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Immigration Status and Child Well-Being in the United States

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IMMIGRATION STATUS AND CHILD WELL-BEING IN THE UNITED STATES

JULIA GELATT

A DISSERTATION
PRESENTED TO THE FACULTY
OF PRINCETON UNIVERSITY
IN CANDIDACY FOR THE DEGREE
OF DOCTOR OF PHILOSOPHY

RECOMMENDED FOR ACCEPTANCE
BY THE DEPARTMENT OF SOCIOLOGY
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ADVISOR: DOUGLAS S. MASSEY

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Abstract

Immigration inflows have changed the face of the US child population. Today, almost one-quarter of children in the United States have at least one immigrant parent, and of those, 5.5 million have at least one undocumented immigrant parent. About 1 million children are themselves undocumented immigrants. In this dissertation, I analyze the implications of parents' and children's immigration status for various dimensions of child well-being. I draw mainly on the Los Angeles Family and Neighborhood Survey (L.A. FANS), a survey representative of Los Angeles County, which contains direct measures of respondents' immigration status, but also on the National Health Interview Survey and Medical Expenditure Panel Survey, to explore children's health insurance coverage, access to healthcare, physical health, mental health, and academic performance in Latino families. I find that access to health insurance and a usual healthcare provider are severely constrained for children in undocumented immigrant families, that is, for children who are themselves undocumented, but that such children still get annual checkups at rates similar to other children. Some evidence suggests they may receive less thorough care than children in native families. Evidence on the health status of children of undocumented immigrants is mixed. Looking at children's behavioral problems, as a measure of children's mental health, I find that children in all immigrant families show greater overall and internalizing behavioral problems than children in native families. But children in undocumented immigrant families, who are themselves undocumented, show the greatest mental health problems, particularly through externalizing behaviors. Children in all types of immigrant families, regardless of legal status, tend to show superior cognitive skills on letter word identification tests compared to children in native Latino families, but show similar scores to

children in native families on applied math tests and reading comprehension tests. Taken together, my findings suggest that children in Latino, undocumented immigrant families in Los Angeles face particular threats to their healthy growth and development, while children in mixed-status families appear to share experiences more with children in legal immigrant families than with children in undocumented immigrant families.

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Chapter 1. Introduction

Immigration and the changing face of the US child population

The child population of the United States has changed dramatically since the middle of the 20st century. Increasing shares of children are born to unmarried mothers and grow up in single parent households, and the gap in household incomes and wealth between children in poor families and children in rich families has widened (Teachman, Tedrow, and Crowder 2000). The implications of such changes, defined as part of the "second demographic transition," (Lesthaeghe 1995) have been widely theorized and analyzed. Alongside such changes, the country has seen a boom in immigration from a shifting set of sending countries, leading to a growing number of foreign-born children and children of immigrants in the United States and a diversification of the racial and ethnic backgrounds of the child population. In 1990, about 13 percent of children in the United States had at least one foreign-born parent. This share grew to 24 percent by 2011 (MPI Data Hub 2012).

The great majority of these immigrant parents arrived from Asia or Latin America. Such immigration, combined with the higher fertility rates of some groups of foreign-born women, generated the first cohort of "majority minority" babies in 2012, in which fewer than 50 percent of children under age one were categorized as non-Hispanic white (U.S. Census Bureau 2012). Changes in the racial/ethnic background of the child population were initially visible mainly on the coasts and in major cities, particularly in California, New York, Florida, Texas, and Illinois, but by the end of the 1990s and early 2000s, changes had become apparent in states such as

North Carolina, Georgia, and Alabama, places that had not seen high immigration since the influx of European immigrants at the turn of the 20th century.

While immigration inflows grew over the 1980s, 1990s, and 2000s, revisions to immigration law did not keep pace with changing push factors in migrant sending countries – international and civil conflicts, economic booms and busts, transitions in and out of democracy, shifting treatment of minority groups, and changing international terms of trade – nor did they keep pace with the growth and restructuring of the US economy and increasing demand for service workers. The mismatch between social reality and public policy has led to what all parties agree is a massive failure in the US immigration system, resulting in a population of an estimated 11 million undocumented immigrants (Passel and Cohn 2011). Some undocumented immigrants (or those who entered legally and later became undocumented) brought children with them; others reunited with children in the United States years after initially coming to the country alone; and still others bore children in the United States. Such families generated a growing, and increasingly visible, population of children with undocumented immigrant parents. By 2010, about 5.5 million children in the United States had an undocumented immigrant parent. Of these, about 1 million are themselves undocumented immigrants while 4.5 million are US-born, US citizens. In addition, roughly 1 million undocumented immigrant young adults (age 18-30) in the United States have spent at least part of their childhood in the country as an undocumented immigrant (Passel and Cohn 2011; Passel and Lopez 2012).

Accommodating or deflecting the undocumented

These children with undocumented immigrant parents face a strong set of challenges to healthy growth, development, educational attainment, and the transition to adulthood. Policies

toward undocumented immigrants and their children have evolved through a complex set of awkward compromises, in which economic imperatives and concerns for human rights are pitted against the "rule of law." The result is limited rights for children of undocumented immigrants – who are sometimes construed as innocent victims of their parents' legal violations – but general exclusion from government services and the US social safety net. For example, the Supreme Court ruled in Plyler v. Doe in 1982 that all children residing in the United States are eligible for free, public K-12 education, regardless of their immigration status, while the 1996 Illegal Immigration Reform and Immigrant Responsibility Act (IIIRIRA) prohibited states from treating undocumented children and youth as equal to their peers in charging public higher education tuition rates, unless they treat residents of all US states in the same way, effectively capping the educational progress of undocumented immigrant youth in many states at grade 12.

US-born children of undocumented immigrants have the same rights, under law, to public education, in-state college tuition, and state and federal financial aid as any other US citizens, but administrators are often confused about such policies. Primary school administrators have sometimes asked for evidence of enrolling students' immigration status or even that of their parents, while US citizen college students with undocumented immigrant parents in Florida and New Jersey had to take state officials to court for the right to pay the same in-state tuition rates or receive the same state financial aid as all other US citizens (Rios 2012; Semple 2011).

Healthcare and public benefits systems are also out of reach for undocumented immigrant children, and somewhat curtailed for children in mixed-status families with undocumented immigrant parents. Hospital emergency rooms are required to treat undocumented immigrants, as all patients, until they are stable. The cost of such care is paid, at least in part, by the federal government. Meanwhile, chronic childhood health conditions and even infectious diseases

among undocumented immigrant adults and children are not covered under federal healthcare payment systems, or most state systems. On the other hand, undocumented immigrant women who are pregnant with future US citizen children may receive publicly funded prenatal care in several states. And a handful of states use state funds to provide public health insurance to all children, regardless of immigration status. Women with young children can also receive nutritional assistance through the Women Infants and Children (WIC) program, and children can access school lunch programs regardless of immigration status (Fortuny and Chaudry 2011).

For the most part, however, undocumented immigrants, adults and children, remain ineligible for federal cash assistance, food stamps, housing assistance, or public health insurance, and most states and localities echo these federal policies. US citizen children with undocumented parents can access all the same programs as other US citizen children, but likely have lower rates of uptake due to undocumented immigrants parents' fears of government workers or language and transportation barriers. Mixed-status families also receive smaller amounts of benefits, scaled down to serve only the documented members of the family. Undocumented immigrant families, who are more likely than other US families to have low-incomes, therefore live largely outside the safety net that has been built to protect the well-being of the nation's children.

Beyond the provision of public benefits, policies toward immigrants have shifted to more punitive measures since the mid-1980s, turning a blind eye to the ways in which enforcement efforts affect the growing share of US children with undocumented immigrant parents. Prior to 1996, non-criminal immigrants who were discovered and placed into deportation proceedings by the US government could apply for and receive a cancellation of their removal if they had strong community ties and had dependents in the United States who would be severely harmed by their removal. The aforementioned IIRIRA of 1996 raised the standard for such leniency to

"extremely unusual hardship" for dependents, a standard that requires suffering well beyond the usual financial setback and emotional toll of removing a worker and parent from a family. This change paved the way for increased deportations of immigrant parents away from US citizen children.

Particularly since the terrorist attacks of September 11, 2001, immigration enforcement has focused on not only securing borders, but also locating and deporting undocumented immigrants in the interior of the United States. Through increased expenditures for internal enforcement, strengthened relationships between local law enforcement and federal immigration agencies, and expanding federal mandates that local law enforcement officials check the immigration status of everyone they arrest, the number of immigrants deported from the United States has risen from about 24,000 a year in the mid-1980s to about 50,000 a year in the mid-1990s to about 400,000 a year in 2009-2011 (Office of Immigration Statistics 2012). Among these deportees were about 100,000 parents of US citizen children in the 10 years from 1998 to 2007, according to the government's own statistics (U.S. Department of Homeland Security 2009).

In the mid-2000s, and particularly through the economic downturn in 2007-2009, state and local governments attempted to join in the immigration enforcement game. Cities and counties debated and sometimes enacted local ordinances such as those prohibiting landlords from renting to undocumented immigrants, penalizing employers who hire undocumented immigrants, or prohibiting gatherings of day laborers at common hiring sites. Arizona's widely discussed state enforcement bill, HB1070, spurred copycat bills in Georgia, South Carolina, and in Alabama in 2011.

Alabama's bill was written to be particularly harsh for undocumented immigrant families, seeking to block undocumented immigrants from enrolling in public higher education institutions, requiring primary schools to count the number of undocumented students they enroll, making it a crime to transport or "harbor" undocumented immigrants or rent to them, requiring businesses to verify the immigration status of new employees using a federal database inquiry system called E-Verify, and invalidating all contracts signed with undocumented immigrants, including, for example, contracts for the provision of gas, water, and electricity. The harshest provisions of these local and state laws have been struck down by the courts, or remain embroiled in litigation. However, the intended purpose of such attempts was to create a climate of fear in undocumented immigrant communities, as well as make daily life difficult to the point that returning to the home country comes to be seen as a preferable option (Megid 2012). Such a climate can form simply through debates about enforcement legislation, even if proposed bills do not pass or never come into force.

Not all recent changes in immigration policy have been unhelpful to children, though. Some states have chosen, over the years, to open in-state tuition rates for public colleges and universities to all students regardless of immigration status. Such expansive policies have been shown to increase high school completion rates, lower high school drop-out rates, and increase college attendance rates for foreign-born, Mexican youth (among whom substantial shares of students are undocumented immigrants) (Flores 2010; Kaushal 2008; Potochnick 2011). Texas, California, and New Mexico have also opened up state financial aid to undocumented youth.

The most important shift for the well-being of older children who are themselves undocumented, came in the summer of 2012. In response to broad public sympathy, successful organizing efforts by undocumented youth activists, and election year politics, President

Obama's administration announced a program of affirmative discretionary leniency toward young undocumented immigrants, called Deferred Action for Childhood Arrivals (DACA). DACA is open to youth without major criminal records, age 15 to 30, who arrived to the United States before the age of 16, and who have completed or are currently enrolled in high school or a GED program. Those granted DACA receive a two-year, renewable status that protects them from deportation, and provides authorization to work legally in the United States.

How does growing up in a context of increasing immigration enforcement and limited access to economic supports affect the well-being of children of undocumented immigrants? Even setting aside localized, recent expressions of anti-immigrant sentiment, how does growing up in a poor, immigrant family in the United States, without access to much of the social safety net, and under the threat of deportation, affect children's health, mental health, or educational progress? And what are the implications of such impacts for the shape of inequality in this country at a time when one in eight babies born in the United States has undocumented immigrant parents (Taylor et al. 2011)?

Research on children of undocumented immigrants

Research to date on children of immigrants has acknowledged the particular challenges faced by children in mixed-status or undocumented immigrant families, but, due to data limitations and privacy concerns, it has generally not tested propositions about the impacts of legal status on children. In their straight-line assimilation theory, Alba and Nee (2003) make one caveat in their optimistic portrait of second-generation immigrant integration, noting that children of undocumented immigrants may suffer particular disadvantage. Nevertheless, they do not evaluate this hypothesis in their analyses. Similarly, segmented assimilation theory argues

that contexts of reception, including government policies granting or denying legal entry, strongly shape intergenerational mobility (Portes and Rumbaut 2001). However, the dataset originally collected to test this theory, the Children of Immigrants Longitudinal Survey (CILS), was not able to ask about parents' or children's immigration status. In fact, the lack of measures of immigration status in most surveys that include samples of children of immigrants has largely foreclosed opportunities to study the role of parents' and children's immigration status in shaping children's growth and development with generalizable samples.

