

Latino parents' links to deportees are associated with developmental disorders in their children

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Abstract

Aims: To examine how Latino parent's personal connection to immigrants is linked to their children's risk of being referred/diagnosed with a developmental disorder.

Methods: Using the 2015 Latino National Health and Immigration Survey ($n = 548$), we asked adults about their connections to immigrants. We also asked if their child has been referred/diagnosed with a developmental disorder. We estimated a series of regressions to predict increases in the probability of a child being referred/diagnosed for a developmental disorder.

Results: Respondents who know a deportee are 2.4 times more likely ($p = 0.009$) to report that their child has been referred or diagnosed with a developmental disorder. Additionally, knowing more deportees, and having a closer family tie with deportees, are all statistically associated with developmental problems.

Conclusions: This study adds to the emerging research on stress and child health, by examining the intersections of immigration policy, mental health, and child development.

KEYWORDS

child developmental disorders, deportations, health disparities, Latino populations

1 | INTRODUCTION

The US immigration policy and enforcement have ramped up efforts to increase border security and detain and deport undocumented immigrants. The increase in deportations, detentions, and criminalization of immigrants has not only impacted the fate of the 11 million undocumented immigrants in the US; this also has consequences for immigrants' families and their community (Gulbas & Zayas, 2017; Hagan, Castro & Rodriguez, 2010; García, 2017).

Of importance are the negative health consequences of immigration policies for Latino US citizen children (A. D. Martinez, Ruelas, & Granger, 2017). Over 5.9 million US citizen children are directly affected because they live with a family member or parent who is undocumented and at risk of being detained and deported (American Immigration Council, 2018; Asad & Clair, 2018; Ayón, 2015; Gelatt, 2016; Pew Hispanic Research Center, 2013; Vargas, 2015; Vargas & Ybarra, 2017). Many more US citizen children belonging to nonimmigrant families are indirectly affected because they have familial and community ties to immigrants (Dreby, 2012; Perreira & Ornelas, 2013; Valdez, Padilla & Lewis, 2013). Furthermore, personal and familial connections to immigrants are highest among Latino families, as Latinos compose the highest proportion of undocumented and deported individuals in the United States. The risk of deportation, family separation, and increased family stressors places Latino US citizen children in a vulnerable position that can have psychological implications (Conger et al., 2012; Köhler & Sola-Visner, 2014; Suárez-Orozco, Bang, & Kim, 2010).

A recent proposal suggests that children with connections to undocumented immigrants may be at risk for a wide range of negative developmental outcomes (Suárez-Orozco, Yoshikawa, Teranishi, & Suárez-Orozco, 2011). Although research has supported this proposal by showing that children with ties to undocumented immigrants are negatively impacted in the socioemotional, behavioral, and mental health domains (Rubens et al., 2013), it is less clear if ties to undocumented status increases the risk of developmental disorders in US Latino children, irrespective of their immigration status. Are Latino children with connections to undocumented immigrants at risk for learning, attention, language difficulties, or other developmental disorders? In the current study, we examine the association between Latino parents' personal connection to deportees and parental report of developmental disorders in their children.

1.1 | Connections to immigrants and child outcomes

Children whose parents, family members, and community members are undocumented encounter many challenges (Rubio-Hernandez & Ayón, 2016; Zayas, 2015; Vargas, Sanchez & Juarez 2017). To capture the various contexts that affect children with ties to undocumented immigrants, a recent proposal outlines, through a social-ecological perspective, how children's connections to undocumented immigrants affect their development (Suárez-Orozco et al., 2011). Factors that affect children with links to undocumented immigrants exist at the macro-level of the environment (policies, legislation, and the underutilization of social services), the microlevel (family dynamics and school contexts), and interact with factors at the individual level (worries about deportation). Critically, Suárez-Orozco et al. (2011) proposed that these factors are likely to shape all aspects of development, including socioemotional development, mental well-being, cognitive development, and school performance.

Recent research supports the role of ties to unauthorized family and community members and the socioemotional well-being of children. Stress, anxiety disorders, and depression have been commonly found among children who have witnessed or been exposed to the detention and/or deportation proceedings of family members (Capps, Castaneda, Chaudry, & Santos, 2007; Chaudry et al., 2010; Coffey, Kaplan, Sampson, & Tucci, 2010; Kremer, Moccio, & Hammell, 2009; Yoshikawa, 2011; Zayas, 2015). Family relationships are also disrupted, with parents with higher levels of legal vulnerability experiencing higher levels of poor emotional well-being and poor relationships with their children (Brabeck & Xu, 2010). Furthermore, children of undocumented immigrants have higher levels of both internalized (depression and anxiety) and externalized (rule breaking and displayed irritability) behaviors compared to those with naturalized or citizen parents (Landale, Hardie, Oropesa, & Hillemeier, 2015).

A new literature is also finding that ties to undocumented immigrants have widespread impacts on Latino children irrespective of immigrant status. Latino families and their children have the strongest ties to undocumented individuals, as Latinos compose the largest undocumented (71% are from Mexico and Central America) and deported (97% of deportees come from Mexico, Central, and South America) population in the US (Dominguez Villegas & Rietig, 2015). A recent study highlights the widespread impact that immigration policy has

on Latino children. Latino children reported fear of family instability and separation even when all members of their families were documented (Dreby, 2012). Enriquez (2015) describes this process as “multigenerational” punishment, where US citizen children often share in the risks and punishment associated with the unauthorized status of their families. These findings demonstrate that the connections families have to undocumented immigrants and deportees negatively impacts children's emotional and psychological health, and additionally, these impacts are widespread among immigrant and nonimmigrant Latino families.

