88.5	—
Participation in public benefits			
No	46.5	63.5	<.001
Yes	53.5	36.5	—
Child health status			
Fair or poor	7.6	3.2	<.001
Good or excellent	92.4	96.8	—
Insurance type			
Public	62.9	44.1	—
Uninsured	12.4	4.5	<.001
Private	24.7	51.4	—
Primary home language			
English	22.4	92.8	<.001
Other	77.6	7.2	—

—, not applicable.

high school, high school, or more than high school), family structure (female-headed household, 2 adult home, or other), maternal mental health (excellent, very good, good, or fair, poor) as per self-report or report by proxy if another adult other than the mother was completing the survey (~22% of the sample), insurance type (public, private, or uninsured), parent-rated or guardian-rated child health status (excellent, very good, good, fair, or poor), and primary language at home (English or other).

We also included a measure of family environment supportiveness on the basis of the parents' responses to 2 questions: "In general, how well do you feel you are coping with the day-to-day demands of [parenthood and/or raising children]?" and

"Is there someone that you can turn to for day-to-day emotional help with [parenthood and/or raising children]?"²⁵ Parents who reported "very well" or "somewhat well" to both questions were classified as having a supportive family environment (yes = 1). Finally, we classified public benefit participation if the respondent reported that at least 1 household member participated in at least one of the following programs: Women, Infants, and Children; Temporary Assistance for Needy Families; or the Supplemental Nutrition Assistance Program.

Analysis

In bivariate analyses, we used Pearson's χ^2 and *t* tests to examine differences in child and family

characteristics by immigrant family status. To assess differences in odds of reporting high or low ACE exposure (compared with no ACE exposure) by immigrant family status, we used unadjusted multinomial logistic regression models. Then we adjusted for family and child characteristics to evaluate the role of these factors in explaining any differences between the groups. Covariates in the multivariate model included household income-to-poverty ratio, highest household education, family structure, maternal mental health, family environment supportiveness, public benefit participation, child health status, and insurance type.

NSCH provided multiple imputation methodology, used by the Child and Adolescent Health Measurement

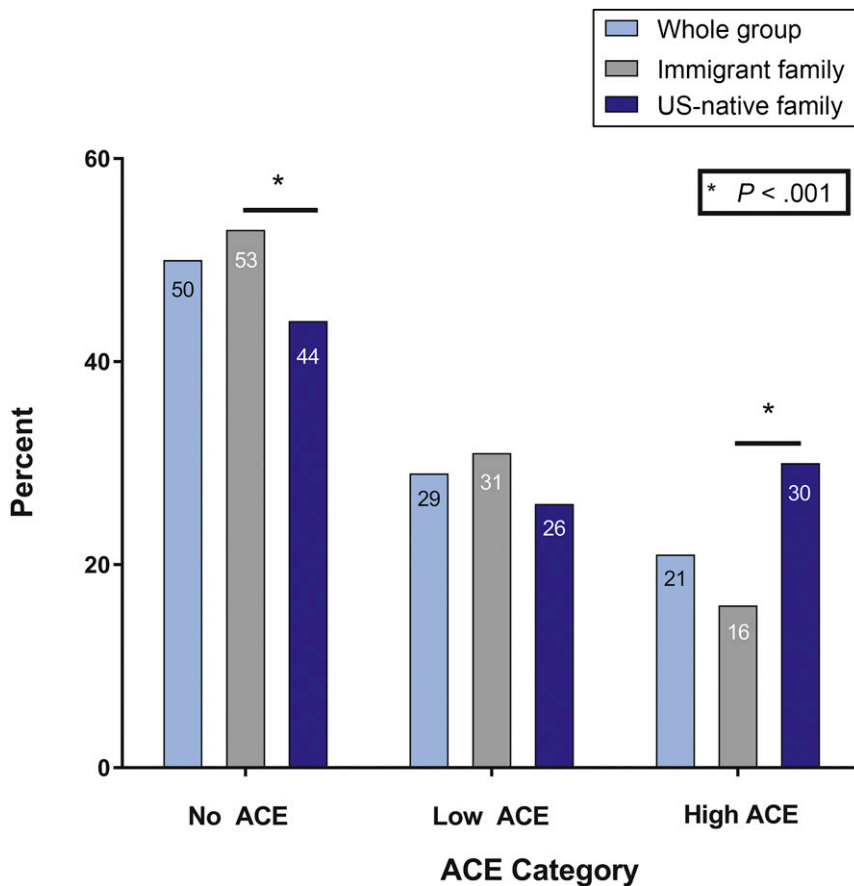


FIGURE 1
Prevalence of ACEs (percentage) by immigrant family status.