Research attention first turned to the role of legal status in shaping child well-being after implementation of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA). Researchers noted that the increased restrictions on access to benefits by legal immigrant parents would affect a large number of US citizen children as well. In doing so, scholars also pointed out the large numbers of children residing with undocumented immigrant parents (Fix and Zimmermann 2001). Through the 2000s, research on children with undocumented parents focused mainly on whether or not undocumented parents in low-income families were taking up public benefits for their eligible US citizen children. Over the past several years, in the current era of increasing internal immigration law enforcement, rising deportations, and state and local action on immigration policy, and as the largest wave of undocumented immigrant children have aged into young adulthood and begun to make political demands for expanded rights, a nascent literature has explored a broader set of implications of parents' legal status for child well-being.

First to gain attention were undocumented immigrant youth, who emerged as activists and political actors on the national stage through advocacy for the federal DREAM (Development, Relief, and Education for Alien Minors) Act, which would offer a path to legal

status and US citizenship to undocumented immigrants who entered the country as minors and who obtain some higher education or complete military service. In the latest push for this bill, in 2010, undocumented youth began "coming out" publicly as undocumented, sharing their migration stories and their daily struggles as undocumented immigrants in public spaces and in the media as a strategy to put a human face on the issue and build popular support for the bill.

First nonfiction literary accounts (Thorpe 2009) and then careful ethnographic and interview accounts (Abrego and Gonzales 2010; Gonzales 2011) described undocumented youth's difficulties staying motivated in high school, finding employment, and establishing independent households from their parents. The transition to adulthood is particularly difficult for undocumented youth, given their inability to take out college loans, accept most scholarships, receive most forms of financial aid, or work legally in the country. As mentioned above, quantitative evidence has demonstrated that providing in-state tuition to undocumented youth can improve both high school graduation rates and college enrollment rates. Localized data collection efforts also looked at the experiences of documented and undocumented immigrant youth before, after, and during the migration process, and how this shaped emotional well-being (Potochnick and Perreira 2010) and at how parental legal status transitions over time affected youth's educational progress (Bean et al. 2011).

Studies of the impacts of immigration status and immigration enforcement on younger children have emerged more recently. Policy reports examined what happened to (generally US citizen) children after well-publicized workplace immigration raids detained and deported parents without contingency plans in place to care for their children (Chaudry et al. 2010) and looked at the number of children of deportees being placed in the US foster care system: 5,100 in 2011 (Applied Research Center 2011). An ambitious quantitative and ethnographic project in

New York City explored the role of parents' immigration status in shaping very young children's well-being, looking at the emotional well-being and cognitive development of young children in Mexican, Dominican, African American, and Chinese families, finding cognitive delays among children of undocumented immigrants, mediated by parents' economic hardship, psychological distress, and difficult work situations, as well as by children's lower access to center-based care (Yoshikawa 2011). Interviews with parents and children in New Jersey and Ohio showed that children of immigrants had very strong fears that their parents will be deported and separated from them, sometimes even if their parents were legal immigrants, suggesting that deportations are creating a broad sense of fear in immigrant communities that shapes children's emotional well-being (Dreby 2012).

Unanswered questions

This growing literature has opened up an important inquiry into the collateral consequences of immigration policy and enforcement regimes for new generations of Americans. But many questions remain unanswered. First, research has focused, so far, on very young US citizen children of undocumented immigrants, or on teenage and young adult undocumented immigrant youth, but very little research has focused on younger children who are undocumented immigrants or on citizen children of undocumented immigrants in middle or later childhood (Suarez-Orozco et al. 2011). Second, the health implications of undocumented status likewise remain understudied. While some work has documented the low rates of insurance coverage and access to healthcare of undocumented immigrant children (UCLA Center for Health Policy Research 2003) and debated evidence of "chilling effects" depressing enrollment into health insurance programs by citizen children with undocumented immigrant parents (Borjas 2002b;

Fix and Passel 1999; Fomby and Cherlin 2004; Haider et al. 2004; Henderson, Capps, and Finegold 2008; Van Hook 2003; Lofstrom and Bean 2002), little research has explored how blocked access to healthcare manifests in the health of children of immigrants, or how the general story of an immigrant health advantage may vary for children in mixed-status or undocumented immigrant families.

Research on the mental health of children of immigrants shows mixed evidence, with some signs of an immigrant or second-generation mental health advantage, and some signs of threats to children's mental health in immigrant families (Crosnoe 2006; Harker 2001; Jackson, Kiernan, and McLanahan 2012; Kao 1999), but very little evidence has been marshaled, to date, on how this story may vary for children in mixed-status or undocumented immigrant families. Yoshikawa's study of young children of immigrants in New York did not find evidence of differences in emotional well-being between two and three year-old children whose parents were documented or undocumented (Yoshikawa 2011); but does this pattern hold for children at older ages, in other parts of the United States? Others have studied the emotional well-being of a small number of documented and undocumented immigrant youth in North Carolina, finding that children in undocumented immigrant families experience higher anxiety than children who are legal immigrants (Potochnick and Perreira 2010). But how does the mental health of children who are themselves undocumented compare to that of children who are themselves US-born citizens, with all the rights that entails, who are growing up in a household with undocumented immigrant parents and other family members? Does the relationship between immigration status and mental health vary for children in middle childhood or older childhood compared to very young children?

Finally, we now have evidence about the cognitive skills of very young US citizen children of undocumented immigrants, and about the educational struggles of undocumented immigrant teenagers, but we know very little about the educational achievement of older children in mixed-status families or of younger undocumented immigrant children. Some prior work has found evidence of an immigrant educational advantage for both first and second generation immigrant youth, but this applies more to Asian immigrants than Latino/a immigrants, and no research has investigated whether immigration status can explain any differences between national origin groups in cognitive development and educational attainment.

Description of analytic chapters

Chapter 2: Legal Status and the Healthcare Access and Health of Children of Immigrants

In this chapter, I look at how parents' and children's immigration status, that is, living in a mixed-status or undocumented immigrant family, shapes children's access to healthcare and their physical health outcomes. I utilize the Los Angeles Family and Neighborhood Survey (L.A. FANS) to explore these relationships. L.A. FANS is a survey of a representative sample of households in Los Angeles County, which contains direct measures of parents' and children's immigration status. It also asks parents about various dimensions of child well-being.

I hypothesize that, consistent with existing evidence, these data will show that children who are themselves undocumented have lower rates of health insurance coverage than children in native families, while children in mixed-status families fall in between children in undocumented immigrant families and children in legal immigrant families in rates of health insurance coverage. I expect to find that lower health insurance coverage is associated with

lower access to preventive healthcare, and perhaps to higher rates of some common childhood ailments. After exploring these initial relationships, I explore the mediating roles of family and neighborhood characteristics in shaping children's access to insurance, healthcare, and physical health.

Chapter 3: Undocumented and Uninsured: Children's Immigration Status and Access to Healthcare

This chapter takes a different approach to exploring the relationship between immigration status and children's access to healthcare. I focus in on the relationship between children's own immigration status and their access to healthcare, asking: How does being an undocumented immigrant shape children's access to health insurance and healthcare? Does children's immigration status matter, or do "chilling effects" deterring undocumented immigrant parents from taking up insurance for their children fully explain previously observed lower rates of health insurance coverage among children in undocumented immigrant families?

To investigate this, I use the National Health Interview Survey (NHIS), merged with the Medical Expenditure Panel Survey (MEPS). The NHIS has good measures of immigration history, while the MEPS provides better measures of healthcare access for all children in a household. I use foreign-born, noncitizen children whose parents are from Mexico or Central or South America as a rough proxy for undocumented immigrant children, and then select a sample of such children who live with at least one US-born, US citizen sibling. I investigate whether rates of health insurance coverage and rates of access to healthcare differ between citizen and undocumented children in the same family. In this way, I isolate the impact of children's

immigration status on their insurance and healthcare access from any household or neighborhood-level processes that may be difficult to measure and take into account.

Chapter 4: Immigration Status and Children's Mental Health

This chapter explores a second dimension of child well-being: mental health. Using the same data as chapter 1, the L.A. FANS, I explore the relationship between children and parents' immigration status and children's mental health, drawing on parents' reports of children's behavioral problems – a widely used measure of child mental health. I look at overall behavioral problems, internalizing problems such as withdrawing or displaying sadness, externalizing problems such as acting out or displaying anger, and at six subscales of more specific behavioral problems.

I expect to find that parental immigration status shapes children's mental health strongly. I expect such a relationship to be mediated by household characteristics such as family poverty, residential instability, household overcrowding, and mothers' mental health, and by neighborhood characteristics such as neighborhood poverty, high turnover, and threats to safety such as gangs and drugs. I expect that, consistent with prior work on undocumented teens, the impacts of legal status will prove to be more severe for older versus younger children.

Chapter 5: Immigrant Exceptionalism or Legal Disadvantage? Immigration Status and Children's Cognitive Skills in Latino Families

The final analytic chapter explores the impact of immigration status on children's cognitive development, using the L.A. FANS data. Building on prior work that explored the relationship between parents' immigration status and the cognitive development of very young

children in New York City, I investigate how having undocumented immigrant parents or being an undocumented immigrant affects the cognitive development of younger and older children. The L.A. FANS includes direct, age-appropriate measures of cognitive skills for children age three to 17 along three dimensions: letter word identification, applied problems (math skills), and paragraph comprehension (reading skills). I first investigate how cognitive scores vary among children in native, legal immigrant, mixed-status, and undocumented immigrant families, and then explore the role of family socioeconomic status, mothers' mental health, children's educational experiences, and neighborhood conditions in mediating any relationships between immigration status and cognitive skills.

Chapter 2. Legal Status and the Healthcare Access and Health of Children of Immigrants

Abstract

In this paper, I examine how children's and parents' immigration status (US-born, legal immigrant, or undocumented) is associated with children's access to insurance and healthcare and physical health. I investigate whether healthcare access mediates the relationship between immigration status and health. To do so, I analyze data from the Los Angeles Family and Neighborhood Survey, representative of Los Angeles County. I find that undocumented immigrant children face severely constrained access to health insurance and a usual source of healthcare, while children with foreign-born parents have lower global health status, but also lower rates of being overweight. Children with undocumented parents may have less access to a doctor diagnosis for common childhood ailments. These results show that without public insurance, many undocumented children lack health insurance and a usual healthcare provider, even in a county with substantial experience serving immigrant families. Expanding public insurance to children regardless of immigration status could expand access to healthcare and proper diagnoses.

Introduction

An estimated 5.5 million children in the United States are undocumented immigrants or the children of undocumented immigrants. Such children make up 7 percent of the school-aged population in the country (Passel and Cohn 2011; Passel and Taylor 2010). The number of children of undocumented immigrants in the United States has risen over the past decade, but very little information exists on the role of immigration status in shaping child well-being in general, or child health in particular. Assimilation theories suggest that undocumented status should disadvantage children (Alba and Nee 2005; Bean and Stevens 2003; Portes and Rumbaut 2001), but this proposition has only begun to be tested with empirical evidence. In this paper, I examine the relationship between immigration status and two important metrics of child well-being: access to healthcare and child health. I further examine how access to healthcare and public assistance mediates the relationship between immigration status and child health. I compare children in undocumented families (undocumented children and parents) and mixed-status families (US-born children and undocumented parents), to children in legal immigrant or native (all US-born) families.

The link between immigration status and child well-being is understudied in large part because of a lack of representative surveys that ask about both immigration status and child well-being. Researchers looking at the implications of immigration status have often relied on non-citizen, foreign-born Latinos or Mexicans as a proxy for undocumented immigrants (Flores 2010; Kaushal 2008; Potochnick 2011), or have relied on databases such as the Mexican Migration Project (MMP) or the Legalized Population Survey (LPS), which include immigration status, but sampled adults only. I draw on the Los Angeles Family and Neighborhood Survey (L.A. FANS), representative of Los Angeles County, which contains direct measures of

immigration status for adults and children and health measures, permitting a rare, direct examination of the implications of immigration status for children. California has more undocumented immigrants than any other state, about 2.6 million, concentrated heavily in the Los Angeles area, with just over 900,000 undocumented immigrants in Los Angeles County in 2001 and 2008 (Hill and Johnson 2011; Passel and Cohn 2011).

Understanding the health of this important segment of the child population is vital not only because child health is important in and of itself, but also because early health has implications for later educational performance and future earnings. Poor childhood health is associated with lower scores on cognitive tests, lower educational attainment, lower employment rates, and lower earnings (Case and Paxson 2010; Currie and Stabile 2007). Further, access to healthcare is arguably one of the factors behind growing inequality that is most open to policy intervention (Crosnoe 2006). Understanding the relationship between legal status, access to healthcare, and health can help suggest policy interventions to reduce future inequalities along lines of immigration status.