Although this evidence links children's connections to unauthorized immigrants to a wide variety of health outcomes outlined in Suárez-Orozco et al.'s (2011) proposal, it leaves open the question of whether developmental health is affected by immigration policies (Lawton, Kapke, & Gerdes, 2016; Suárez-Orozco et al., 2011). Developmental health encompasses a wide variety of skills acquired during early development, including learning, cognitive, attentional, and language abilities. Problems or delays in development often place children at risk for a diagnosis of a developmental disorder such as communication disorders, intellectual disability, attention deficit hyperactivity disorder, and autism spectrum disorder (American Psychiatric Association, 2013). Many factors influence the risk of a child being referred to or diagnosed with a developmental disorder, including the type of disorder, gender, and insurance coverage. Previous research suggests that social factors also influence young children's risk of being diagnosed with a developmental disorder. For example, minority children and children below the poverty line have an increased risk of being diagnosed with a developmental disorder than their majority, higher-income counterparts (Child Trends, 2014).

Are children in families who have ties to undocumented immigrants more likely to exhibit developmental impairments? Based on the stress process theory, we propose that the stress that stems from fear and threat of deportation in immigrant communities has spillover effects on children's developmental health. Specifically, families who have close links to individuals who have been deported may suffer the highest stress, disrupting lives and relationships, therefore impacting the developmental trajectory of children. Furthermore, these impacts may be widespread for Latino children regardless of documentation status, given the strong ties that Latinos have to immigrant communities.

1.2 | Connections to deportees and stress

How might connections with undocumented immigrants impact developmental health and increase the risk of developmental disorders in children? One possible mechanism is stress. Pearlin's (1989) stress process theory posits that an individual's social location and structural contexts expose them to varying levels of stressors. Importantly, a traumatic event, an unwanted change in social status, or chronic strain can produce stress proliferation, the presence of additional stressors beyond the original one. These stressors not only affect the individual, but they have consequences for the individuals' familial and social networks (Merton, 1949).

There are multiple, nonmutually exclusive pathways by which ties to undocumented individuals may proliferate stress and increase the risk of developmental disorders. The first is the direct effect of deportation on the individual child. Children with undocumented family members have been found to have higher stress and worries of deportation than their nonimmigrant counterparts (Zayas, 2015). Even Latino children who do not belong to legally vulnerable families themselves worry about family separation (Dreby, 2012). Importantly, stress in early childhood has strong consequences for development. Early life stress and chronic childhood stress have been linked to changes and delays in the brain and cognitive development (Farah et al., 2006; Hanson et al., 2013). The stress that a child experiences may also disrupt their school performance and the ability to concentrate in class, further negatively impacting children's learning in school (Salas, Ayón, & Gurrola, 2013). If children experience stressors related to their family members' undocumented status early in life, typical brain, cognitive, and educational development may be disrupted, increasing the risk of developmental disorders.

A second pathway deals with the effects of deportation on parents. Parents who have ties to individuals who are legally vulnerable, even when they themselves are not immigrants, may experience the stressful consequences

that come from deportation. Infants of mothers who report high levels of stress are at higher risk for negative birth outcomes, such as being born preterm and having low birth weight (DiPietro, 2012). These factors in turn place children at higher risk for developmental delays (Sherman & Shulman, 1997), with high maternal stress during pregnancy being linked to issues in cognitive performance in infancy (Bergman, Sarkar, O'Connor, Modi & Glover, 2007). If having a family member at risk of deportation generates higher levels of stress in mothers, their children may have a higher risk of negative birth outcomes and developmental problems. A recent study highlights this possibility (Novak, Geronimus, & Martinez-Cardoso, 2017). Infants born to Latina mothers after an immigration raid in Iowa were at higher risk for low birth weight than infants born to Latina mothers before the immigration raid. Critically, this effect was found for both immigrant Latina and US citizen Latina mothers, highlighting that the stress of immigration enforcement is widespread across the Latino community and has consequences for children's developmental health early on.

Finally, ties to undocumented individuals and the risk of deportation of those individuals may also impact family functioning. According to the Family Stress Model, hardships experienced by parents such as economic hardship or social stressors negatively impact parent-child relationships, which increase the risk of negative child outcomes, such as poor mental health (Conger et al., 2002, 2012; Conger, Conger, & Martin, 2010). In particular, sociocultural stressors in Latino parents have been found to be linked to substance use and mental health problems in Latino youth (Lorenzo-Blanco et al., 2016). The experience of having a family member, friend, or community member deported may strain familial relationships, disrupting typical development in the children of parents experiencing these stressors (Brabeck & Xu, 2010).

In sum, parents' connections to undocumented individuals and individuals who have been deported may increase stressors felt at the individual, parental, and familial levels, disrupting typical child development, and increasing the risk of developmental disorders. To date, however, no study has examined the association between parents' links to undocumented immigrants and their report of developmental disorders in their child. In this study, we examine parent's connections to deportees and their report of developmental impairments in their child. The goal was to better understand the implication and spillover effects that immigration policy has on the development of Latino children.

1.3 | The present study

Given the role that stress plays in early cognitive development and educational outcomes, children in families with close connections to undocumented and deported immigrants may be at a higher risk of developmental problems and therefore may be more likely to be referred for or diagnosed with a developmental disorder. As a first step to examine this issue, we contextualize Latino families' connections to undocumented immigrants by assessing if Latinos know individuals who have been deported and how Latinos are linked to deportees (e.g., whether they are family vs. friends). We then examined if knowing a deportee, and the type of relationship with a deportee, is linked with parents' report of developmental disorders in their child. Because Latinos are the highest population to be deported and undocumented, both immigrant and nonimmigrant Latinos may be more likely to be embedded in communities of and linked with undocumented individuals. We, therefore, focus our study on both immigrant and nonimmigrant Latinos. We argue that immigration policy disrupts families and communities, creating stress proliferation, and interrupting children's typical cognitive, intellectual, and language development. If this is the case, we should find not only that Latino parents' ties to deported and undocumented immigrants is related to the risk of their child having a developmental disorder, but that the number and strength of these connections matter for their child's developmental health.