Initiative, to account for the 9% missing data in the household income-to-poverty ratio; therefore, we retained this variable in our analyses.²² Although the level of missingness for maternal mental health was 6%, we chose to retain this variable because of correlation of poor maternal mental health with risk for ACE exposure.²⁶ Listwise deletion was employed. All analyses were conducted with Stata version 13 (StataCorp, College Station, TX), accounting for survey sampling weights.

RESULTS

Hispanic children in immigrant families comprised 66% of the study sample. Family and child characteristics by immigrant family status are displayed in Table 1.

In general, children in immigrant families were more likely than children in US-native families to live in a low-income household ($\leq 200\%$ of the FPL), have public insurance or no insurance, participate in public benefits, live in a nonsingle woman family structure, and live in a home in which their highest parental educational attainment was less than high school.

The prevalence of high ACE exposure (≥ 2 ACEs) was significantly higher in children in US-native families compared with children in immigrant families (30% vs 16%; $P < .001$). Children in immigrant families had higher prevalence of no ACE exposure compared with children in US-native families (53% vs 44%; $P < .001$) (Fig 1). For both groups, parental divorce and economic hardship were the

most prevalent ACE exposures (Fig 2). A summary of individual ACE questions by immigrant family status and a summary of family and child characteristics by ACE category are available in Supplemental Tables 3 and 4, respectively.

The results of unadjusted and adjusted multinomial regression models are shown in Table 2. In the unadjusted models, children in immigrant families had significantly lower odds of high ACE exposure (versus no ACE exposure) than children in US-native families. The odds of any ACE exposure by child and family characteristics were generally similar in magnitude and direction in both Hispanic family groups. In adjusted models, children in immigrant families still had significantly lower odds of ACE exposure compared with children in US-native families (adjusted odds ratio [aOR]: 0.5 [95% confidence interval (CI): 0.34–0.61]) (Table 2). The relationship between family and child characteristics and the odds of ACE exposure were similar by Hispanic immigrant family status. Poor maternal mental health and single woman family structure had the strongest associations with ACE exposure in both groups. Similarly, in both groups, low-income or middle-income households ($\leq 200\%$ of FPL or 201%–400%) were associated with twice the odds of high ACE exposure compared with the high-income reference group.

Notably, a high school or less than high school education was significantly associated with decreased odds of high ACE exposure in children in immigrant families only (high school aOR: 0.6 [95% CI: 0.37–0.81], less than high school aOR: 0.6 [95% CI: 0.42–0.92]). Lack of a supportive family environment was significantly associated with increased odds of high ACE exposure in children in immigrant families only (aOR: 1.7 [95% CI: 0.1.17–2.43]). Participation in public insurance