Background

Immigration theory. Contemporary theories of immigrant assimilation all suggest that children could be negatively affected by their parents' or their own lack of immigration status. Segmented assimilation theory argues that "contexts of reception," including the type of legal status the government affords to immigrants, strongly shape mobility from the first to second generation. Hostile policies, such as the denial of legal residence permits, work authorization, and public services are hypothesized to have negative consequences for immigrant mobility (Portes and Rumbaut 2001). Contemporary straight line assimilation theories generally paint a

rosier picture, arguing that the immigrant second generation will exceed their parents in education, occupational prestige, and income, but the most prominent proponents of this theory, Alba and Nee (2005), make the caveat that undocumented status might limit mobility. The datasets that have been used to test assimilation theories, the Children of Immigrants Longitudinal Study (CILS), data from the US Census Bureau (including the Current Population Survey, the Decennial Census, and the American Community Survey), and the Fragile Families and Child Wellbeing Study do not collect information on immigration status aside from citizenship status, and so the implications of legal status for child well-being or intergenerational mobility have not been tested using representative data. Qualitative reports tend to focus on undocumented youth's transition to adulthood, not on childhood experiences, and on educational and work outcomes and mental health, not on healthcare access and physical health (Abrego 2006; Gonzales 2011; Portes and Fernández-Kelly 2008; Suarez-Orozco et al. 2011).

Immigration status and child health. In fact, no research has investigated the health outcomes of undocumented children or of US-born children of undocumented immigrants, in what are commonly referred to as "mixed-status families." Instead, evidence to date focuses on the health of immigrant children and children of immigrants, overall, regardless of immigration status. This evidence generally finds support that the immigrant health advantage, shown among adults, extends to children, but with some important caveats. Foreign-born, immigrant children have shown lower obesity rates than US-born children (Harris, Perreira, and Lee 2009; Popkin and Udry 1998) and exhibit fewer risky health behaviors (Blake et al. 2001). The also seem to have lower rates of common childhood ailments than native children (Burgos et al. 2005; Hamilton et al. 2011), though parents sometimes simultaneously report poorer global health for foreign-born versus native-born children, muddying the story (Burgos et al. 2005).

Children of immigrants, at least those with mothers born in Mexico, tend to have healthier birth weights and lower infant mortality, but higher childhood obesity rates, than children whose mothers are otherwise similar but were born in the United States (Hamilton, Teitler, and Reichman 2011; Hummer et al. 2007). Some evidence suggests that young children of immigrants have lower rates of common chronic health conditions and asthma than children with US-born parents, particularly among families with low parental educational attainment (Jackson 2011; Padilla, Hamilton, and Hummer 2009; Subramanian et al. 2009), but such observed relationships, which rely on rates of doctor-reported conditions, may be shaped as much by lower access to medical care as by lower incidence of asthma (Claudio and Stingone 2009; Perreira and Ornelas 2011).

Yet we would not necessarily expect that any health advantages of immigrant children or children of immigrants would extend to children whose parents are undocumented immigrants or who are themselves undocumented immigrants. Mixed-status and undocumented immigrant families may face restricted access to health insurance, quality healthcare, and public assistance, and may face the extensive stress and marginality of life in an undocumented or mixed-status family. All of these factors could have negative health implications, potentially outweighing any immigrant health advantage for children.

Immigration status and insurance and healthcare access. For children who are themselves undocumented or who have undocumented immigrant parents, one large threat to good health may be their severely circumscribed access to health insurance, potentially placing needed healthcare out of financial reach. In Los Angeles County, where I focus my research, undocumented immigrant children were not eligible for public health insurance – either the state Medicaid program called Medi-Cal or the state SCHIP program called Healthy Families – prior

to 2003. Starting in 2003, undocumented children could get insurance through the Los Angeles Healthy Kids Program, but the pre-2003 policy context that I study here is more comparable to that faced by undocumented children in the United States overall, as only a few states provide health insurance to undocumented children. (As described below, I also focus on this earlier time period due to data limitations.) Undocumented immigrant children, as well as US-born children in mixed-status families likely have limited access to private health insurance as well because their parents work in industries and occupations that rarely offer employer-provided insurance (Buchmueller et al. 2007). The little available evidence confirms such worries, showing low rates of health insurance coverage for undocumented children and adults, and low rates of physician visits for undocumented immigrant adults. An earlier examination of L.A. FANS data showed that 68 percent of adult Latino undocumented immigrants lacked health insurance in 2000-2001 (Goldman, Smith, and Sood 2005). Nationally, 46 percent of noncitizen immigrants of all ages lacked health insurance in 2009 (Artiga and Tolbert 2009). According to the California Health Interview Survey, noncitizen (documented and undocumented) adults in California are also less likely than their citizen counterparts to receive regular, preventive care or to have a usual source of healthcare (Ortega et al. 2007). And in 2001, about half of likely-undocumented immigrant children in Los Angeles County did not have health insurance coverage (UCLA Center for Health Policy Research 2003).

I am not aware of any research that links these levels of insurance coverage and healthcare access to health outcomes. Blocked access to healthcare may or may not lead to immediate health implications. Children tend to be generally healthy and resilient to health challenges, and evidence on the link between access to health insurance and health status among children overall is mixed, with some studies finding that the expansion of Medicaid was

associated with better child health and fewer preventable hospitalizations among some groups of children, and others finding no differences in child health (Currie, Decker, and Lin 2008; Holl et al. 2000; Hughes and Ng 2003; Kaestner, Joyce, and Racine 2001; Szilagyi et al. 2000). It is unclear, therefore, whether we would expect blocked access to insurance and care to counterbalance or outweigh any potential immigrant health advantages among children in undocumented immigrant or mixed-status families.

Other effects of immigration status. Aside from disparities in health insurance coverage, there are numerous other reasons why children in mixed-status or undocumented immigrant families might have poorer health than children in native families. For example, the stress of living in contradiction to US immigration laws, and the very real threat of deportation this brings, may have implications for children's health. Whether or not children are undocumented themselves, and whether or not they are aware of their parents immigration status or the implications of that status, parents' very real worries about possible deportation may affect children's health, since maternal depression is linked to poor childhood health outcomes (Turney 2011). Such worries are not unfounded: Between 1998 and 2007, about 100,000 parents of US citizen children were deported. Overall, about 190,000 undocumented immigrants were deported per year in 2000 and 2001 (a number that rose to nearly 400,000 by 2009) (U.S. Department of Homeland Security 2009). And about a third of likely-undocumented Latinos say they know someone who was recently detained or deported by the US government (Lopez and Gonzales-Barrera 2012).

In addition, undocumented parents often work in the lowest echelons of the US labor force, and parents long and stressful work days may impact children's physical health (Bernhardt, Polson, and DeFilippis 2010; Passel and Cohn 2011; Yoshikawa 2011). Parents'

labor market position also leads, of course, to high rates of poverty in undocumented immigrant families, which can impact children's health. Such effects are compounded by mixed-status and undocumented immigrant families' limited access to public benefits and economic supports. Undocumented immigrant children and parents are not eligible for public benefits such as cash assistance, food stamps, or supplemental security income in California. Restricted welfare access has been shown to be associated with poorer health and higher infant mortality for at least some subgroups of children of immigrants (Cho 2011; Kalil and Crosby 2009, 2010; Kaushal and Kaestner 2006). Finally, due to both low incomes and legal marginality, families with undocumented parents may have instable housing, including overcrowding, frequent moves, and poor housing conditions, which could lead to stress and the need to change medical providers after moving (Hall and Greenman 2013; Yoshikawa 2011).

Methods

Data source. The first wave of the Los Angeles Family and Neighborhoods Study (L.A. FANS) interviewed a stratified random sample of households in Los Angeles County in 2000-2001, oversampling those with children and in poor or very poor neighborhoods. Parents provided information on a randomly selected child and a randomly selected sibling if one lived in the household, leading to information on an average of about 1.5 children per household. Importantly, the survey asks foreign-born respondents whether they have US citizenship or any type of legal visa. I assign children's families to one of four immigration status categories – native, legal immigrant, mixed-status, and undocumented – based on children and mothers' immigration status.

Native families consist of US-born parents and US-born children. Legal immigrant families are those in which parents are foreign-born, but have legal status (a green card or valid temporary visa) and children are either US-born or legal immigrants (most are US-born). In mixed-status families, parents have no legal status but children are US-born, US citizens. Undocumented families have parents and children who all lack legal status. I limit my sample to Latino families with origins in Mexico or Central America because surveys were conducted only in English and Spanish and because selection regimes for immigrants from other parts of Latin America operate differently than those for Mexicans or Central Americans.

The L.A. FANS roster file contains 3,684 children. Of those, 3,060 had information on children's legal status and health. After selecting only Latino/a respondents with backgrounds from Mexico and Central America, who I could reliably locate in one of the four types of immigrant families of interest, without missing data on my dependent variables, my analytic sample is 1,672. I imputed missing data on independent variables using the Amelia multiple imputation program (Honaker, King, and Blackwell 2012). About 15 percent of observations were missing information on one or more independent variables. I focus on the first wave of the survey only, in part, as explained above, as the policy context in Los Angeles County in 2000-2001 was more similar to that faced by children in other parts of the United States, but also because the second wave only contains 34 children who can be identified as living in an undocumented immigrant family.

Statistical analysis. I look at four measures of children's access to healthcare: having health insurance, having a usual source of healthcare, and having a well-care doctor visit or seeing a dentist in the prior year. Health insurance, of course, opens the path to affordable healthcare. Having a usual source of healthcare is associated with lower rates of unmet need for

medical care and for greater utilization of preventive healthcare (DeVoe et al. 2003, 2009, 2012). Pediatricians recommend that children of all ages receive an annual checkup to track healthy growth and development and to check for common childhood illnesses. I measured children's health insurance coverage using the latest reported (ongoing) insurance coverage from event history reports. Their insurance was pre-coded in the L.A. FANS dataset to public or private insurance, if children had some form of insurance. Parents were asked directly whether children have a place they usually go when they are sick or when parents need health advice for their children, and about whether children had seen a dentist in the last 12 months. They were also asked about the type of usual healthcare provider, which was coded into 1) a clinic, health center or HMO, 2) a doctor's office, 3) a hospital emergency room, 4) a hospital outpatient department, or 5) another place.

Given low reports of using a hospital emergency room, hospital outpatient department, or other source, I combined these categories into an "other" usual provider category. Notably, only 29 children had the emergency room listed as their usual source of healthcare, and of those, 5 were in native families, 19 in legal immigrant families, 3 in mixed-status families, and 2 in undocumented immigrant families. Parents were also asked whether children had a usual place they go for preventive healthcare, but in almost all cases they reported the same type of provider for both types of care. To measure whether children had received a preventive healthcare screening in the prior year, I combine answers from parents about whether children had seen a doctor in the prior year, for what reason they had seen a doctor in the prior year, and the date of the child's last "routine health checkup," compared to the date of interview.

To explore children's health, I look at parent-reported global health status, a widely-used measure of health that is found to correlate highly, in general, with reports of specific health

conditions and with physicians' reports of health (Case, Lubotsky, and Paxson 2001). (Below, I discuss the sensitivity of this measure to cultural influences and translation issues.) I also look at whether children have been told by a doctor that they have several common childhood ailments: asthma; frequent ear infections (more than three in a year); or anemia or iron deficiency. I use logistic regression models and ordered logistic regression models to explore these healthcare access and health outcomes. In all models, I include a random intercept at the household level, to account for unmeasured family-level influences that affect both siblings in the same household.

The L.A. FANS asked parents about these and a number of other common childhood ailments; I examine the subset of measures that were prevalent enough in my analytic sample to allow analysis. Some other disorders, such as diabetes or developmental delay were present in less than 2 percent of cases, prohibiting analysis of differences by immigration status. Children age 12 and older were asked to report their weight and height. For these children, I calculate their body mass index (BMI) based on these reports. I then compare their BMI to the average for children of their age and gender using statistics reported by the US Center for Disease Control (CDC). I label children as overweight if their BMI is at or above the 85th percentile for their age and gender, following the CDC definition.

I include independent variables in blocks. First, I control for factors unrelated to parents' or children's immigration status, but that may vary between different types of immigrant families and be correlated with my measures of healthcare access and health. In these initial models, I control for children's age and gender; the number of children in the household; whether the child lives with two biological parents, a mother and stepdad, a single mother, or in another type of family; the mother's age; and a binary indicator of whether the child had a low birth weight (less than 2,500 grams). I also control for the number of households in the census tract and the poverty

strata of the census tract, to account for sampling design. I control for the highest educational attainment of a parent in the household (less than high school, high school, or some college or more), for immigrant mothers' duration of residence in the United States (fewer than five years, five to nine years, 10 to 19 years, or 20 years or more), and for whether immigrant mothers were born in Central America versus Mexico.

After including these basic controls, I investigate whether various factors mediate between family immigration status and the various measures of healthcare access and health. I explore whether socioeconomic factors that may result from undocumented status explain any associations between immigration status and healthcare access or health by factoring in family income (logged), whether the family owns the home in which they reside, whether the household is overcrowded (more than 2 residents per bedroom), whether any household member is employed, whether the mother is employed, and whether the family changed residence at all in the prior two years. I explore the mediating role of mothers' mental health by accounting for whether the mother reported experiencing a two week period of depression or loss of interest in the past 12 months and for mother's reported self-efficacy, or sense of control over life, measured by a weighted scale (weighted using principal components analysis) of mothers' answers to the seven-question Pearlin Self-Efficacy scale.