For our study, we used cross-national quantitative data as this approach allows for a national assessment of Latinos' of different origins and citizenship status. This approach provides the ability to understand how widespread the effects of deportation policies may be on American children and their families. We utilize the Robert Wood Johnson Foundation (RWJF) Center for Health Policy at the University of New Mexico's (UNM) 2015 Latino National Health and Immigration Survey (LNHIS). Those surveyed consisted of majority Latinos who trace their roots to a variety of Latin American places (including Puerto Rico, but majority to Mexico). Furthermore,

respondents were both US citizens and noncitizens (with the majority being US citizens). The survey is ideal for our analysis given that it contains key self-reported measures relevant to our question: The nature of Latinos' personal connections with immigrants, and whether the child of a respondent has been referred for or diagnosed with a developmental disorder.

The key predictors in our study were parents' connections to undocumented individuals. The survey asked parents if (a) they knew someone who is undocumented, and (b) if they knew someone who has been deported for immigration reasons. Furthermore, we contextualized parents' relationship with the detained/deported individual they knew by using responses to about their relationship with the detainee/deportee (family, friend, or other), and if the detainee/deportee is the main breadwinner in their family. Recently, it was demonstrated that Latino adults who reported they knew a detainee/deportee, and those that knew a higher number of deportees, were more likely to report that they sought help from a mental health professional in the past 12 months (Vargas, Juarez, Sanchez, & Livaudais, 2018). This finding suggests that being connected with immigrants who have been detained and/or deported has consequences for Latino adults' mental health. Here, we examine if these connections have spill-over effects on Latinos' children.

The key outcome measures in our study were Latino parents' responses to two questions about their child's developmental health: If their child has been referred for testing because of a learning or concentration problem, and if their child has been diagnosed with a developmental disorder. The diagnosis question provides a direct measure of an actual diagnosis of a developmental disorder (through school and/or ambulatory care). The referral question serves as a broad measure of atypical behavior on the part of the child that has generated concern for a possible developmental issue. Because families with ties to individuals without documentation may lack access to health services (Gelatt, 2016; O. Martinez et al., 2015; Vargas, 2015; Vargas & Pirog, 2016), many children who exhibit issues in cognitive development and school performance may be referred for assessment without actually having had an official diagnosis. Finally, we measure parental reports of their children's developmental health as a large literature shows that parental report tends to be very accurate (Case, Lubotsky, & Paxson, 2002; Dadds, Stein, & Johnson Silver, 1995; Pastor & Reuben, 2005). Querying the parent directly not only provides an accurate report of their child's developmental health, but additionally provides the best method for collecting data from a large sample.

Our main questions concerned whether and how Latino parents' connections with individuals who have been deported or are undocumented are linked to a developmental problem in their child. To answer these questions, we first examined whether knowing an undocumented individual and knowing someone who has been detained/deported is predictive of parents' report of their child being referred or diagnosed with a developmental disorder. We then examined if the number of known deportees was significantly linked to the probability of reporting that their child was referred/diagnosed with a developmental disorder. Finally, we contextualized parents' relationships to the known deportee, and examined how the closeness and the significance of these relationships is linked to our child outcome. Specifically, we looked at whether the known deportee was a family member, a friend, or other, and whether the known deportee was a breadwinner.

If there is a link between Latino parents' connections to undocumented and deported immigrants, then we expect to find that parents who know someone who is undocumented or someone who has been deported are more likely to report a referral/diagnosis for a developmental disorder in their child. Furthermore, we expect that the more deportees a parent knows, and the closer and more significant their bond is with that individual (the known deportee is a family member and a breadwinner in their family), the higher the likelihood of reporting a developmental problem in their child.

2 | METHOD

2.1 | Sample and design

The sample in this study formed part of a large scale survey, the RWJF Center for Health Policy at the UNM 2015 LNHS. A total of 989 Latinos were interviewed over the phone and an additional 504 Latinos were sampled

through the Internet for the survey. The web mode contained the exact same questions as the phone mode.¹ All phone calls were administered by Pacific Market Research in Renton, Washington, doing business as Latino Decisions. The survey has an overall margin of error of $\pm 2.5\%$ with an American Association for Public Opinion Research response rate of 18% for the telephone sample. Latino Decisions selected the 44 states and Puerto Rico with the highest number of Latino residents for the sampling design, states that collectively account for 91% of the overall Latino adult population. A mix of cell phone (35%) only and landline (65%) households were included in the sample. The web focused respondents were randomly drawn from the Latino Decision's national panel of Latino adults. Respondents for the web are from a double-opt-in national Internet panel, randomly selected to participate in the study, and weighted to be representative of the Latino population.

Respondents across all modes of data collection could choose to be surveyed in either English or Spanish, and the full data set including both phone and web interviews are weighted to match the 2013 Current Population Survey universe estimate of Latino adults with respect to age, place of birth, gender, and state. The survey was approximately 28 min long and was fielded from 29 January 2015 to 12 March 2015.

The sample for the current study were respondents who reported they had children who were <18 years of age and who were living in the household at the time of the survey. After excluding missing data (50 observations) on both the dependent and independent variables, our final sample was composed of 548 parent respondents. Demographic details of the parent respondents and the child they responded for are summarized in Table 1.