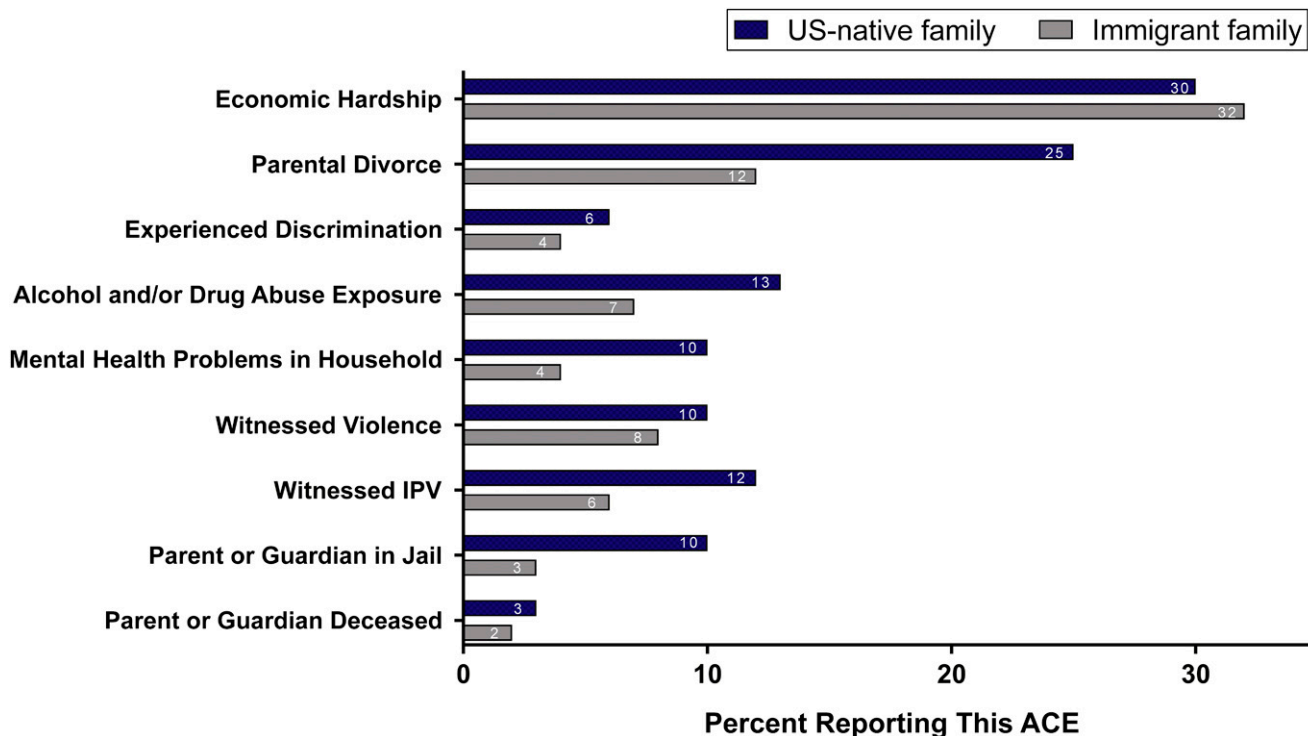


FIGURE 2 Individual ACEs reported (percentage) by immigrant family status. IPV, intimate partner violence.

(versus private) was significantly associated with a higher odds of any ACE exposure in children in US-native families only, but participation in other public benefits was not associated with ACE exposure in either group. In the US-native group, after adjusting for child and family characteristics, the odds of high ACE exposure for children of mothers with fair or poor maternal mental health decreased by half from 6.2 (95% CI: 2.94–13.04) to 3.2 (95% CI: 1.27–7.88). Similarly, the odds of high ACE exposure decreased by half for income $\leq 200\%$ of FPL in the US-native adjusted model from 4.4 (95% CI: 2.81–6.83) to 2.3 (95% CI: 1.31–3.91).

DISCUSSION

We found that the odds of high ACE exposure were greater among children in US-native Hispanic families compared with children in immigrant families. This disparity was not explained by differences in child and

family characteristics between the 2 Hispanic family groups. There are at least 2 possible explanations for this finding. First, there may be additional unmeasured confounders that buffer Hispanic children from ACE exposure in immigrant families, and/or negative effects of unmeasured factors for Hispanic children in US-native families. Second, ACE questions may not be capturing the adverse experiences specific to immigrant families.

The literature on resilience in immigrant families shows that strong family and community networks can buffer the effects of ACE exposure.^{27–30} In addition, religious and spiritual values among Hispanic immigrant parents and positive cultural identity among Hispanic youth correlate with positive self-rated health and ability to cope with mental health issues, discrimination, and stressful life events.^{31–33} When parents are resilient to their circumstances, they may be better able to buffer the effects of negative

exposures on their children. When youth are grounded in their cultural identities, they may be better able to thrive in the face of stressors. The authors of emerging studies are responding to the need to account for some of these important factors by proposing an expansion of adversity scale domains to include questions about family strengths, cultural values, child self-regulation, and parental skills.^{34,35}

On the other hand, it is possible that adverse experiences and environments that are specific to the immigrant experience are not reflected in traditional measures of ACE exposure, including measures used in the NSCH. For example, the potential emotional consequences of an absent parent are likely universal among children. In immigrant families, death, divorce, and incarceration are not the only reasons for parental absence, but they are the only types of parental absence included in traditional ACE questions. Children

TABLE 2 Unadjusted Odds Ratio and aOR of Low or High ACE (Compared With no ACE) by Child and Family Characteristics Compared With Reference Groups