Finally, I explore the potential mediating role of neighborhood characteristics, drawing on tract-level information from the 2000 census. I use modified versions of the neighborhood quality indices included in the restricted-use L.A. FANS data. First, I include a measure of the concentration of immigrants in the neighborhood, which is a weighted scale of 1) the share of adults in the tract who are Spanish speakers, 2) the non-citizen share of the population, 3) the foreign-born share of the population, 4) the share of the population that is a recent immigrant

(who entered the country in the last five years), 5) the share of adults in the tract who are English only speakers, and 6) the share of adults who speak English very well. I next include a measure of the share of households in the neighborhood with children.

I control for residential instability by creating a weighted scale of 1) the share of people in the tract who are living in the same residence as five years ago, 2) the share of residences that are owner occupied, 3) the share of households that are in multi-unit buildings, and 4) the share of households made up of non-family living arrangements. Finally, I control for the ethnic and racial composition of the neighborhood, including the share of the neighborhood that is Latino, non-Hispanic white, non-Hispanic black, and Asian or other. I combine the share Asian with the share from other races and ethnicities because the Latino families in my sample tend to live in census tracts with a very low Asian share of the tract population.

Results

Descriptive statistics. Table 2.1 shows means and standard errors of the means of healthcare access and child health measures for the analytic sample overall, and for children in each of the four types of immigrant families. Health insurance coverage varies strongly by immigration status. Among children in native families, 90 percent have health insurance of some sort, and a majority have private health insurance. In both legal immigrant and mixed-status families, about three-quarters of children have health insurance coverage. Children in legal immigrant families are about equally likely to have public or private insurance, while most children in mixed-status families who have insurance rely on public insurance. Seventy-two percent of children in undocumented immigrant families lack health insurance coverage. Parents report that 20 percent

Table 2.1. Sample means and proportions and standard errors

	Total		Native		Legal immigrant		Mixed-status		Undocumented	
	mean	SE	mean	SE	mean	SE	mean	SE	mean	SE
Health insurance status										
None	0.26	0.01	0.10	0.02	0.24	0.02	0.25	0.02	**0.72**	0.04
Public	0.44	0.01	0.36	0.03	**0.39**	0.02	0.69	0.02	**0.20**	0.03
Private	0.31	0.01	0.54	0.03	**0.37**	0.02	0.06	0.01	0.08	0.02
Usual source of healthcare										
None	0.09	0.01	0.02	0.01	0.08	0.01	0.07	0.01	**0.35**	0.04
Clinic or other	0.70	0.01	0.64	0.03	**0.70**	0.02	0.79	0.02	**0.63**	0.04
Doctor's office	0.21	0.01	0.35	0.03	**0.22**	0.01	0.13	0.02	**0.03**	0.01
Had well-care checkup in last 12 months	0.73	0.01	0.80	0.02	**0.69**	0.02	0.77	0.02	0.69	0.04
Saw dentist in last 12 months	0.48	0.01	0.57	0.03	0.50	0.02	0.43	0.03	**0.28**	0.04
Parent reported global health status										
Poor or fair	0.07	0.01	0.02	0.01	0.07	0.01	0.08	0.01	0.10	0.02
Good	0.31	0.01	0.16	0.02	0.30	0.02	0.40	0.02	0.41	0.04
Very good	0.23	0.01	0.27	0.02	0.24	0.02	0.18	0.02	0.23	0.03
Excellent	0.40	0.01	0.54	0.03	0.39	0.02	0.34	0.02	0.25	0.04
Has doctor reported asthma	0.09	0.01	0.15	0.02	0.09	0.01	0.07	0.01	0.07	0.02
Has doctor reported frequent ear infections	0.09	0.01	0.11	0.02	0.08	0.01	0.11	0.02	**0.03**	0.01
Has doctor reported anemia	0.08	0.01	0.05	0.01	0.08	0.01	0.11	0.02	0.11	0.03
Overweight (age 12 to 17)	0.38	0.02	0.28	0.06	0.40	0.03	0.50	0.11	0.38	0.06
N	1672		323		806		393		150	

Note: Shaded numbers indicate mean is significantly different than the mean for children in native families. Numbers in bold indicate mean is significantly different than the mean for children in mixed-status families.

of children in undocumented immigrant families have public health insurance, which likely indicates parents reporting some form of stop-gap, charity care or emergency medical care as insurance. Only 6 percent of children in mixed-status families and 8 percent of children in undocumented immigrant families have private health insurance.

There are also strong disparities in having a usual healthcare provider. Children in native, legal immigrant, and mixed-status families all tend to have a usual source of healthcare, while about 35 percent of children in undocumented families have no usual source of care. Children in native families are more likely than others to go to a doctor’s office rather than a clinic or other source for their care. Despite this, children in all types of immigrant families report high rates of having seen a doctor for a routine exam in the prior year. Children in

undocumented immigrant families have lower rates of having seen a dentist than children in native or other immigrant families: Among children in native families, 57 percent saw a dentist last year, compared to 28 percent of children in undocumented families.

Mothers of children in native families report that children have better global health than parents in immigrant families. Over half of children in native families have excellent health, as reported by their mothers, compared to 39 percent of children in legal immigrant families, 34 percent of children in mixed-status families, and a quarter of children in undocumented immigrant families. In seeming contradiction, children in native families also have significantly higher levels of doctor-diagnosed asthma and frequent ear infections than children in mixed-status and undocumented immigrant families. Children in immigrant families seem to have higher rates of being overweight than children in native families, but due to the small sample size (and thus large standard errors) for the body mass index measures, these differences are not statistically significant.

Access to insurance and a usual healthcare provider. Access to health insurance and access to a usual healthcare provider are so strongly correlated with immigration status, and are shaped so strongly at the household level (for households with information on two siblings), that no useful information can be gained by looking at these outcomes with individual level multivariate regression models. Descriptive statistics showed that children in undocumented immigrant families were significantly less likely to have health insurance than children in native families or than children in mixed-status families, while children in native, legal immigrant, and mixed-status families had similar rates of having some type of health insurance coverage. They also showed that children in undocumented immigrant families had significantly lower rates of having a usual care provider than children in native families or in mixed-status families, while

children in native, legal immigrant, and mixed-status families had similar rates of having some type of usual care provider. This suggests that children's own immigration status, but not parents' immigration status, is strongly correlated with children's access to health insurance and healthcare. Models exploring the correlation between immigration status and access to health insurance and having a usual care provider at the group level show these same relationships even after controlling for differences in backgrounds, socioeconomic characteristics, mother's mental health, and neighborhood contexts among the four types of immigrant families (available upon request).

Access to physical health and dental checkups. A somewhat different story emerges when looking at children's access to preventive healthcare (see table 2.2). Despite differences in health insurance coverage and having a usual source of care, there no evidence that immigration status is associated with disparities in seeing a doctor for preventive care. Even when including just the basic set of controls, there are not significant differences in odds of having seen a doctor for a checkup in the past year by immigration status. When, accounting for family and neighborhood characteristics, there are still no significant differences.

In contrast, there are legal status differences in having access to dental care. In initial models, children in both legal immigrant and undocumented immigrant families have lower odds of having seen a dentist in the prior year, compared to children in native families, but after including household and neighborhood characteristics, only children in undocumented immigrant families have lower odds (90 percent lower) of having seen a dentist in the prior year.
The difference in the odds of seeing a dentist between children in undocumented immigrant families and children in mixed-status families is significant, suggesting again that children's

Table 2.2. Children's healthcare access

	Saw doctor in last 12 months for well-care visit, logistic regression		Saw dentist in last 12 months, logistic regression	
	(1)	(2)	(3)	(4)
Immigration status				
Legal immigrant	-0.017	0.026	-0.970*	-0.651
	(0.447)	(0.450)	(0.469)	(0.470)
Mixed-status	-0.130	-0.093	-0.574	-0.185
	(0.454)	(0.463)	(0.464)	(0.473)
Undocumented	0.273	0.157	-2.689***	-2.234***
	(0.456)	(0.470)	(0.511)	(0.517)
Basic controls	Yes	Yes	Yes	Yes
Family SES	No	Yes	No	Yes
Mother's mental health	No	Yes	No	Yes
Neighborhood characteristics	No	Yes	No	Yes
Constant	3.892***	4.993***	-1.614**	-1.577
	(0.625)	(1.081)	(0.605)	(1.096)
N	1672	1672	1672	1672

Note: Standard errors in parentheses.
^ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

immigration status matters more than parents' immigration status in shaping children's access to a dentist.

Health status. I explore five different health outcomes in table 2.3. Models 1-3 show the relationship between immigration status and children's global health status. With just the initial set of controls, children in any type of immigrant family have lower parent-reported health status than children in native families. These associations persist after accounting for family and neighborhood characteristics that might mediate associations between immigration status and global health. After adding in children's healthcare access – their health insurance coverage and their type of usual healthcare provider, if any – the difference in global health between children in legal immigrant and native families is only marginally significant, while children in mixed-

Table 2.3. Children's health status

	Parent reported global health status, ordered logistic			Doctor said child has asthma, logistic			Doctor said child has frequent ear infections, logistic		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Immigration status									
Legal immigrant	-0.791***	-0.692*	-0.622^	-0.712*	-1.006^	-0.933	-0.337	-0.495	-0.478
	(0.208)	(0.333)	(0.335)	(0.319)	(0.600)	(0.603)	(0.316)	(0.566)	(0.571)
Mixed-status	-1.299***	-0.904**	-0.807*	-0.782*	-0.801	-0.788	0.053	-0.124	-0.144
	(0.234)	(0.337)	(0.340)	(0.385)	(0.621)	(0.625)	(0.349)	(0.568)	(0.576)
Undocumented	-1.538***	-1.129**	-0.927*	-1.206*	-1.114^	-0.822	-1.348*	-1.564*	-1.475*
	(0.287)	(0.347)	(0.361)	(0.522)	(0.658)	(0.684)	(0.619)	(0.725)	(0.746)
Health insurance coverage (ref = none)									
Public			0.358^			0.397			-0.022
			(0.209)			(0.374)			(0.367)
Private			0.106			0.598^			0.169
			(0.182)			(0.345)			(0.322)
Source or usual healthcare (ref = none)									
Clinic or other			0.229			0.159			0.344
			(0.239)			(0.477)			(0.485)
Doctor's office			0.359			-0.034			0.234
			(0.283)			(0.540)			(0.547)
Had checkup last year						-0.144			0.199
						(0.258)			(0.271)
Constant				-3.908***	-7.074***	-7.599***	-2.996***	-4.537**	-5.189***
				(0.744)	(1.654)	(1.760)	(0.688)	(1.412)	(1.558)
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Family SES	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Mother's mental health	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Neighborhood characteristics	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
N	1672	1672	1672	1672	1672	1672	1672	1672	1672

Note: Standard errors in parentheses.

^ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Table 2.3, continued. Children's health status

	Doctor said child has anemia, logistic			Child is overweight, logistic (age 12-17)		
	(10)	(11)	(12)	(13)	(14)	(15)
Immigration status						
Legal immigrant	0.248	-0.262	-0.308	0.278	-3.429*	-3.497*
	(0.390)	(0.581)	(0.588)	(0.460)	(1.382)	(1.416)
Mixed-status	0.427	-0.137	-0.308	1.066	-2.015	-2.021
	(0.408)	(0.570)	(0.580)	(0.779)	(1.397)	(1.426)
Undocumented	0.869^	0.454	0.450	0.338	-2.599^	-2.586^
	(0.502)	(0.583)	(0.608)	(0.568)	(1.328)	(1.379)
Health insurance coverage (ref = none)						
Public			-0.576			0.457
			(0.388)			(0.435)
Private			0.033			0.084
			(0.308)			(0.459)
Source or usual healthcare (ref = none)						
Clinic or other			0.767			-0.229
			(0.472)			(0.521)
Doctor's office			0.463			-0.197
			(0.558)			(0.652)
Had checkup last year			0.175			-0.344
			(0.288)			(0.326)
Constant	-2.135**	-4.539**	-5.178**	1.855	5.409*	5.858*
	(0.728)	(1.485)	(1.615)	(1.739)	(2.600)	(2.729)
Basic controls	Yes	Yes	Yes	Yes	Yes	Yes
Family SES	No	Yes	Yes	No	Yes	Yes
Mother's mental health	No	Yes	Yes	No	Yes	Yes
Neighborhood characteristics	No	Yes	Yes	No	Yes	Yes
N	1672	1672	1672	380	380	380

Note: Standard errors in parentheses.

^ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

status and undocumented families still have significantly lower global health. Health insurance coverage and having a usual care provider are not strongly correlated with physical health status. The differences in global health status between children in legal immigrant families and children in mixed-status or undocumented immigrant families are not significant, suggesting parental place of birth may matter more than parents' or children's immigration status is shaping global health. (See appendix 2.1 for coefficients of all independent variables in models of health outcomes with the full set of controls.)

For doctor-reported asthma, columns 4-6 of table 2.3 show that with just the basic set of controls, children in all types of immigrant families have lower rates than children in native families. After including family and neighborhood characteristics, rates of asthma are lower for children in legal or undocumented immigrant families compared to children in native families, but these differences are only marginally significant. Higher parental educational attainment, residence in a neighborhood with a higher share of white neighbors, and higher family income all seem to be correlated with higher rates of asthma (see appendix 2.1), which runs in contrast to the relationship between socioeconomic status and asthma observed in the US population as a whole (Case and Paxson 2006). I discuss this finding more below. After adding controls for healthcare access, there are no significant correlations between immigration status and odds of having asthma. Differences in odds of having an asthma diagnosis do not vary significantly between children in different types of immigrant families regardless of the controls and mediators included in the model.

Children in undocumented immigrant families, but not children in legal immigrant or mixed-status families, have lower odds of having doctor-diagnosed frequent ear infections than children in native families, regardless of the controls or mediators added to the model. Children

in undocumented immigrant families also have lower odds of frequent ear infections than children in mixed-status families. This story does not change when accounting for children's health insurance coverage, type of usual care provider, or whether children saw a doctor for a checkup in the past year. There are no significant differences by legal status for rates of diagnosed anemia/iron deficiency, once controlling for parental educational attainment.

Finally, there do not initially seem to be differences by immigration status or legal status in rates of being overweight among older children. Once accounting for family and neighborhood characteristics, however, a gap opens between children in legal immigrant families and children in native families, and a marginally significant gap opens between children in undocumented immigrant families and native families. Higher family income is associated with lower odds of being overweight, while mother's longer duration in the United States is associated with higher odds of being overweight. Living in a more immigrant-heavy neighborhood is associated with higher odds of being overweight. Lower odds of being overweight in legal immigrant and undocumented immigrant families persist with the full set of mediators and when including measures of access to healthcare.

Discussion

The exclusion of undocumented parents and children from most rights afforded to legal US residents portends potential health threats for children of undocumented immigrants. The results above suggest that undocumented children have limited access to insurance and steady healthcare. Almost three-quarters of undocumented children in Los Angeles County did not have health insurance in 2000-2001, while citizen children with undocumented parents relied heavily on public health insurance access. Children in mixed-status families had lower rates of reliance

on potentially higher-quality medical care in doctor's offices than children in native families, while children in undocumented families were more likely to lack a usual source of healthcare. Immigration status does not appear to be associated with the odds of having seen a doctor in the prior year, though it is possible that the quality of the medical providers visited by children differs based on immigration status, while undocumented children are less likely to have seen a dentist than other children.

Global, parent-reported health status is worse for children with foreign-born parents, particularly those in mixed-status or undocumented immigrant families. In seeming contradiction, children in undocumented immigrant families have significantly lower rates of doctor-diagnosed frequent ear infections. There is some evidence here to suggest that children in immigrant families have lower rates of access to a doctor's diagnosis of common ailments, rather than having lower rates of asthma or ear infections. If an immigrant health advantage were operating, we would not expect that controlling for the lower family income of undocumented families and higher family income of natives would attenuate the lower rates of asthma between children in legal and undocumented immigrant families and children in native families. Rather, controlling for the lower incomes of immigrant households would widen the gap between healthier children of immigrants and less healthy children of natives. Indeed, this is the story we see for the one health outcome that is not dependent on having a doctor diagnosis. After controlling for the lower socioeconomic status of immigrant households, we see a children-of-immigrant advantage in children's weight. These data do not allow a firm conclusion, but it seems possible that children in immigrant families have less access to high quality doctors who can accurately diagnose common childhood ailments, even though they see doctors for annual checkups at the same rate as children in native families. There is tentative evidence here that

healthcare access for children of immigrants remained a problem in 2000-2001, even in Los Angeles County, a location with decades of experience serving a substantial population of immigrant and undocumented families.

The L.A. FANS data permit the first real examination of the relationship between parent and child immigration status, children's access to healthcare, and child health outcomes, but there are several limitations to this analysis. First, I rely here on only the first wave of L.A. FANS data. Very few respondents gain legal status between the two waves of the survey, so it is not possible to examine how changes in legal status lead to changes in access to healthcare or health status. Further, there were only 34 undocumented immigrant children in the second wave of the survey, prohibiting analysis of how children's own immigration status affects healthcare access and health in the second wave. The relationship between immigration status and healthcare access and health described in this paper cannot be interpreted as a causal relationship. Second, as discussed earlier, because L.A. FANS asks parents about doctor diagnoses of health conditions, rather than about parents' perceptions of children's health conditions, it is not entirely possible to separate health status from the availability of a doctor's diagnosis.

Third, parents' reports are an imperfect measure of children's global health status due to potential cultural or language of interview biases in reports. Because the Spanish translation used for "fair" health is *regular*, which has a more positive connotation than "fair," adults sometimes report their health as *regular* at disproportionately high rates. Using adult self-reported health status from L.A. FANS, Bzostek et al. found that that language of interview, but not the language spoken at home, is significantly associated with self-reported health status, suggesting translation/connotation problems rather than systematically poorer health among Spanish

speakers (Bzostek, Goldman, and Pebley 2007). Since I use a sample of only respondents with Mexican and Central American origins, cultural differences in reporting health are less of a concern for my findings than for studies using a US-born white reference group. Further, very few parents report their children's global health status as fair or *regular*. I do not control for the language of interview in my study, because immigration status and language of the parent interview are so collinear (only one parent in an undocumented family answered the survey in English, only 25 interviews with native families were done in Spanish). In models, available upon request, where I do control for language of interview, there are no longer significant differences in children's global, parent-reported health by immigration status. However, controlling for the language of interview also changes the results for even seemingly objective outcomes such as whether children have a usual care provider, suggesting the language of interview control is soaking up other variation between children in different types of immigrant families, not simply interview effects.

Wave 2 of L.A. FANS contains a vignette study in which adult respondents are asked to rate the health of hypothetical people with certain health conditions. After controlling for basic socioeconomic characteristics, I find that Latino parents interviewed in Spanish rate physical functioning, limitations, and vitality (energy levels) similarly to those interviewed in English, but rate painful conditions as less severe. These vignette results therefore suggest that, if anything, immigrant parents reporting in Spanish may be overstating children's health. In additional analyses of the wave one global child health measures, available upon request, I controlled for parents' reports of their own global health status in models of children's global health status. In doing so, I assume that parents' biases toward reporting better or worse health, or in interpreting the connotations of "good/*bueno*" or "fair/*regular*" health would operate similarly in reporting

their own health as in reporting their children's health. These models show the same lower global health among children of immigrants compared to children of natives as reported earlier.

In conclusion, this study provides the first look, using a representative sample, at how parent and child immigration status affects children's access to healthcare, and in turn, how immigration status and healthcare access combine to shape children's health status. Relevant to policymakers, citizen children of undocumented parents are able to access public health insurance at high rates, at least in a city that has worked hard to support the well-being of immigrant families. Children in immigrant families, whether legal, mixed-status, or undocumented, see doctors at similar rates to children in native families, but there is some evidence that children in undocumented immigrant families may lack access to high quality doctors who can diagnose common illnesses, while there is evidence here of a children-of-immigrants advantage in healthy body weight. Further research is needed to unpack the causes behind the relationship between parental place of birth and child health, and to disentangle levels of access to high quality doctors and the incidence of frequent childhood health conditions among children in mixed-status and undocumented families.

Appendix 2.1. Models of health outcomes with full controls

	Parent reported global health status, ordered logistic		Doctor said child has asthma, logistic		Doctor said child has frequent ear infections, logistic		Doctor said child has anemia, logistic		Child is overweight, logistic (age 12-17)	
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)										
Legal immigrant	-0.622^	(0.335)	-0.933	(0.603)	-0.478	(0.571)	-0.308	(0.588)	-3.497*	(1.416)
Mixed-status	-0.807*	(0.340)	-0.788	(0.625)	-0.144	(0.576)	-0.308	(0.580)	-2.021	(1.426)
Undocumented	-0.927*	(0.361)	-0.822	(0.684)	-1.475*	(0.746)	0.450	(0.608)	-2.586^	(1.379)
Controls										
Basic										
Age	0.001	(0.016)	0.037	(0.030)	-0.046	(0.030)	-0.084*	(0.033)	-0.180^	(0.100)
Female	0.056	(0.119)	-0.292	(0.220)	0.007	(0.216)	-0.268	(0.228)	-0.723*	(0.318)
Neighborhood poverty strata (ref = very poor)										
Poor	0.209	(0.209)	-0.082	(0.352)	0.134	(0.350)	-0.286	(0.359)	0.464	(0.469)
Not poor	0.309	(0.463)	-0.176	(0.771)	0.946	(0.748)	-0.914	(0.863)	0.690	(1.064)
Number of households in census tract	-0.000^	(0.000)	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)	-0.000	(0.000)
Family structure, parental education										
Number of siblings in household	0.071	(0.061)	0.101	(0.108)	-0.044	(0.105)	-0.156	(0.108)	-0.145	(0.146)
Family structure (ref = two biological parents)										
Biological mom, stepdad	-0.133	(0.279)	-0.032	(0.487)	0.188	(0.473)	-0.741	(0.634)	0.112	(0.619)
Single mom	0.001	(0.197)	0.649*	(0.316)	-0.413	(0.346)	-0.391	(0.362)	-0.492	(0.414)
Other	0.646	(0.449)	-0.641	(0.801)	-0.422	(0.814)	-0.514	(0.941)	-0.650	(0.644)
Mother's age	-0.033**	(0.011)	0.025	(0.019)	0.013	(0.019)	0.016	(0.021)	-0.007	(0.023)
Highest parental education (ref = less than high school)										
High school	0.254	(0.180)	0.793**	(0.307)	0.086	(0.308)	-0.590^	(0.326)	-0.699^	(0.412)
Some college or more	0.186	(0.199)	0.488	(0.346)	0.504	(0.330)	-0.353	(0.351)	0.143	(0.451)
Immigration factors										
Mother's place of birth (ref = Mexico)										
Central America	0.493*	(0.198)	0.330	(0.334)	0.091	(0.331)	0.193	(0.343)	-0.491	(0.448)
Mother's years in the United States (ref = fewer than 5)										
Five to nine	-0.324	(0.257)	0.387	(0.491)	-0.029	(0.454)	-0.038	(0.428)	0.572	(0.875)
Ten to 19	-0.078	(0.255)	-0.199	(0.492)	0.116	(0.452)	0.161	(0.428)	2.623*	(1.198)
20 or more	0.131	(0.315)	0.700	(0.575)	-0.077	(0.561)	0.322	(0.542)	4.005**	(1.399)

Appendix 2.1, continued. Models of health outcomes with full controls

	Parent reported global health status, ordered logistic		Doctor said child has asthma, logistic		Doctor said child has frequent ear infections, logistic		Doctor said child has anemia, logistic		Child is overweight, logistic (age 12-17)	
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Family socioeconomic factors										
Logged family income	0.012	(0.020)	0.131^	(0.073)	-0.001	(0.035)	0.053	(0.039)	-0.183*	(0.083)
Overcrowded house	-0.257	(0.166)	-0.075	(0.282)	0.109	(0.284)	0.457	(0.299)	-0.033	(0.361)
Changed residence in last two years	0.022	(0.169)	0.545^	(0.287)	0.008	(0.280)	0.327	(0.282)	-0.378	(0.479)
One person in household employed	-0.303	(0.254)	0.273	-0.425	-0.014	(0.438)	0.412	(0.456)	-0.311	(0.525)
Mother is employed	-0.201	(0.153)	0.077	(0.262)	0.051	(0.259)	-0.080	(0.264)	0.635^	(0.366)
Mother's mental health and social support										
Mother experienced depression	-0.193	(0.152)	0.128	(0.257)	0.863***	(0.255)	0.257	(0.259)	-0.159	(0.341)
Mother's self-efficacy scale	0.183***	(0.049)	-0.048	(0.081)	-0.086	(0.080)	-0.034	(0.083)	-0.135	(0.109)
Neighborhood factors										
Neighborhood immigrant factor	-0.028	(0.098)	0.165	(0.161)	0.169	(0.164)	0.236	(0.172)	0.596*	(0.264)
Share of households with kids	1.834^	(1.018)	1.799	(1.786)	1.570	(1.761)	1.286	(1.779)	-2.949	(2.527)
Neighborhood stability factor	-0.018	(0.068)	-0.046	(0.114)	-0.043	(0.116)	0.216^	(0.119)	0.222	(0.159)
Neighborhood ethnic composition (ref = share Latino)										
Share white	0.412	(1.119)	4.068*	(1.665)	2.244	(1.775)	3.953^	(2.120)	2.797	(2.347)
Share black	0.353	(1.202)	-0.809	(2.250)	0.826	(2.092)	3.507^	(2.064)	4.965	(3.036)
Share Asian or other	2.217*	(0.977)	1.785	(1.517)	-0.552	(1.626)	-0.158	(2.003)	0.290	(2.106)
Healthcare access										
Health insurance coverage (ref = none)										
Private	0.358^	(0.209)	0.397	(0.374)	-0.022	(0.367)	-0.576	(0.388)	0.457	(0.435)
Public	0.106	(0.182)	0.598^	(0.345)	0.169	(0.322)	0.033	(0.308)	0.084	(0.459)
Usual source of healthcare (ref = none)										
Clinic or other	0.229	(0.239)	0.159	(0.477)	0.344	(0.485)	0.767	(0.472)	-0.229	(0.521)
Doctor's office	0.359	(0.283)	-0.034	(0.540)	0.234	(0.547)	0.463	(0.558)	-0.197	(0.652)
Had checkup last year			-0.144	(0.258)	0.199	(0.271)	0.175	(0.288)	-0.344	(0.326)
Constant			-7.599***	(1.760)	-5.189***	(1.558)	-5.178**	(1.615)	5.858*	(2.729)
N	1672		1672		1672		1672		380	