The mean age of our parent respondents was 41 years and the mean age of their child for which they responded to the child outcome questions was 7.7 years. The majority of the parent respondents had at least a high school education, 53% of the parent respondents were married, and 19% of parent respondents did not have health insurance. In regard to citizenship, 74% of our parent respondents were US citizen, 16% were permanent residents, and 10% were noncitizens and nonpermanent residents. The majority of our sample indicated that they traced their ancestry to Mexico (57%), while 8% indicated they traced their ancestry to Puerto Rico. The remaining proportion of our sample traced their ancestry to 17 other countries in Latin America.² Just over half of our parent respondents completed the survey in English, and over half of parent respondents were female. The average rating that parents provided for their child's physical health was "very good" from the conventional self-rated health survey item.

2.2 | Measures

2.2.1 | Connection to immigrants variables

Our main explanatory variables are 10 "personal connections to immigrants" dichotomous categories as well as a rank variable that sums the total number of deportees parent respondents personally know. The survey items we drew from to create our first measures of personal connections to immigrants were: (a) *Do you personally know someone who has faced detention or deportation for immigration reasons?* (b) *Now take a moment to think about all the people in your family, your friends, coworkers, and other people you know. Do you happen to know somebody who may be an undocumented immigrant?*

We then created three mutually exclusive categories if respondents indicated they know someone who has been detained/deported (1 = yes, 0 = no), if they know someone who is undocumented only (1 = yes, 0 = no), and a category if they do not know either an undocumented or detained/deported immigrant (1 = yes, 0 = no), which we specify as our reference category.

¹We note that this mixed-mode approach improves the ability to capture a wide segment of the Latino population by providing a mechanism to poll the growing segment of the Latino population that lacks a land-line telephone as well as those who prefer to engage in surveys on-line. This approach is sensitive to some of the major shifts in survey methodology driven by changes in the communication behavior of the population.

²Other Latin American countries included: Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela.

TABLE 1 Weighted summary statistics, 2015 Latino National Health and Immigration Survey ($n = 548$)

Variables	Mean	Standard deviation	Min.	Max.
Developmental disorders ^a	0.18		0	1
Relationship with immigrants				
Personally know a deported immigrant	0.37		0	1
Personally know an undocumented immigrant	0.30		0	1
Do not personally know deportee or undocumented immigrant	0.33		0	1
Number of deportees known				
Do not know deportee	0.63		0	1
Know 1–2 deportees	0.33		0	1
Know 3–6 deportees	0.04		0	1
Contextual relationship with Immigrants				
Deportee is a relative	0.33		0	1
Deportee is a friend	0.45		0	1
Deportee is someone else	0.23		0	1
Deportee is family and main breadwinner	0.19		0	1
Child's self-rated physical health status ^b	4.20	0.97	1	5
Child's age ^c	7.76	5.56	0	18
Citizenship status: US citizen	0.74		0	1
Citizenship status: permanent resident	0.16		0	1
Citizenship status: undocumented	0.10		0	1
Female	0.54		0	1
Education ^d	5.40	2.21	1	10
Age ^e	41.02	15.80	18	76
Married ^f	0.53		0	1
Income missing				
Income: <20 k	0.19		0	1
Income: 20–39 k	0.22		0	1
Income: 40–60 k	0.14		0	1
Income: 60–80 k	0.09		0	1
Income: 80–100 k	0.06		0	1
Income: 100–150 k	0.07		0	1
Income: 150 k+	0.03		0	1
Currently uninsured ^g	0.19		0	1
Spanish ^h	0.42		0	1
Mexican origin	0.57		0	1

^aChildren's developmental disorders: 0 = no, 1 = child (0 = no, 1 = child has been referred or diagnosed with a developmental disorder) disorder.

^bChildren's self-rated health status: (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent).

^cChild's age (standard deviation = 5.54).

^dHighest education levels completed: (1 = no formal schooling, 2 = Grade 1–8, 3 = some HS, 4 = GED, 5 = HS graduate, 6 = some college, 7 = associates, 8 = bachelors, 9 = MA, 10 = Ph.D/MD), standard deviation = 2.22.

^eParent's age (standard deviation = 11.02).

^fMarried: (0 = unmarried, 1 = married), insurance coverage: (0 = currently insured, 1 = currently uninsured).

^gLanguage of interview: (0 = English, 1 = Spanish).

We additionally modeled the magnitude of Latinos' personal connections to deportees by creating an indicator that counts the number of different types of relationships to deportees. This variable was created using the responses to the relationship category question, which asks, "What is your relationship with the person who was detained or deported? Select all that apply." We counted each unique relationship category selected as a different deportee known (ranging from 0 to 6). We then summed up the number of responses on that list to create our ranked variable. Given that the mean of this variable is 0.58 and not normally distributed, we collapsed this rank-ordered variable into three categories of knowing a deportee (0 = none, 1 = 1–2 deportees, 3 = 3 deportees and above).

Finally, we contextualized the relationships of parent respondents to deportees. In the survey, if respondents indicated they knew a deportee, they were asked to report their relationship to the detained or deported person (s) by selecting from a list of different relationship categories (parent, partner, sibling, other family member, neighbor, coworker, yourself, colleague, friend, and other). Respondents could only select each relationship category once, regardless of whether they knew one or multiple deportees within that relationship category (e.g., a respondent who knew multiple individuals who were deported that were all friends would only select the "friend" category).

From these responses, we created three mutually exclusive categories: if any known deportees were a family member, a friend, or all else (1 = family member, 2 = friend, and 3 = all other). We additionally coded whether the known deportee was a main breadwinner and a family member. The economic breadwinner item asks respondents who know a deportee, "Was this person who was deported or detained the primary economic provider in their/your family?" From these variables, we coded a binary variable for respondents for who the known deportee was a family member AND breadwinner, versus all else (1 = deportee was the breadwinner and family member, 0 = all else). The goal was to assess the closeness of the relationship a parent responded had with the known deportee.