Family and Child Characteristics	All Hispanic Sample, N = 12 162		Child in Immigrant Family, n = 6863		Child in US-Native Family, n = 5299		
	ACE	Unadjusted OR (95% CI)	aOR (95% CI)	Unadjusted OR (95% CI)	aOR (95% CI)	Unadjusted OR (95% CI)	aOR (95% CI)
Immigrant family group							
Child in immigrant family	L	1.0 (0.79–1.18)	0.8 (0.66–1.16)	—	—	—	—
	H	0.4 (0.36–0.55) ^a	0.5 (0.34–0.61) ^a	—	—	—	—
Child in US-native family		Ref	Ref	—	—	—	—
Income, % of FPL							
≤200% of FPL	L	2.6 (2.00–3.54) ^a	2.1 (1.45–3.09) ^a	2.9 (1.81–4.59) ^a	2.2 (1.31–3.77) ^a	2.7 (1.81–4.17) ^a	1.8 (0.99–3.32)
	H	2.2 (1.59–3.14) ^a	2.2 (1.45–3.39) ^a	2.3 (1.16–4.39) ^a	2.1 (1.04–4.31) ^a	4.4 (2.81–6.83) ^a	2.3 (1.31–3.91) ^a
201%–400% of FPL	L	1.9 (1.30–2.64) ^a	1.8 (1.29–2.55) ^a	1.3 (0.74–2.20)	1.2 (0.71–2.08)	2.6 (1.62–4.07) ^a	2.5 (1.62–3.82) ^a
	H	2.0 (1.33–3.00) ^a	2.3 (1.50–3.40) ^a	1.7 (0.78–3.73)	2.3 (1.08–5.10) ^a	2.5 (1.52–4.04) ^a	2.3 (1.48–3.72) ^a
≥401% of FPL		Ref	Ref	Ref	Ref	Ref	Ref
Highest household education							
<High school	L	1.6 (1.27–1.97) ^a	1.1 (0.81–1.45)	1.7 (1.32–2.2) ^a	1.1 (0.76–1.42)	2.1 (1.11–3.99) ^a	1.2 (0.54–2.53)
	H	1.0 (0.78–1.30)	0.6 (0.44–0.89) ^a	1.3 (0.89–1.77)	0.6 (0.42–0.92) ^a	2.4 (1.31–4.3) ^a	0.6 (0.26–1.21)
High school	L	1.3 (1.00–1.59) ^a	1.0 (0.76–1.28)	1.4 (1.0–1.83) ^a	1.0 (0.71–1.35)	1.3 (0.83–1.89)	1.0 (0.65–1.62)
	H	0.9 (0.72–1.20)	0.7 (0.47–0.90) ^a	0.9 (0.61–1.32)	0.6 (0.37–0.81) ^a	1.4 (0.96–2.1)	0.8 (0.50–1.41)
>High school		Ref	Ref	Ref	Ref	Ref	Ref
Family structure							
Single woman	L	2.3 (1.81–3.00) ^a	1.9 (1.46–2.51) ^a	2.3 (1.68–3.11) ^a	1.9 (1.35–2.62) ^a	2.5 (1.62–3.78) ^a	2.2 (1.38–3.59) ^a
	H	6.2 (4.79–8.00) ^a	5.2 (3.94–6.92) ^a	5.8 (4.09–8.10) ^a	5.4 (3.67–7.82) ^a	5.4 (3.65–8.09) ^a	5.3 (3.41–8.14) ^a
Nonsingle woman		Ref	Ref	Ref	Ref	Ref	Ref
Maternal mental health							
Fair or poor	L	2.4 (1.65–3.51) ^a	2.0 (1.34–3.00) ^a	2.3 (1.59–3.46) ^a	2.0 (1.29–3.08) ^a	3.0 (1.22–7.28) ^a	1.8 (0.73–4.52) ^a
	H	4.7 (3.28–6.71) ^a	3.8 (2.47–5.90) ^a	4.8 (3.09–7.42) ^a	4.1 (2.49–6.76) ^a	6.2 (2.94–13.04) ^a	3.2 (1.27–7.88) ^a
Good, very good, or excellent		Ref	Ref	Ref	Ref	Ref	Ref
Supportive family environment							
No	L	1.7 (1.32–2.07) ^a	1.4 (1.08–1.77) ^a	1.6 (1.28–2.09) ^a	1.4 (1.04–1.75) ^a	2.2 (1.17–4.25) ^a	1.7 (0.84–3.40)
	H	1.9 (1.47–2.39) ^a	1.7 (1.22–2.27) ^a	2.4 (1.79–3.32) ^a	1.7 (1.17–2.43) ^a	3.0 (1.76–5.0) ^a	1.8 (0.96–3.45)
Yes		Ref	Ref	Ref	Ref	Ref	Ref
Participation in public benefits							
No	L	0.6 (0.51–0.74) ^a	0.9 (0.68–1.11)	0.6 (0.46–0.72) ^a	0.8 (0.57–1.00)	0.7 (0.46–0.94) ^a	1.4 (0.87–2.40)
	H	0.6 (0.48–0.74) ^a	0.9 (0.65–1.20)	0.6 (0.45–0.81) ^a	0.8 (0.51–1.14)	0.4 (0.29–0.59) ^a	1.3 (0.78–2.21)
Yes		Ref	Ref	Ref	Ref	Ref	Ref
Child health status							
Fair or poor	L	1.8 (1.16–2.67) ^a	1.3 (0.85–2.07)	1.6 (1.02–2.49) ^a	1.2 (0.73–1.92)	3.7 (1.34–10.34) ^a	2.7 (0.97–7.75)
	H	2.5 (1.59–3.8) ^a	1.8 (1.05–3.15) ^a	2.7 (1.63–4.50) ^a	1.7 (0.88–3.20)	5.2 (2.24–11.89) ^a	3.3 (1.19–9.38) ^a
Good, very good, or excellent		Ref	Ref	Ref	Ref	Ref	Ref