Note: Standard errors in parentheses

^ p<0.10 * p<0.05 ** p<0.01 *** p<0.001

Chapter 3. Undocumented and Uninsured: Children's Immigration Status and Access to Healthcare

Abstract

Despite growing attention to undocumented immigrant youth who were brought to the United States as children, we know very little about how being undocumented affects children's well-being. I use data from the National Health Interview Survey and Medical Expenditure Panel Survey to analyze the relationship between undocumented status and children's access to health insurance and healthcare. I directly compare undocumented and US citizen children in the same family, to net out unobserved family level factors affecting whether or not children take up any available health insurance and healthcare. I find that undocumented children have lower odds of insurance coverage than their US citizen siblings, and have lower odds of having a usual care provider. Younger undocumented children appear less likely to receive regular preventive health checkups or to see the dentist regularly, though results are mixed. Any differences in access to preventive healthcare are fully explained by differences in health insurance coverage. These results suggest that policies blocking undocumented children from public insurance, not only parents' health beliefs or willingness to take up available insurance, strongly shape undocumented children's access to insurance and care. Undocumented parents do indeed access public insurance and healthcare for their eligible US citizen children.

Introduction

Expansions in Medicaid and SCHIP, the public health insurance programs serving children in low-income families, have lowered the share of US children without health insurance to about 10 percent in 2011 (DeNavas-Walt, Proctor, and Smith 2012). Yet federal health insurance programs, including all provisions of the Patient Protection and Affordable Care Act (ACA) of 2010, and most state-funded programs leave out a particularly vulnerable subset of the US child population – undocumented immigrant children. The number of undocumented children in the country grew through the 1980s and 1990s, reaching over 1.5 million in the early 2000s before falling to about 1 million today (Passel and Cohn 2011). Their presence has gone without much notice. Media and research attention on undocumented immigrants in the United States over the past several decades has focused mostly on the fates of adult workers, estimating their numbers and investigating their locations in the labor force and impacts on US-born workers. Researchers have only just begun to turn attention to the well-being of children of undocumented immigrants in the United States, focusing on the early childhood cognitive skills of US-born children and on the difficult transition to adulthood faced by undocumented youth (Gonzales 2011; Yoshikawa 2011).

Understanding the healthcare access of undocumented immigrant children is important in and of itself, but also because child health has implications for adult outcomes, with reverberations across the country's economy and society. Poor child health is associated with poorer adult health, lower educational attainment, and lower adult earnings (Case and Paxson 2010; Currie and Stabile 2007). Lower access to insurance and healthcare is generally accepted to threaten child health, though evidence is a bit mixed (Currie et al. 2008; Holl et al. 2000; Hughes and Ng 2003; Kaestner et al. 2001; Szilagyi et al. 2000), perhaps because children tend

to be healthy and resilient, so any health effects may not be immediately measurable. Among adults, new insurance coverage is associated not only with improved self-reported physical and mental health, but also with less financial strain (Finkelstein et al. 2011). The preponderance of evidence, therefore, suggests policies shaping children's access to insurance also shape future inequality trends in the country.

The likelihood that currently-undocumented children will remain in the United States to fulfill their educational aspirations and carry out their working lives has increased following President Obama's June 15, 2012 announcement that undocumented youth who entered the United States before age 16 may apply affirmatively for Deferred Action, a quasi-legal status that confers no visa, but protects youth from deportation and offers work authorization (Preston and Cushman 2012). An estimated 1.7 million undocumented youth under age 30 could become eligible for this program (Passel and Lopez 2012). While the impacts of this initiative in coming months and years remains to be seen, the move has further highlighted the plight of undocumented youth in the United States and led to opinion polls revealing strong majority support among American voters for granting undocumented students the right to stay in the country (Lerer 2012). The chances of passage of a law offering undocumented youth a real path to citizenship – such as the 10-year-pending DREAM Act – appear to be growing.

In this paper, I ask whether children's immigration status affects their access to health insurance and healthcare, and whether any differences in access to care are accounted for by differences in access to health insurance. In doing so, I separate the direct impact of children's immigration status from parental influences in determining rates of accessing insurance and healthcare. This distinction is important because insurance coverage rates conflate eligibility – the direct consequence of legal status – and take-up, which can be shaped by myriad family-level

factors. Many US parents do not sign up their children for available insurance. Despite the fact that all US citizen or legal immigrant children (past their first five years in the country) are eligible for Medicaid, in 2011, 14 percent of children (around 7 million) in poor families had failed to enroll in the program (DeNavas-Walt et al. 2012). Undocumented immigrant parents face additional barriers in accessing insurance for their children not faced by other US parents. To the extent, therefore, that undocumented children face lower access to insurance or healthcare, it could be due to immigrant parents' failure to access available benefits and care for any of their children, US citizen or undocumented. Or it could be that parents do access insurance for their children when they are able, but that they simply cannot access coverage for their undocumented children, who are ineligible for public insurance in all but a handful of states.

To separate the effects of insurance policies from the effects of parental take-up rates, I use the National Health Interview Survey and Medical Expenditure Panel Surveys, and compare the health insurance and healthcare access of likely undocumented children to that of their US citizen siblings, using random and fixed effects models. In this way, I net out parental or neighborhood factors that may influence access to health insurance, such as parents' health beliefs, parents' knowledge of and fears about available public benefits, neighborhood or community peer influences, transportation difficulties, or parents' work hours. Looking at differences in outcomes between siblings who share the same family and neighborhood characteristics allows me to approximate causal effects of children's legal status and insurance eligibility policies on their access to healthcare.

Existing research on the healthcare access of immigrant children has not tested whether there are direct impacts of children's immigration status on their access to insurance and care,

largely because most population-based surveys do not inquire about children's immigration status. As a result, researchers look instead at the healthcare access of noncitizen children, without attempting to differentiate between legal permanent resident children, who generally have access to public insurance, and undocumented children, who do not. Researchers who use imputations of legal status to try to estimate the insurance coverage and healthcare access of undocumented children have not accounted for other family, parent, or child characteristics that might affect access to insurance and care. In fact no research to date has attempted to disentangle undocumented children's access to care, as shaped by public health insurance eligibility policies, from family take-up rates of available care.

Background

Theory. Theories of immigrant assimilation, straight-line, segmented, and otherwise, all argue that lacking legal status should negatively impact immigrants' ability to successfully navigate the society of their new homeland. Segmented assimilation theory suggests that immigrants' contexts of reception, including government policies offering or denying legal residence, affect assimilation trajectories across immigrant generations (Portes and Rumbaut 2001). The modern retelling of straight line assimilation theory – first developed to describe the experiences of European immigrants to the United States at the turn of the 20th Century – likewise suggests that children of undocumented immigrants prove the exception to an otherwise optimistic scenario of upward assimilation by most children of immigrants (Alba and Nee 2005).

Mixed-immigration status families. In this paper, I analyze "mixed-status families" – defined for my purposes as families in which siblings hold different immigration statuses – as a way of isolating the effects of children's immigration status from the effects of parents'

immigration status and family characteristics. The term "mixed-status families" more commonly refers to families with undocumented immigrant parents and US-born children. Under the 14th amendment to the US constitution, all children born in the United States are automatically US citizens, regardless of the citizenship or immigration status of their parents. Therefore, when undocumented parents bear children in the United States, a mixed-status family results. Fix and Zimmerman first drew attention to these families, pointing out that in 1998, almost one in ten (9 percent) of US families with children consisted of at least one noncitizen parent and at least one citizen child (Fix and Zimmermann 2001). In 2010, an estimated 9 million people in the United States lived in a family with at least one undocumented adult and one US-born child (Taylor et al. 2011).

Most relevant to my research, of the estimated 1 million undocumented children in the United States, about 40 percent live with at least one US citizen sibling (Taylor et al. 2011). This type of mixed-status family, with a mixed-citizenship sibship, generally arises when undocumented immigrants bring one or more children to the United States with them, and then give birth to one or more additional children in the United States. Mixed-status families of both types raise important questions about the well-being of immigrant children and the relationship between parents' and children's legal status and child well-being. But in this paper, I focus in narrowly on mixed-citizenship sibships, in order to exploit variation in children's legal status within a single family as a way to isolate the impact of children's legal status on children's access to health insurance and healthcare.

Immigration status and healthcare access

Prior findings. Prior estimates suggest that undocumented children likely have much lower health insurance coverage than legal immigrant or US citizen children. Relying on imputations of legal status in the Current Population Survey, the Migration Policy Institute estimates that 44 percent of undocumented immigrant children lacked health insurance coverage in 2008, compared to 25 percent of Legal Permanent Resident (LPR) children, and 10 percent of US-born children (Capps, Rosenblum, and Fix 2009). This descriptive paper accounts for family income-to-poverty ratios, but does not control for any other family, parent, or child-level factors in exploring these relationships. Evidence on noncitizen children overall, using data from California, from the 13 states covered by the National Survey of America's Families, and from the United States as a whole, suggests that noncitizen children have had lower rates of health insurance coverage and doctor visits than citizen children in native US families (Artiga and Schwartz 2007; Huang, Yu, and Ledsky 2006; Ku and Matani 2001; Ortega et al. 2007; UCLA Center for Health Policy Research 2003). As shown in chapter 2, analysis of one of the only US datasets to ask about children's specific immigration status, the Los Angeles Family and Neighborhood Survey (L.A. FANS), suggests that undocumented children have vastly rates of health insurance coverage than children in native families, and have lower rates of having a usual source of healthcare, but have similar odds of having had a healthy checkup in the prior year.

Aside from this Los Angeles-focused paper, existing research does not attempt to isolate those non-citizen children most likely to be undocumented immigrants from children who are most likely to have a green card for permanent legal residence, and so conflates the effects of eligibility rates for undocumented children with take-up rates for generally eligible legal immigrant children. Furthermore, because noncitizen children also have noncitizen (legal

immigrant or undocumented) parents, these studies conflate the result of parental inability or unwillingness to access insurance and healthcare for their children with the effects of children's own legal status. Immigrant, and particularly undocumented immigrant, parents may not apply for available insurance and care for their children because of limited English proficiency, lack of knowledge of available benefits, difficulty finding time or transportation to apply, difficulty completing needed paperwork, or fears of interacting with government workers due to lack of legal status.

Parent-level mechanisms. Multiple factors may block immigrant, and particularly undocumented, parents from accessing insurance and healthcare for which their children are eligible. Advocates have worried since changes to immigrant welfare eligibility in 1996 that undocumented and even legal immigrant parents would avoid applying for benefits for their eligible children because of misunderstanding of the consequences for future applications for legal status or US citizenship. After 1996, there was widespread confusion about how immigration authorities would interpret a "public charge" provision that prohibits individuals who are highly dependent on government assistance from certain immigration benefits (Fix and Zimmermann 2001). Researchers and advocates have also hypothesized that lack of information about available benefits, misunderstanding of eligibility rules, language and transportation problems, fear of providing detailed information to government workers, and lack of proper documents to prove income, due to informal or illegal work situations, all might deter parents from applying for benefits for their children, including public health insurance (Lessard and Ku 2003; Portes, Fernández-Kelly, and Light 2011).