2.2.2 | Developmental disorders

The primary child developmental disorder outcome variables of interest deal with problems with developmental disorders within the LNHIS data set. The child developmental disorders variable was created by asking adults who had children under 18 years of age who were currently living at home two questions: (a) *Has this child ever been referred for testing because of a learning disorder or because he/she could not concentrate?* (b) *Has this child been diagnosed with a developmental disorder such as ADHD, autism, or language impairment?*

We combined the responses to these two questions to create a binary dependent variable coded as 1 = referred for testing because of a learning disorder or diagnosed with a development disorder, 0 = not referred or diagnosed. Given that families with ties to individuals who are legally vulnerable may lack access to health services (Gelatt, 2016; O. Martinez et al., 2015; Vargas, 2015) the diagnosis question alone may exclude individuals who do have a developmental disorder but have not been able to access services for a formal diagnosis. By joining the two measures together, we were able to also capture the presence of atypical behavior on the part of the child that has generated concern for a possible developmental issue. As we briefly mention later in the results section, examining each outcome separately yielded a similar pattern of results.

In an attempt to minimize biases in children's birth order (e.g., only receiving information on an oldest child vs. a youngest child in the household or only receiving information for children who are the namesake) the survey asked parents to provide responses for the child who has recently celebrated a birthday. In both questions, the survey did not restrict the questions with respect to who provided the referral/diagnosis, as the intent was to capture referral/diagnosis that may have occurred through school or through ambulatory care.

2.2.3 | Control variables

For all models, we control for a handful of parental and child measures that have been found to be correlated with child developmental disorders in previous research. Among the demographic variables, we include standard

measures of income, parent educational attainment, child age, parent age, parent marital status, parent gender, parent insurance coverage, and parent language. To assess income we included several dummy variables representing different income categories: <\$19,999, \$20,000–\$39,999, \$40,000–\$59,999, \$60,000–\$79,999, \$80,000–\$99,999, \$100,000–\$149,999, \$150,000, and above. The category “<\$19,999” served as the reference category. We also include a binary variable of “unknown” income in the model which includes respondents who did not report their income as a means of saving cases. For our measure of health insurance, we do not distinguish between private and public insurance. For our study, we were only interested if the parent is currently insured or uninsured.

Given our national focus on Latinos' of different origins and citizenship status, we included responses of parents who are Puerto Ricans and other non-Mexican origin as we also expected them to internalize anti-immigrant climate and personally have strong ties with undocumented immigrants. In fact, over 57% of Puerto Rican parents in the sample personally know either an undocumented immigrant or someone who has been deported. Moreover, there is an Agent in Charge of Immigration and Customs Enforcement (ICE)'s Homeland Security Investigations located in Puerto Rico who also oversees the US Virgin Islands. Given prior research and the fact that immigration enforcement has largely targeted Mexicans we include a dummy variable that captures if the parent respondent is of Mexican origin.

We also control for cultural and Latino-specific variables such as the language of interview, which has been used widely as a proxy for acculturation (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Torres, Driscoll, & Voell, 2012). Given our focus on immigration enforcement, we also control for a measure of the citizenship status of the parent respondent. To code citizenship status, we created three mutually exclusive categories from the survey question that explicitly asked: “Are you currently a US citizen, a Legal Permanent Resident, or a noncitizen?” Citizenship status is also relevant to our study given eligibility requirements and parent's unwillingness to visit a doctor or clinic due to fear of being deported. To control for child-specific variation, we include the age of the child and parent's report of their child's self-reported physical health status (1 = *poor* to 5 = *excellent*).

3 | RESULTS

3.1 | Analytic strategy

Our analytic approach is focused on conducting various categorical regressions to determine if our measures of parents' personal connections to immigrants (and our other contextual measures) are correlated with developmental problems among their Latino children. Analyses were conducted using four logistic regression models for which the outcome was if the respondent's child had been referred/diagnosed with a developmental disorder, and the predictors were our measures of relationships to deportees. In the first model, three indicators of respondent's relationships with immigrants (1 = *know a deportee*, 2 = *know an undocumented immigrant*, and 3 = *don't know either*) are examined, controlling for multiple covariates. Our second model examined whether the number of deportees (1 = *none*, 2 = *1–2 deportees*, 3 = *3 deportees and above*) contributed to the prediction of a respondent's child being referred/diagnosed with a developmental disorder. In our third model, we isolate respondents who know a deportee and estimate a logistic regression to test whether the type of personal relationship matters (1 = *family member deported*, 2 = *friend deported*, 3 = *all other deportees known*) on respondent's child being referred/diagnosed with a developmental disorder. Our last model tests whether the respondent's child being referred/diagnosed with a developmental disorder is magnified if the deportee known is a relative and a breadwinner (1 = *deportee was the breadwinner and family member*, 2 = *nonbreadwinner and family member*). Given the flexibility of multivariate logistic regression we can fit a model and hold all other covariates at their respective means or mode values. All statistical analyses were conducted using Stata 12 software (StataCorp., 2011) and survey weights were used to account for the complex survey design. Maximum likelihood estimation and postestimation techniques were used to gather predicted probabilities and test our questions.

3.2 | Summary statistics

3.2.1 | Connections to deportees

With respect to our predictor variables, connections to undocumented immigrants and deportees, we find that 37% of our parent respondents intimately know an immigrant who has been deported, 30% know an undocumented immigrant, and 33% did not know either a deportee or an undocumented immigrant. Importantly, the majority of both US citizen (75%) and noncitizen (78%) Latinos in our sample indicated knowing a deportee or undocumented immigrant. With respect to the number of deportees a parent respondent knows, we found that 63% of respondents know 0 deportees, 33% know 1–2 deportees, and 4% know 3 or more. To compare these numbers, the only published paper to model personal connections to immigrants uses data from 2013 and finds that 34% of Latinos know somebody that has been deported/undocumented, 36% know someone that is undocumented only, and 29% do not know either (Sanchez, Pedraza, & Vargas, 2015).