TABLE 2 Continued

Family and Child Characteristics	ACE	All Hispanic Sample, N = 12 162		Child in Immigrant Family, n = 6863		Child in US-Native Family, n = 5299	
		Unadjusted OR (95% CI)	aOR (95% CI)	Unadjusted OR (95% CI)	aOR (95% CI)	Unadjusted OR (95% CI)	aOR (95% CI)
Insurance type	L	1.7 (1.40–2.13) ^a	1.1 (0.78–1.43)	1.7 (1.28–2.25) ^a	0.9 (0.59–1.26)	2.2 (1.5–3.1) ^a	1.7 (1.05–2.70) ^a
		1.7 (1.37–2.19) ^a	1.3 (0.92–1.86)	1.6 (1.1–2.4) ^a	1.0 (0.60–1.58)	3.3 (2.3–4.7) ^a	2.0 (1.24–3.31) ^a
		1.8 (1.24–2.52) ^a	1.1 (0.78–1.73)	1.9 (1.27–2.91) ^a	1.1 (0.66–1.66)	1.4 (0.6–3.4)	1.2 (0.50–2.96)
		2.0 (1.36–2.9) ^a	2.2 (1.41–3.41) ^a	2.5 (1.51–4.1) ^a	1.9 (1.08–3.22) ^a	2.8 (1.25–6.02) ^a	2.3 (1.01–5.16) ^a
		Ref	Ref	Ref	Ref	Ref	Ref

H, high ACE exposure (≥ 2 ACEs); L, low ACE exposure (1 ACE); OR, odds ratio; Ref, reference; —, not applicable.

^a Significance <0.05.

may experience prolonged separation from parents related to parental deportation, complicated and often discriminatory immigration policies, and financial limitations.^{36–38} The indefinite nature of these separations has powerful consequences on childhood attachment, and emotional, social, and physical health.^{36,37} Including a question on deportation and migration-associated parental separation would likely increase the prevalence of ACE exposure in the immigrant family group and reduce the differences seen across Hispanic family groups.

Restructuring existing ACE questions may be another approach to capturing experiences relevant to Hispanic families. One example from this data set is a question about experiencing unfair treatment or judgment (“Was the child ever treated or judged unfairly because of [his or her] race or ethnic group?”). The prevalence of positive response to this question was similarly low in both groups (4% for children in immigrant families and 6% for children in US-native families, $P < .042$). One reason may be that the parent may not be fully aware of their child’s experiences outside the home. One cross-sectional study of >5000 preadolescent fifth-graders across 3 urban cities found that African American and Hispanic children were more likely to report perceived racial and/or ethnic discrimination than white children, and 80% of these experiences occurred at school.³⁹

Another possibility is that the discrimination question aimed at the child may not capture systematic exclusion from resources. Immigrant prejudice, racism, and discrimination may be a part of an immigrant family’s experience, often manifesting as exclusion from health, housing, and economic resources.³⁷ Discrimination among Hispanic adults and adolescents is associated with depression, family dysfunction,

and alcohol and substance use; in younger children, discrimination is associated with depression, attention-deficit/hyperactivity disorder, and conduct disorder.^{39–43} Perhaps we would see a greater prevalence of this ACE and be able to more directly address the associated negative health consequences if survey participants were provided with examples of unfair judgment and treatment and if the question extended to the primary caregiver’s experiences. There are also limited, if any, data on immigrant families’ interpretation of ACEs questions. Culturally and linguistically appropriate translations of questions across the heterogeneous Hispanic immigrant population may be difficult to achieve.^{44,45} There is also concern for social desirability bias given families’ vulnerable position as immigrants.^{46–48} Ultimately, the absence of ACE questions related to the immigrant experience may limit identification of trauma experienced by immigrant children, whereas variation in cultural and linguistic interpretation of ACE questions may compromise comparison of responses across language and cultural differences.

Adverse experiences and poverty are closely linked.⁶ In our analysis, children in immigrant families had significantly higher prevalence of poverty but experienced fewer ACEs. If an ACEs screener is used in a clinical setting to identify and connect families with resources, it may fail to identify a significant portion of in-need, low-income Hispanic families because they have a low ACEs score. Although screening tools can be useful in a busy clinical practice, it is important to maintain the ability to efficiently and effectively identify specific social needs that mediate effects of adversity, such as food and housing insecurity and other social determinants of health for which evidence-based screening and supports exist.⁴⁹ On the basis of our findings, in practices that serve

Hispanic immigrant families, we would not recommend using ACE score to decide whether to connect families to support services. There is ongoing research on how providing support to families on the basis of screening for social determinants such as food, housing, or economic insecurity may be a better way to address these social needs.^{50,51}

These findings must be interpreted within the context of potential limitations. As with most observational data, we cannot draw causal inferences as to how social, family, and child characteristics influence the presence or absence of ACE exposure, nor can we capture a child's coping response to an ACE exposure. Because foreign-born children were combined with US-born children with at least 1 immigrant parent, there may be limitations in generalizing our findings to all foreign-born Hispanic children. In addition, the NSCH does not collect data related to citizenship or documentation status. The absence of immigration status data limit analysis of ACE exposure and immigrant legal status. The sample was not stratified by country of origin, and factors like mental health disorders, for example, may vary by country of origin and length of time in the United States.⁵²

Another limitation of this data set is there may be variability in cultural perception of adversity, which may influence ACE reporting, particularly among immigrant family groups. For example, there is some evidence that African Americans underreport racism and discrimination as a significant stressor, because these experiences may be perceived as commonplace in some segregated

communities.⁵³ In addition, the national-level data provided by NSCH do not allow us to account for variability in state-funded and county-funded health and social benefit programs for immigrants, which may affect the prevalence and risk of ACE exposure.