Indeed, research in three communities in Texas, Massachusetts, and North Carolina revealed that all of these factors limit immigrants from accessing public insurance and healthcare

for their children, as does parents' inability to get to Medicaid offices during business hours due to work schedules, and in some cases, lacking children's birth certificates (Crosnoe et al. 2012). A study of barriers to health insurance coverage in Massachusetts, where all children in low-income families are eligible for public insurance regardless of immigration status, revealed that misunderstanding about eligibility rules, language barriers, and lack of proper documents all prevented immigrant parents from obtaining insurance for their children (Flores et al. 2005). In interviews with immigrant families in Ohio and New Jersey, Dreby found that undocumented parents were afraid to drive, because getting caught driving without a license could lead to their deportation, which could make it difficult for parents to take children to doctor's appointments (Dreby 2012).

Child-level mechanisms. While having immigrant and particularly undocumented parents may block even US citizen children from accessing insurance and healthcare, in this paper I seek to explore the particular obstacles faced by children who are themselves undocumented, using family level fixed effects to approximate a causal relationship between children's own immigration status and their access to insurance and healthcare. Undocumented children are prohibited from accessing federally funded Medicaid and SCHIP, the main sources of insurance for children in other low-income families.[1] A small number of states and counties have decided to use state and local funds to provide public insurance to undocumented immigrant children in low-income families, currently Illinois, Massachusetts, New York, Washington, the District of Columbia, and some California and Florida counties (Kaiser Commission Medicaid and the Uninsured 2009; National Immigration Law Center 2011). Most states, however, do not.

[1] Hospitals, however, can be reimbursed by Medicaid for short-term, emergency medical care given to undocumented immigrants.

In addition, immigrant, and particularly undocumented parents often work in jobs that do not provide employer-based health insurance (Buchmueller et al. 2007), and often cannot afford to purchase private health insurance plans or pay for care out of pocket. Under the Patient Protection and Affordable Care Act (ACA) of 2010, undocumented immigrant adults and children remain ineligible for federally-funded non-emergency Medicaid, and will be barred from using new state-based health exchanges to shop for individual private health insurance plans. Noncitizen immigrant children made up only 12 percent of the low-income uninsured child population in 2000 (Lessard and Ku 2003), but this share will undoubtedly grow after the ACA is fully implemented and more US citizen children gain coverage.

In comparing undocumented children to their US-born citizen siblings, therefore, I expect to find lower rates of insurance coverage because of lower rates of eligibility for public insurance. And, I expect to find that undocumented children have blocked access to healthcare. I expect that undocumented children's lower access to public insurance will completely explain away any association between children's legal status and access to healthcare.

Methods

I look at the relationship between immigration status and access to health insurance and healthcare using the National Health Interview Survey (NHIS) and the associated Medical Expenditure Panel Survey (MEPS). Both are large, nationally-representative, annual surveys that ask about the health insurance coverage and certain health outcomes of all members of selected households. My analysis focuses on unmarried children under age 18 in families with foreign-born, noncitizen parents from Mexico or Central or South America – not including Puerto Rico, Cuba, or the Dominican Republic. I drop the small number of children in the sample who are not

related to the adults in the household. I select only children living in families with at least one foreign-born noncitizen child and at least one US-born US citizen child – what I will call a mixed-citizenship sibship. I exclude any foreign-born children who entered the United States above the age of 15 years old, to match the eligibility criteria for the proposed federal DREAM Act.

In order to increase my sample size for the relatively small population of mixed-citizenship sibships, I merged together the 2002-2008 waves of the NHIS and link them to the MEPS surveys from years 2003 to 2009. In the seven years of combined NHIS and MEPS files, there are 915 children living in such mixed citizenship sibships who have complete data on key variables (6.7 percent of cases have missing data after selecting unmarried children with parents from Mexico or non-Caribbean Latin America, I then select mixed citizenship sibships from the other 93.3 percent of the selected sample).

The MEPS surveys a subsample of respondents from the NHIS over the course of two years. The NHIS collects information about respondents' place of birth and citizenship status, but not about their immigration status (temporary immigrant, legal permanent resident, or undocumented, for example). Therefore, I use noncitizen Mexicans and Central and South Americans as a proxy for undocumented immigrants. Of course not all foreign-born, noncitizen Latin American immigrants are undocumented. Best available estimates suggest that about 87 percent of children who have an undocumented parent have parents from Mexico or another part of Latin America, and that about 57 percent of Mexican immigrants and 53 percent of Salvadoran and Guatemalan immigrants overall (children and adults) in the United State are undocumented (Passel and Cohn 2010; Rumbaut 2008). Roughly 70 percent of noncitizen Mexicans in the United States are undocumented (Passel 2012). The undocumented share is

likely higher for relatively young parents – those with children age 0 to 17 – since legal status is positively correlated with age and with earlier year of entry to the United States. I call these children, who are likely to be undocumented, "undocumented children" throughout the remainder of the paper to avoid awkward phrasing, though the most accurate label for them would be "foreign-born, noncitizen children from non-Caribbean Latin America, who are quite likely to be undocumented."

In order to isolate the effects of immigration status from family socioeconomic effects, I compare the health insurance and access to healthcare of undocumented children to the outcomes of their US-born, citizen siblings. I use family-level random and fixed effects to net out any family level measured or unmeasured characteristics. These sibling models allow me to isolate the impact of legal status on children's access to health insurance and healthcare from all other factors, approximating a causal relationship.

I first look at sibling differences in health insurance coverage, examining whether or not children currently have health insurance and whether that insurance is public or private, using the MEPS summary measure of health insurance coverage. For most children, I have two annual measures of health insurance coverage from two years of MEPS surveys. I coded children according to their most advantaged health insurance status during the two years, considering private health insurance more advantaged than public insurance. I next examine how citizenship status and type of health insurance coverage are associated with regular healthcare access, looking at whether children had a usual care provider in both MEPS survey years, whether they had a routine care checkup in the last 12 months in both MEPS survey years, and whether they saw a dentist in the last 12 months in both MEPS survey years. The measure for having seen a

doctor for a checkup in the prior year was only asked of children younger than age 17, so the sample for these analyses is a bit smaller, 878.

I investigate differences between mixed citizenship siblings using logistic regression models, first with family-level random intercepts to account for unobserved family or neighborhood effects, and next with family fixed effects to more tightly control for family-level effects. In the random effects models, I control for children's age and gender, the family's place of origin (Central or South America versus Mexico), whether the child's father is in the household, mother's age, whether there are four or more adults in the household as a measure of household overcrowding, and the number of siblings. I also control for parental educational attainment, measured as the education of the adult with the highest education in the family – less than high school, a high school diploma, some college, or a bachelor's or higher degree, as well as for the family's income-to-poverty ratio, measured as whether the household income was below the federal poverty line, below 200 percent of the federal poverty line, or at least 200 percent of the poverty line or higher. I also control for whether the family owns the home they live in, as an additional measure of socioeconomic status and, to adjust for any potential language difficulties in applying for or accessing insurance and care, I control for the language of interview (English, Spanish, or both) and whether the household respondent reports that English is the language most commonly spoken in the home.

I control for the US region of residence, based on the four Census regions – South, West, Northeast, and Midwest. Unfortunately these data do not provide information on the state of residence, so I use this region measure in lieu of state of residence. I also control for whether the family lives in a metropolitan (versus rural) area, which might affect how difficult it is for families to find transportation to application sites or to healthcare providers and for the mother's

number of years in the United States, reported in 5-year increments – less than 1 year, one to four years, five to nine years, 10-14 years, and 15 years or more. Finally, I include dummy indicators for the survey year.

In regressions looking at health insurance coverage I also control for whether one parent has health insurance through work, since employer-provided insurance is the main source of private insurance for US families. In regressions examining whether the child has seen a dentist in the prior year, I control for whether the child has no insurance, public insurance, or private insurance. In models for whether the child has annual health checkups, I control for insurance coverage as well as for whether the child has a usual care provider. Children's age, children's gender, mother's age, household composition, country of origin, parental educational attainment, mother's duration of US residence, the language of interview, and home ownership are taken from the NHIS, while children's residence in a metropolitan area, whether the family speaks primarily English at home, the US region of residence, and the family's income to poverty ratio were available only in the MEPS. For access to healthcare models, I also repeat the analysis for children under age 10, since parents are most likely to access regular preventive healthcare for younger children.

Results

Descriptive statistics. Table 3.1 shows descriptive statistics of children's individual characteristics (age and gender), and healthcare access and health outcomes. As expected given the way mixed-status families form, on average, foreign-born children are older than their US-born siblings – 10.3 years old compared to 4.7 years old in the NHIS. Table 3.2 shows family-level characteristics of this mixed sibling sample. The average age of mothers is 32. The great

majority (93 percent) of families are from Mexico. Almost half (45 percent) of children had mothers who had been in the United States between 5 and 9 years. Eighteen percent had mothers who had been in the US for fewer than 5 years, and 36 percent had been in the US for 10 or more years. The average educational attainment of parents is low – 72 percent have less than a high school education, while just 11 percent have some college education. The largest share of children in my sample (46 percent) live in households with income below the poverty line, while only 13 percent live in households with incomes above 200 percent of the poverty line. The majority of interviews (62 percent) were conducted in Spanish. Only 6 percent of kids lived in families where English was the most common language spoken at home. A full 54 percent lived in the western United States, while 8 percent lived in the Midwest, 34 percent in the South, and just 3 percent in the Northeast. The great majority – 89 percent – lived in a metropolitan area. Twelve percent of families had no father present. Children lived with an average of 2.5 siblings, and 2.3 adults. Just 23 percent of parents had health insurance through work.

Table 3.1. Descriptive statistics of individual characteristics and outcomes

	US Citizen		Foreign-born, Noncitizen	
	Mean	SD	Mean	SD
Age (NHIS)	4.67	3.75	10.29	3.48
Female	0.51	0.50	0.50	0.50
Has insurance				
Private	0.09	0.28	0.11	0.31
Public only	0.81	0.39	0.39	0.49
None	0.11	0.31	0.50	0.50
Has usual healthcare provider	0.71	0.45	0.51	0.50
Had routine checkup in last 12 months	0.35	0.48	0.20	0.40
Saw dentist in last 12 months	0.21	0.41	0.15	0.36
	475		440	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Table 3.2. Descriptive statistics of family-level characteristics

	Mean	SD
Place of origin		
Mexico	0.93	0.25
Central or South America	0.07	0.25
Highest education level in family		
Less than high school	0.72	0.45
High school	0.17	0.37
Some college	0.09	0.29
College degree	0.02	0.15
Poverty status		
Poor	0.46	0.50
Low-income	0.42	0.49
Not poor	0.13	0.33
Family owns home	0.27	0.44
Language of interview		
English	0.13	0.33
Spanish	0.62	0.48
English and Spanish	0.25	0.43
English is language spoken most at home	0.06	0.23
Lives in MSA	0.89	0.31
Region of US		
Northeast	0.03	0.16
Midwest	0.08	0.28
West	0.54	0.50
South	0.34	0.48
Mother's age	32.16	6.04
Mother's years in the United States		
Less than 1 year	0.00	0.00
1 to 4 years	0.18	0.38
5 to 9 years	0.45	0.50
10 to 14 years	0.28	0.45
15 or more years	0.08	0.27
No mom in household	0.01	0.09
No dad in household	0.12	0.32
Number of adults in household	2.27	0.78
Number of siblings	2.48	1.27
At least one parent gets health insurance at work	0.23	0.42
	915	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

In these descriptive statistics, clear disparities in health insurance coverage appear, as expected, with half of undocumented children lacking health insurance coverage, compared to 11 percent of their US-born siblings (see table 3.1). Undocumented and US-born citizen children have similar rates of private health insurance coverage, so the difference in health insurance coverage comes from disparities in access to public health insurance coverage – 81 percent for US citizens compared to 39 percent for undocumented children. Foreign-born noncitizen children who have access to public health insurance either live in one of the states that provide public insurance to undocumented youth, or they are not actually undocumented. (State-level indicators are not available in the public release of these datasets, so I am not able to draw this distinction.)

US citizen children have higher rates of having a usual care provider than undocumented children (71 percent compared to 51 percent). Having a usual care provider is associated with more preventive health education, greater access to preventive care, and less unmet need for medical care (DeVoe et al. 2003, 2009, 2012). To further explore potential disparities in health access, I next look at whether children had a routine care check-up in the prior year. Physicians recommend that children see a doctor for a check-up every year. In descriptive statistics, 35 percent of US citizen children had a checkup last year, compared to 20 percent of undocumented children. Finally, 21 percent of US citizen children saw a dentist in the prior year, compared to 15 percent of undocumented children.