Of parent respondents who knew a deportee, 33% indicated that they knew a deportee that was a relative and 45% reported they knew a deportee that was a friend. Furthermore, 19% reported that they knew a deportee who was a family member and the main breadwinner.

3.2.2 | Developmental disorders

With respect to our outcome variable, 12% of the parent respondents stated that their child has been diagnosed with a developmental disorder. This is very similar to the national statistic, where about 11.90% of children living in poverty have been diagnosed by a school administrator as having a learning disability (Child Trends, 2014). The percentage for children who have been referred for diagnosis of a developmental problem is higher, at 15%. This may be due to the referral question, as mentioned above, being a broader measure than the diagnosis question, as it may capture atypical behavior that has caused concern over developmental problems but has not been diagnosed. The total percentage of parents who reported that their child has been referred or diagnosed with a developmental disorder is approximately 18%. Both US citizens (19%) and non-US citizens (14%) reported having a child being referred or diagnosed for a developmental disorder.

3.3 | Knowing a deportee/undocumented immigrant and developmental disorders

Our first analysis (Table 2, Model 1) tests the relation between knowing an undocumented immigrant or deportee, and the probability of a child being referred or diagnosed with a developmental disorder. Our main results show that both knowing a deportee and knowing someone who is undocumented are associated with the probability of a child being referred or diagnosed with a developmental disorder. Latinos parents who personally know someone that has been deported are 2.4 times more likely ($p = 0.009$, 95% confidence interval [CI] [0.27, 1.53]) to report that their child has been referred or diagnosed with a developmental disorder compared to Latinos parents who do not personally know someone that has been deported, holding all else constant. In other words, the odds of a Latino parent personally knowing someone that has been deported increases their odds of reporting developmental problems in their child by 139%.

We also find significant differences for respondents who personally know someone that is undocumented compared to not knowing an undocumented immigrant or deportee. Latino parents who personally know someone that is undocumented are 2.27 times more likely ($p = 0.023$, 95% CI [0.11, 1.53]) to report that their child has been referred or diagnosed with a developmental disorder compared to Latinos' who do not personally know someone that is undocumented or deported, holding all else constant.

The substantive impacts of these relationships are shown in Figure 1, which display the postestimation results of our logistic regression Model 1. Figure 1 graphs the adjusted predicted probabilities of Latinos' personal connections to immigrants on children's referral and diagnoses with a developmental problem. As shown, respondents who personally know an immigrant who has been detained or deported are statistically more likely to

TABLE 2 Logistic coefficients for regression of Latinos' personal connections to immigrants on child's referral and diagnoses of a developmental disorders, 2015 Latino National Health and Immigration Survey

Variables	Odds ratios			
	Model 1	Model 2	Model 3	Model 4
Reference category: do not know either				
Know deported immigrant	2.394***			
Know an undocumented immigrant	2.272**			
Reference category: do not know any deportees				
Personally know 1-2		1.158		
Personally know 3+		4.560***		
Reference category: deportee is a friend				
Deportee is a family relative			2.925**	
Deportee is someone else			2.794**	
Deportee is family and main breadwinner				3.963***
Child's self-rated health ^a	0.636***	0.624***	0.787	0.795
Child's age	1.021	1.007	0.998	0.984
Citizenship status: undocumented ^b	1.02	1.058	0.991	0.767
Citizenship status: permanent resident	0.574	0.58	0.689	0.589
Married	0.695	0.718	0.405**	0.443*
Female	1.299	1.194	1.535	1.580
Education ^c	0.901	0.909	0.927	0.936
Age	0.996	1	1.012	1.014
Income missing ^d	0.325**	0.348*	0.742	0.713
Income: 20-39 k	0.98	1	1.510	1.553
Income: 40-60 k	1.146	1.075	1.212	1.339
Income: 60-80 k	1.523	1.322	1.932	2.279
Income: 80-100 k	0.409	0.422	1.002	0.924
Income: 100-150 k	0.685	0.622	2.456	2.762
Income: 150 k+	0.632	0.613	0.433	0.587
Currently uninsured	0.534*	0.551*	0.334**	0.282**
Spanish language	2.490***	2.185**	0.607	0.675
Mexican	0.67	0.729	0.424**	0.380***
Constant	1.412	2.571	2.927	1.249
Observations	548	548	259	257
Adjusted R ²	0.105	0.112	0.170	0.177

* $p < 0.1$, using complex survey weights.

** $p < 0.05$.

*** $p < 0.01$.

^aChildren's self-rated health status: (1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent).

^bCitizenship reference category: US citizen.

^cHighest education levels completed, (1 = no formal schooling, 2 = Grade 1-8, 3 = some HS, 4 = GED, 5 = HS graduate, 6 = some college, 7 = associates, 8 = bachelors, 9 = MA, 10 = Ph.D/MD).

^dIncome reference category: <\$20,000.

have children who have been referred or diagnosed with a developmental disorder relative to Latinos' who do not personally know someone that has been deported. In fact, if a respondent personally knows someone that has been deported the probability of them reporting that their child has a developmental disorder is 32%, holding all else constant. If a respondent personally knows someone that is undocumented the probability of them reporting referral or diagnoses with a development disorder is 31%, holding all else constant.

Additionally, we also estimated various sensitivity analyses to gain a better understanding of our main results. For example, we changed our country of origin variable to three categories (Mexican, Puerto Rican, and all other Latino origin countries) and our results remained constant. When we removed Puerto Ricans from our model, our results also remained unchanged. In a model where we only included US citizens, we found that knowing a deportee remains a significant predictor of a child being referred or diagnosed with a developmental disorder. Additionally, in a model that excludes US citizens, both predictors become marginally significant, suggesting that non-US citizen respondents might be under-reporting developmental disorders or exhibiting the immigrant health paradox as suggested in the mental health literature. We also ran a model and included generational status and our findings remain unchanged. Finally, we ran the model separately for referral only and diagnoses only, and found that knowing a deportee is significantly related to both outcomes individually.