We also found some relationships between ACE exposure and family and child characteristics that were unexpected and were not consistent with general findings on this topic. Specifically, higher parental education correlated with greater odds of ACE exposure for Hispanic children in immigrant families. Particular to immigrant adults, higher education may not result in better financial opportunities because of legal exclusion from higher-paying employment. Similarly, participation in public (versus private) insurance only significantly correlated with ACE exposure in US-native families. This may be due to the smaller sample of Hispanic children in immigrant families with private insurance. We postulate that in US-native families, for whom eligibility for private insurance is potentially greater, participation in public insurance correlates more closely with poverty and associated stressors than for children in immigrant families. Further analyses would be needed to draw conclusions from these relationships.

CONCLUSIONS

Capturing the experiences of children in immigrant families is crucial to understanding and supporting their health and well-being. It is well established that ACEs in childhood have formative impacts on the developing brain and

the neuroendocrine and immune systems.⁵⁴ Biological adaptations to adverse conditions can limit children's opportunities and contribute to health and educational disparities. The experiences of Hispanic children in immigrant families are broad, change with time, and may differ between generations of children. The experiences of many include a combination of poverty, discrimination, and violence exposure intertwined with strong cultural and family values, resilience, and determination to succeed. Current ACE measures may not fully capture buffers and adversities that are specific to children's experiences growing up in immigrant families.

The possibility of family separation at border detention facilities and increased detainment and deportation under Immigration and Customs Enforcement (ICE) is increasingly part of American political discourse. We know that parents have the power to help children heal from traumatic experiences, and policies aimed at separating families may have deleterious effects on a child's ability to thrive in the face of trauma.^{55,56} Now more than ever, it is crucial for clinicians and researchers to understand trauma and adversity in children in immigrant families to guide and support child health.

ABBREVIATIONS

ACE: adverse childhood experience
aOR: adjusted odds ratio
CI: confidence interval
FPL: federal poverty level
NSCH: National Survey of Children's Health