3.4 | Number of deportees known and developmental disorders

Next, we examined how the rank sum, or the total number of different relationships with deportees that respondents personally know, is linked to their child being referred or diagnosed with a developmental disorder (Table 2 and Model 2). We found that as the number of deportees a Latino parent knows personally increases, the probability of a child being referred or diagnosed with a developmental disorder increases. If respondents personally know 1–2 deportees as opposed to not knowing any deportees, the likelihood of a child being referred or diagnosed with a developmental disorder increases by a factor of 1.2, but this effect is not significant. However,

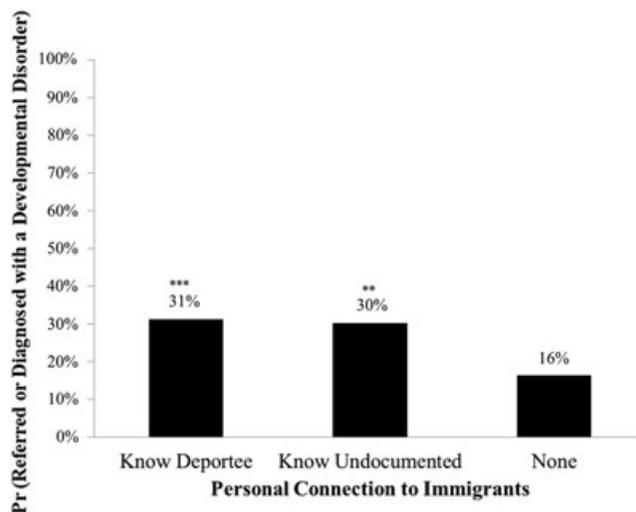


FIGURE 1 Adjusted predicted probabilities of logistic regression model of Latinos' personal connections to immigrants on children's referral and diagnoses of a developmental disorder: 2015 Latino national health and immigration survey ($n = 548$). Controlling for education, age, income, gender, citizenship, mexican origin, language of interview, marital status, insurance coverage, child's age, and child's self-rated health status and complex survey weights (all of which were set to their mean or mode values). *** $p < 0.01$ for the difference between not knowing a deportee versus knowing a deportee. ** $p < 0.01$ for the difference between not knowing a deportee versus knowing an undocumented immigrant only

we did find statistical differences for respondents who personally know three or more deportees as compared to not knowing a deportee. The results suggest that respondents who personally know three or more deportees increases the likelihood of their child being referred or diagnosed with a developmental disorder by a factor of 4.5 ($p < 0.001$, 95% CI [0.68, 2.36]), holding all else constant.

3.5 | Relationships to deportees and developmental disorders

Our next model examined the probability of the child being referred or diagnosed with a developmental problem if the known deportee is a family member, a friend, or someone else. Table 2 (Model 3) shows the results. We find differences if the known deportee is a family member versus a friend. If the known deportee is a relative compared to a friend, the likelihood of the child being referred or diagnosed with a developmental disorder increases by a factor of 2.9 ($p = 0.016$, 95% CI [0.198, 1.94]), holding all else constant. We also find differences if the known deportee is someone else versus a friend. If the known deportee is someone else relative to a friend, the likelihood of the child being referred or diagnosed with a developmental disorder increases by a factor of 2.7 ($p = 0.034$, 95% CI [0.079, 1.97]), holding all else constant. This finding is surprising and may be attributed to how respondents were only allowed to choose one response category. For example, if you are a neighbor, coworker, or colleague you are coded as "someone else," but it could be the case that these individuals have stronger ties to the respondents. In other words, a neighbor can be more than a friend and part of an extended family and we are not capturing this level of connectedness and influence.

In our final model, we find stronger support in how being head of household and a family member might impact children's risk for a developmental disorder. These results, as shown in Model 4, indicate that if the deportee is a breadwinner and family member, the probability of referral or diagnoses increases. If the deportee is the main breadwinner and a family member, the likelihood of the child being referred or diagnosed with a developmental disorder increases by a factor of 3.9 ($p = 0.003$, 95% CI [479, 2.274]), holding all else constant.

Although not presented in our tables, we also ran a model that includes an interaction between the deportee being the main breadwinner, family member, and if the deportee is a female. We find that if the deportee is a female, the main breadwinner, and a family member, this increases the odds of the child being referred or diagnosed with a developmental disorder relative to the deportee not being a breadwinner, nonfamily member, or male, which is statistically significant ($p = 0.018$, 95% CI [-3.38, -0.310]), holding all else constant. This finding is also statistically significant when the deportee is female but the deportee is not the main breadwinner or nonfamily member ($p = 0.003$, 95% CI [-4.63, -0.955]), holding all else constant. These findings may highlight the importance of gender on psychological stress created by family separation as discussed by Suárez-Orozco et al. (2010).

3.6 | Control variables

Several of our control variables showed a link to a parental report of developmental disorders in their child across the models. We find that across the models (Table 2), insurance coverage and Mexican origin respondents are less likely to have their child referred or diagnosed with a developmental disorder. We also find an inverse relationship between child's self-rated physical health (coded poor to excellent) and child developmental disorders. Parent respondents who reported optimal health for their child were less likely to report referral or diagnosis of a developmental disorder in their child. Regarding our other control variables, we found that being married buffers the likelihood of a child being referred or diagnosed with a developmental problem.