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REFERENCES

1. Passel JS, Cohn D. U.S. population projections: 2005-2050. Pew Research Center. 2008. Available at: www.pewhispanic.org/2008/02/11/us-population-projections-2005-2050/. Accessed January 10, 2017
2. Child Trends Databank. Immigrant children. 2014. Available at: www.childtrends.org/?indicators=immigrant-children. Accessed January 10, 2017
3. Woods T, Hanson D, Saxton S, Simms M. Children of immigrants: 2013 state trends update. 2016. Available at: www.urban.org/research/publication/children-immigrants-2013-state-trends-update. Accessed August 29, 2016
4. Wildsmith E, Alvira-Hammond M, Guzman L. A national portrait of Hispanic children in need. 2016. Available at: www.childtrends.org/publications/a-national-portrait-of-hispanic-children-in-need/. Accessed January 10, 2017
5. Capps R, Horowitz A, Fortuny K, Bronte-Tinkew J, Zaslow M. Young Children in Immigrant Families Face Higher Risk of Food Insecurity. 2009. Available at: <https://childtrends-ciw49tixgw5lbab.stackpathdns.com/wp-content/uploads/2009/02/Immigrant-Food-Security.pdf>. Accessed January 10, 2017
6. Shonkoff JP, Garner AS; Committee on Psychosocial Aspects of Child and Family Health; Committee on Early Childhood, Adoption, and Dependent Care; Section on Developmental and Behavioral Pediatrics. The lifelong effects of early childhood adversity and toxic stress. *Pediatrics*. 2012;129(1). Available at: www.pediatrics.org/cgi/content/full/129/1/e232
7. Shonkoff JP, Boyce WT, McEwen BS. Neuroscience, molecular biology, and the childhood roots of health disparities: building a new framework for health promotion and disease prevention. *JAMA*. 2009;301(21):2252–2259
8. American Academy of Pediatrics. Adverse childhood experiences and the lifelong consequences of trauma. 2014. Available at: https://www.aap.org/en-us/Documents/ttb_aces_consequences.pdf. Accessed August 29, 2016
9. Pascoe JM, Wood DL, Duffee JH, Kuo A; Committee on Psychosocial Aspects of Child and Family Health; Council on Community Pediatrics. Mediators and adverse effects of child poverty in the United States. *Pediatrics*. 2016;137(4):e20160340
10. Conroy K, Sandel M, Zuckerman B. Poverty grown up: how childhood socioeconomic status impacts adult health. *J Dev Behav Pediatr*. 2010;31(2):154–160
11. Child Trends Databank. Children in poverty. 2016. Available at: www.childtrends.org/indicators/children-in-poverty/. Accessed September 10, 2016
12. Child Trends Databank. Adverse experiences. 2013. Available at: www.childtrends.org/indicators/adverse-experiences/. Accessed September 10, 2016
13. Mendoza FS. Health disparities and children in immigrant families: a research agenda. *Pediatrics*. 2009;124(3 suppl 3):S187–S195
14. Markides KS, Coreil J. The health of Hispanics in the southwestern United States: an epidemiologic paradox. *Public Health Rep*. 1986;101(3):253–265
15. Vaughn MG, Salas-Wright CP, Huang J, Qian Z, Terzis LD, Helton JJ. Adverse childhood experiences among immigrants to the United States. *J Interpers Violence*. 2017;32(10):1543–1564
16. Teruya SA, Bazargan-Hejazi S. The immigrant and Hispanic paradoxes: a systematic review of their predictions and effects. *Hisp J Behav Sci*. 2013;35(4):486–509
17. Baron-Lee J, Bonner B, Knapp C, Bright M, Hinojosa M. Factors associated with having a medical home for children at-risk of experiencing negative events: results from a national study. *Matern Child Health J*. 2015;19(10):2233–2242
18. Bethell CD, Newacheck P, Hawes E, Halfon N. Adverse childhood experiences: assessing the impact on health and school engagement and the mitigating role of resilience. *Health Aff (Millwood)*. 2014;33(12):2106–2115
19. Wing R, Gjelsvik A, Nocera M, McQuaid EL. Association between adverse childhood experiences in the home and pediatric asthma. *Ann Allergy Asthma Immunol*. 2015;114(5):379–384
20. Kerker BD, Zhang J, Nadeem E, et al. Adverse childhood experiences and mental health, chronic medical conditions, and development in young children. *Acad Pediatr*. 2015;15(5):510–517
21. Heerman WJ, Krishnaswami S, Barkin SL, McPheeters M. Adverse family experiences during childhood and adolescent obesity. *Obesity (Silver Spring)*. 2016;24(3):696–702
22. Blumberg SJ, Foster EB, Frasier AM, et al. Design and operation of the National Survey of Children's Health, 2007. *Vital Health Stat 1*. 2012;(55):1–149
23. Felitti VJ, Anda RF, Nordenberg D, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) study. *Am J Prev Med*. 1998;14(4):245–258
24. Hao L, Bonstead-Bruns M. Parent-child differences in educational expectations and the academic achievement of immigrant and native students. *Sociol Educ*. 1998;71(3):175–198
25. Child and Adolescent Health Measurement Initiative (CAHMI). 2011-2012 NSCH: child health indicator and subgroups SAS codebook, version 1.0. 2013. Available at: <http://www.childhealthdata.org/docs/nsch-docs/>

sas-codebook_2011-2012-nsch-v1_05-10-13.pdf. Accessed August 29, 2016

26. Goodman SH, Rouse MH, Connell AM, Broth MR, Hall CM, Heyward D. Maternal depression and child psychopathology: a meta-analytic review. *Clin Child Fam Psychol Rev*. 2011;14(1):1–27
27. American Psychological Association, Presidential Task Force on Immigration. Crossroads: the psychology of immigration in the new century. 2012. Available at: <http://www.apa.org/topics/immigration/immigration-report.pdf>. Accessed January 10, 2017
28. Linton JM, Choi R, Mendoza F. Caring for children in immigrant families: vulnerabilities, resilience, and opportunities. *Pediatr Clin North Am*. 2016;63(1):115–130
29. Gallo LC, Penedo FJ, Espinosa de los Monteros K, Arguëlles W. Resiliency in the face of disadvantage: do Hispanic cultural characteristics protect health outcomes? *J Pers*. 2009;77(6):1707–1746
30. Javier JR, Festa N, Florendo E, Mendoza FS. Children in immigrant families: the foundation for America's future. *Adv Pediatr*. 2015;62(1):105–136
31. Krause N, Bastida E. Religion, suffering, and self-rated health among older Mexican Americans. *J Gerontol B Psychol Sci Soc Sci*. 2011;66(2):207–216
32. Caplan S, Escobar J, Paris M, et al. Cultural influences on causal beliefs about depression among Latino immigrants. *J Transcult Nurs*. 2013;24(1):68–77
33. Finch BK, Vega WA. Acculturation stress, social support, and self-rated health among Hispanics in California. *J Immigr Health*. 2003;5(3):109–117
34. Shonkoff JP. Capitalizing on advances in science to reduce the health consequences of early childhood adversity. *JAMA Pediatr*. 2016;170(10):1003–1007
35. Finkelhor D, Shattuck A, Turner H, Hamby S. A revised inventory of adverse childhood experiences. *Child Abuse Negl*. 2015;48:13–21
36. Suárez-Orozco C, Todorova ILG, Louie J. Making up for lost time: the experience of separation and reunification among immigrant families. *Fam Process*. 2002;41(4):625–643
37. Enchautegui ME, Menjívar C. Paradoxes of family immigration policy: separation, reorganization, and reunification of families under current immigration laws. *Law Policy*. 2015;37(1–2):32–60
38. Gindling TH, Poggio S. Family separation and reunification as a factor in the educational success of immigrant children. *J Ethn Migr Stud*. 2012;38(7):1155–1173
39. Coker TR, Elliott MN, Kanouse DE, et al. Perceived racial/ethnic discrimination among fifth-grade students and its association with mental health. *Am J Public Health*. 2009;99(5):878–884
40. Perreira KM, Gotman N, Isasi CR, et al. Mental health and exposure to the United States: key correlates from the Hispanic community health study of Latinos. *J Nerv Ment Dis*. 2015;203(9):670–678
41. Unger JB, Schwartz SJ, Huh J, Soto DW, Baezconde-Garbanati L. Acculturation and perceived discrimination: predictors of substance use trajectories from adolescence to emerging adulthood among Hispanics. *Addict Behav*. 2014;39(9):1293–1296
42. Céspedes YM, Huey SJ Jr. Depression in Latino adolescents: a cultural discrepancy perspective. *Cultur Divers Ethnic Minor Psychol*. 2008;14(2):168–172
43. Umaña-Taylor AJ, Updegraff KA. Latino adolescents' mental health: exploring the interrelations among discrimination, ethnic identity, cultural orientation, self-esteem, and depressive symptoms. *J Adolesc*. 2007;30(4):549–567
44. Ponce NA, Lavarreda SA, Yen W, Brown ER, DiSogra C, Satter DE. The California Health Interview Survey 2001: translation of a major survey for California's multiethnic population. *Public Health Rep*. 2004;119(4):388–395
45. Harkness JA, Schoua-Glusberg A. Questionnaires in translation. In: Harkness JA, ed. *ZUMA-Nachrichten Spezial No. 3. Cross-Cultural Survey Equivalence*. Mannheim, Germany: ZUMA; 1998:87–126
46. Hopwood CJ, Flato CG, Ambwani S, Garland BH, Morey LC. A comparison of Latino and Anglo socially desirable responding. *J Clin Psychol*. 2009;65(7):769–780
47. Lee S, Schwarz N, Goldstein LS. Culture-sensitive question order effects of self-rated health between older hispanic and non-hispanic adults in the United States. *J Aging Health*. 2014;26(5):860–883
48. Brown A. The unique challenges of surveying US Latinos. Pew Research Center. 2015. Available at: www.pewresearch.org/2015/11/12/the-unique-challenges-of-surveying-u-s-latinos/. Accessed July 21, 2016
49. Garg A, Toy S, Tripodis Y, Silverstein M, Freeman E. Addressing social determinants of health at well child care visits: a cluster RCT. *Pediatrics*. 2015;135(2). Available at: www.pediatrics.org/cgi/content/full/135/2/e296
50. Chung EK, Siegel BS, Garg A, et al. Screening for social determinants of health among children and families living in poverty: a guide for clinicians. *Curr Probl Pediatr Adolesc Health Care*. 2016;46(5):135–153
51. Gottlieb LM, Hessler D, Long D, et al. Effects of social needs screening and in-person service navigation on child health: a randomized clinical trial. *JAMA Pediatr*. 2016;170(11):e162521
52. Alegría M, Canino G, Shrout PE, et al. Prevalence of mental illness in immigrant and non-immigrant U.S. Latino groups. *Am J Psychiatry*. 2008;165(3):359–369
53. Wade R Jr, Shea JA, Rubin D, Wood J. Adverse childhood experiences of low-income urban youth. *Pediatrics*. 2014;134(1). Available at: www.pediatrics.org/cgi/content/full/134/1/e13
54. Johnson SB, Riley AW, Granger DA, Riis J. The science of early life toxic stress for pediatric practice and advocacy. *Pediatrics*. 2013;131(2):319–327
55. MacKenzie MJ, Bosk E, Zeanah CH. Separating families at the border: consequences for children's health and well-being. *N Engl J Med*. 2017;376(24):2314–2315
56. Linton JM, Griffin M, Shapiro AJ; Council on Community Pediatrics. Detention of immigrant children. *Pediatrics*. 2017;139(5):e20170483

Adverse Childhood Experiences Among Hispanic Children in Immigrant Families Versus US-Native Families

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