4 | GENERAL DISCUSSION

We set out to test if Latino parents who personally know someone who has been deported have a higher likelihood of having their child referred or diagnosed with a developmental disorder relative to not knowing a deportee. In

addition, we contextualized Latino parents' relationships with deportees by asking if the total number of deportees known and if the relationship to the deportee (whether the deportee was a family member or a breadwinner) matter for children's developmental disorders. The results showed that Latino parents who personally know someone that has been detained or deported are more likely to report that their child has been referred or diagnosed with a developmental disorder. Furthermore, we found that knowing more deportees, if the deportee was a family member, and if the deportee was a family member and breadwinner, all increased the likelihood of referral/diagnosis of a developmental disorder in their child. Importantly, we found these links in a sample of Latinos that are both foreign born and US citizens, and among Latinos who trace their roots to a variety of Latin American countries. These findings suggest that the event of a deportation is unhealthy for Latino children's development and gives us insight on the detrimental impact of immigration enforcement on the wellbeing of all US Latino families, irrespective of citizenship status.

Our paper makes several important contributions to the literature associated with the health consequences and spillover effects of deportations as discussed in prior research (Ayón, 2015; Brabeck & Xu, 2010; Dreby, 2015; Suárez-Orozco et al., 2010; Rubio-Hernandez, & Ayón, 2016; Zayas, Aguilar-Gaxiola, Yoon, and Rey, 2015; Zayas, 2015). The results suggest that in addition to having detrimental impacts on the socioemotional, psychological, and behavioral domains, connections with deportees also influence the risk of developmental disorders. The findings are consistent with Suárez-Orozco et al. (2010), Suárez-Orozco et al. (2011), Suárez-Orozco and Yoshikawa (2013) proposals that connections to undocumented immigrants has impacts on all aspects of child development.

Our research design also provided the opportunity to quantitatively assess the contextual nature of relationships with deportees on children's development. Families who have many connections to deportees and where these relationships were significant (they are relatives and breadwinners) are the families that may struggle the most. These findings are consistent with family stress and stress process theory. The detainment and deportation of significant individuals in families may have cascading consequences for children, by changing their social and economic status, by disrupting family bonds, and creating additional stressors that may proliferate throughout their family and community. Indeed, children who witness the detention/deportation of a family member have been found to suffer stress (Capps et al., 2007; Chaudry et al., 2010; Coffey et al., 2010; Kremer et al., 2009; Yoshikawa, 2011; Zayas, 2015). Additionally, parents with higher levels of legal vulnerability experience poor relationships with their children (Brabeck & Xu, 2010). However, given that we did not examine stress directly, our current study cannot definitely answer how connections to deportees impacts developmental health. Instead, our study is the first to establish a link between connections to deportees and the risk of child developmental disorders. Future work is needed to better understand the pathways by which knowing a deportee increases the risk of developmental disorders.

Future research should also examine the contradictory finding that if the deportee is "someone else" versus a "friend," the likelihood of the child being referred/diagnosed with a developmental disorder increases. One explanation could be measurement error as respondents were only allowed to choose one response category. For example, if you are a neighbor, coworker, or colleague you are coded as "someone else," but it could be the case that these individuals have stronger ties to the respondents. In other words, their neighbor can be more than a friend and part of an extended family. Our coding of the response categories does not capture the intricacy or levels of closeness and influence of these dynamic relationships. Despite this finding, however, we do feel confident that if the deportee is a family member, this has the largest impact on children's development. Interestingly, if the main breadwinner was a female versus a male increased the odds of a child being diagnosed with a development disorder. This finding is important given the increased detention of women and the literature on the implications for family separation and child outcomes (Suárez-Orozco et al., 2011). Clearly, the types of relationships Latinos have with undocumented or deported individuals seems to matter for children's developmental health—understanding how will need to be an important focus in future work.

We also must acknowledge the limitations of this study. Our study is a cross-sectional study of Latino populations, therefore we are limited in our ability to make causal claims. For example, we cannot examine the

long-term lasting effects of developmental challenges for these children and the underlying mechanism across time. What we know from the qualitative research is that America's "forgotten citizens," are facing insurmountable challenges that our schools, social service practitioners, and familial networks are not equipped to handle (Ayón, 2013; Brabeck & Xu, 2010; Zayas, 2015). We are also unable to know who referred or diagnosed these children as we believe who brought this to the parent's attention is significant. This point is incredibly important as this may impact where parents decide to seek professional help. Moreover, we are also unable to make comparisons across immigrant groups or understand if these mechanisms are uniform across race, ethnicity, language, and gender of the child. Given that a large majority of deportees are of Mexican and Central American origin, research should also examine Asian American families who are also vulnerable to immigration policy and experiencing unique challenges. We also acknowledge that the rigor of our diagnosis measure cannot be fully ascertained by parental reports and that a professional diagnoses would be ideal. Lastly, given that our questions concerned several areas of impairment or developmental disorders (issues with learning and concentration, diagnoses of attention-deficit/hyperactivity disorder, autism, or language impairment), we cannot discern if connections with deportees impacts a specific area of developmental abilities. However, our work does highlight that a link between deportation and developmental health exists. Future work is needed to better understand how deportations influences developmental health, if some developmental abilities are more strongly impacted over others, and what are the mechanisms that may drive this link.

In conclusion, we have shown that the rise in deportations are associated with impacts on the development of Latino children. Knowing someone who has been deported, and having significant relationships with these individuals, increases the likelihood of Latino parents' child being referred or diagnosed with a developmental disorder. Given the likelihood of continued policy activity in the area of immigration at both the state and federal level for the foreseeable future, understanding the consequences of deportations for children, parents, families, and the Latino community is critical. We hope that our research can inform policy makers of the negative health consequences that anti-immigrant sentiment is having on US citizen children and highlight the need for bipartisan comprehensive immigration reform to end the detrimental consequences of deportation on the lives of children and their families.

5 | HUMAN STUDIES AND SUBJECTS

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study through the University of New Mexico IRB Protocol number 659549 on 12/5/2014.

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