Insurance access. We would expect that policies in most states blocking undocumented children from public insurance would lead them to have much lower insurance coverage than their US citizen siblings. Table 3.3 shows logistic regressions of the relationship between immigration status and whether children have health insurance coverage, with and without

Table 3.3. Association between immigration status and having health insurance coverage, logistic

	Random Effects Regressions				Fixed Effects Regressions			
	(1)		(2)		(3)		(4)	
Foreign-born noncitizen (vs. US-born citizen)	-5.002***	(0.569)	-3.919***	(0.586)	-3.867***	(0.459)	-3.246***	(0.611)
Age in NHIS			-0.184**	(0.060)			-0.109	(0.081)
Female			-0.101	(0.347)			-0.256	(0.536)
Year fixed effects	Yes		Yes		-		-	
Controls	No		Yes		-		-	
Constant	4.659***	(0.923)	5.366**	(2.076)				
N	915		915		391		391	
BIC	830.387		919.907		83.113		93.073	
ll	-384.508		-344.032		-38.572		-37.583	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Notes: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

individual and family-level controls, but with a household-level random intercept. Indeed, with or without controls, undocumented children have over 95 percent lower odds of having health insurance coverage than their US-born, citizen siblings. Older children have lower odds of having health insurance coverage, but this does not explain away the relationship between immigration status and insurance coverage. Children who live in states in the US South have lower odds of insurance than children in the Midwest or Northeast (which I collapse together, since only 11 percent of the sample is from these two areas) while children in the West have similar odds of coverage as those in the Midwest and Northeast. Children in metro areas have lower odds of insurance coverage than children in rural areas. Surprisingly, children whose mothers who have been in the United States longer have lower odds of having health insurance coverage. Not surprisingly, children who have at least one parent who has health insurance through work have higher odds of health insurance coverage. The fixed effects regression models with age and gender controls (model 4) tells the same story – that undocumented children have much lower odds of having health insurance coverage, even when compared directly to their own US-born, citizen siblings.

Healthcare access. I expect to find that undocumented children have lower access to preventive healthcare, but that lower access to health and dental checkups is completely mediated by their lower rates of health insurance coverage. Is this true? I first explore whether children have a usual care provider. In random effects regressions (see table 3.4), being undocumented is associated with much lower odds of having a usual care provider than citizen siblings. Older children are less likely to have a usual care provider. Those who live in the South are less likely than those in the Northeast or Midwest to have a usual care provider. The fixed

Table 3.4. Association between immigration status and having a usual care provider, logistic

	Random Effects Regressions				Fixed Effects Regressions			
	(1)		(2)		(3)		(4)	
Foreign-born noncitizen (vs. US-born citizen)	-1.999***	(0.213)	-3.191***	(0.690)	-4.156***	(0.722)	-2.808**	(0.993)
Age in NHIS			-0.304***	(0.082)			-0.230	(0.150)
Female			0.025	(0.439)			-0.474	(0.745)
Year fixed effects	Yes		Yes		-		-	
Controls	No		Yes		-		-	
Constant	1.508***	(0.366)	12.660***	(2.874)				
N	915		915		207		207	
BIC	669.423		917.599		40.374		48.650	
ll	-304.026		-342.878		-17.521		-16.326	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008

Notes: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

effects regressions tell the same story. Compared to their own US-born, citizen siblings, undocumented children have over 90 percent lower odds of having a usual care provider.

Table 3.5 shows logistic regression models predicting whether or not a child saw a doctor for routine care last year. Regressions with random and fixed effects both suggest that US citizen and undocumented siblings are equally likely to have had a checkup in the last year, once controlling for age. Each additional year of age is associated with 10-12 percent lower odds of having had a checkup in the past year. Having public insurance is associated with significantly higher odds of having had annual health checkups, while there is no significant relationship between having private insurance and having seen a doctor for regular checkups. Having a usual care provider is significantly associated with higher odds of having regular checkups in the random effects models, but this relationship is not significant in the fixed effects models.

While annual checkups are recommended for all children, younger children are more likely to see the doctor regularly. Random effects models investigating the relationship between legal status and having an annual checkup for children under age 10 (see table 3.6) suggest that undocumented children have 66 percent lower odds of having had a checkup in the prior year, but that this relationship is explained away by differences in access to health insurance. Fixed effects regressions also show a negative relationship between being undocumented and having regular checkups, but the difference is not significant once controlling for age, perhaps because of the small sample of siblings under age 10 who differ in age, gender, and in whether or not they have seen a doctor in the last year. Each additional year of age is associated with 21 percent lower odds of having had regular checkups in the fixed effects model. The sample size in the

Table 3.5. Association between immigration status and having had a regular checkup in last year, logistic

	Random Effects Regressions						Fixed Effects Regressions					
	(1)		(2)		(3)		(4)		(5)		(6)	
Foreign-born noncitizen (vs. US-born citizen)	-1.164***	(0.220)	-0.257	(0.311)	0.132	(0.329)	-1.171***	(0.223)	-0.438	(0.341)	-0.009	(0.372)
Age in NHIS			-0.160***	(0.041)	-0.129**	(0.042)			-0.121**	(0.045)	-0.105*	(0.048)
Female			0.205	(0.228)	0.208	(0.234)			0.170	(0.264)	0.192	(0.273)
Types of insurance (ref = none)												
Private					0.601	(0.569)					1.347	(0.948)
Public					0.908*	(0.376)					1.352*	(0.532)
Has usual care provider					1.811***	(0.365)					0.896	(0.729)
Year fixed effects	Yes		Yes		Yes		-		-		-	
Controls	No		Yes		Yes		-		-		-	
Constant	-1.458**	(0.480)	-0.135	(1.290)	-2.867*	(1.391)						
N	878		878		878		333		333		333	
BIC	986.151		1109.151		1086.233		219.687		223.516		225.206	
ll	-462.576		-442.744		-421.119		-106.939		-103.046		-95.179	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Notes: Standard errors in parentheses. The question on having a checkup in the prior year was asked only of children under age 17, resulting in the lower sample size for these models.

* p<0.05 ** p<0.01 *** p<0.001

Table 3.6. Association between immigration status and having had a regular checkup in last year, children under age 10, logistic

	Random Effects Regressions						Fixed Effects Regressions					
	(1)		(2)		(3)		(4)		(5)		(6)	
Foreign-born noncitizen (vs. US-born citizen)	-1.782***	(0.430)	-1.079*	(0.511)	-0.668	(0.509)	-1.965***	(0.489)	-1.132	(0.602)	-0.946	(0.703)
Age in NHIS			-0.245**	(0.089)	-0.177*	(0.087)			-0.238*	(0.101)	-0.240*	(0.105)
Female			0.033	(0.340)	0.113	(0.331)			-0.463	(0.543)	-0.498	(0.581)
Types of insurance (ref = none)												
Private					1.120	(0.859)					-13.288	(2115.407)
Public					1.408*	(0.614)					1.431	(0.953)
Has usual care provider					1.741***	(0.507)					-1.524	(1.206)
Year fixed effects	Yes		Yes		Yes		-		-		-	
Controls	No		Yes		Yes		-		-		-	
Constant	-1.116	(0.626)	1.746	(1.761)	-1.498	(1.765)						
N	500		500		500		125		125		125	
BIC	625.108		745.939		741.905		70.557		73.441		83.777	
ll	-284.588		-270.429		-259.090		-32.864		-29.478		-27.404	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Notes: Standard errors in parentheses. The question on having a checkup in the prior year was asked only of children under age 17, resulting in the lower sample size for these models.

* p<0.05 ** p<0.01 *** p<0.001

fixed effects regression is too small to properly investigate the association between healthcare access, immigration status, and access to a regular check-up (in model 6).

Finally, I look at whether children saw a dentist in the prior year. Table 3.7 shows random and fixed effect regression models looking at the relationship between immigration status and having a dental checkup. Being undocumented is not associated with significantly lower odds of having seen a dentist last year, once controlling for age and gender. As with seeing a medical doctor, having public insurance is significantly associated with higher odds of having seen a dentist. This association shows up in both the random and fixed effects models. Looking just at children under age 10, random effects models in table 3.8 show that even after controlling for age and gender, and a host of other factors, there is a significant negative association between being likely undocumented and having seen a dentist in the prior year. Model 3 shows that this association is explained away by children's health insurance coverage. In these models, older children are more likely than younger children to have seen a dentist in the prior year. Children with more siblings have lower odds of having seen a dentist recently. Somewhat surprisingly, children in low-income households or in households with incomes over 200 percent of the poverty level have lower odds of having seen a dentist in the prior year, compared to children in families with incomes below the poverty level. The fixed effect model has a sample size of only 83 after including only siblings under age 10 who differ in their immigration status and in whether they have seen a dentist in the prior year. These models do not show any significant relationship between immigration status and access to dental care, and the sample size is too small to allow an investigation of the role of health insurance coverage in shaping access to dental care.

Table 3.7. Association between immigration status and having seen a dentist last year for children under 17, logistic

	Random Effects Regressions						Fixed Effects Regressions					
	(1)		(2)		(3)		(4)		(5)		(6)	
Foreign-born noncitizen (vs. US-born citizen)	-0.754**	(0.259)	-0.270	(0.383)	0.413	(0.430)	-0.738**	(0.258)	-0.394	(0.409)	0.484	(0.513)
Age in NHIS			-0.077	(0.049)	-0.055	(0.052)			-0.060	(0.053)	-0.039	(0.061)
Female			-0.183	(0.286)	-0.212	(0.305)			-0.313	(0.320)	-0.283	(0.347)
Types of insurance (ref = none)												
Private					1.314	(0.807)					1.107	(1.317)
Public					2.304***	(0.544)					2.359***	(0.606)
Year fixed effects	Yes		Yes		Yes		-		-		-	
Controls	No		Yes		Yes		-		-		-	
Constant	-4.645***	(0.898)	-2.915	(1.823)	-5.283*	(2.107)						
N	915		915		915		206		206		206	
BIC	767.631		903.459		893.816		147.145		155.470		147.315	
ll	-353.130		-339.217		-327.577		-70.908		-69.743		-60.338	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Notes: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

Table 3.8. Association between immigration status and having seen a dentist last year for children under age 10, logistic

	Random Effects Regressions						Fixed Effects Regressions					
	(1)		(2)		(3)		(4)		(5)		(6)	
Foreign-born noncitizen (vs. US-born citizen)	-0.438	(0.399)	-1.138*	(0.567)	-0.642	(0.583)	-0.323	(0.445)	-1.341	(0.686)	-0.964	(0.717)
Age in NHIS			0.212*	(0.101)	0.258*	(0.105)			0.256*	(0.120)	0.299*	(0.127)
Female			-0.310	(0.378)	-0.336	(0.383)			-0.075	(0.498)	0.027	(0.533)
Types of insurance (ref = none)												
Private					0.667	(1.081)					-14.149	(1471.626)
Public					1.950**	(0.710)					1.298	(0.849)
Year fixed effects	Yes		Yes		Yes		-		-		-	
Controls	No		Yes		Yes		-		-		-	
Constant	-4.433***	(1.102)	-2.379	(2.090)	-4.048	(2.190)						
N	500		500		500		83		83		83	
BIC	522.965		633.561		636.248		62.946		66.314		71.430	
ll	-233.517		-214.239		-209.369		-29.263		-26.529		-24.668	

Source: Combined National Health Interview Survey and Medical Expenditure Panel Survey data based on 2002-2008 NHIS.

Notes: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

Summary and conclusions

There are clear consequences of children's legal status for their access to health insurance coverage and to preventive healthcare. Undocumented children have much lower rates of insurance coverage than even their own US citizen siblings, driven by lower rates of access to public insurance. They also have vastly lower rates of access to a usual care provider. Evidence is a bit mixed on access to preventive healthcare, but for younger children, random effects models show that being undocumented is associated with lower rates of seeing a healthcare provider for an annual checkup and with lower rates of seeing a dentist regularly, and both associations are fully mediated by access to insurance.

For the most part, these findings as are expected. Being undocumented is associated with lower access to health insurance and to preventive healthcare for children, shaped not by parental fear of accessing benefits or other family-level factors, but by children's own immigration status. I expected that differences in access to healthcare would be completely driven by differences in access to insurance. Some evidence suggests this is true for access to an annual checkup and access to dental care. The fact that results are mixed on whether undocumented and US citizen siblings have different rates of accessing annual checkups also deserves further study, to investigate what sources of medical care children may be using to obtain checkups even without insurance (the source of care variables in the MEPS data do not permit a clear examination of this question). Children may be able to access care through charity systems, or may rely on informal or unlicensed medical care (Portes et al. 2011), but further empirical evidence from a broad variety of US communities is needed.

The main limitation of this paper, discussed above, is the certain measurement error in my "undocumented" indicator. I expect that somewhere in the ballpark of 30 percent of my

"undocumented" children may be legal permanent residents or have some other type of legal status in the United States. Overall, this measurement error should mean that my results are an underestimate of the disadvantage experienced by undocumented children in the United States. The research design of this paper introduces some further limitations. I am not very well able to observe, by design, any parental factors that shape children's access to public insurance and healthcare. In addition to excluding parental characteristics and behavior, I am excluding family-level processes, such as the effects of siblings holding different insurance statuses on the access of all children in the household to health insurance (Percheski and Bzostek 2010).

Furthermore, I am excluding any undocumented children who do not have US citizen siblings. As stated above, about 40 percent of undocumented children in the United States have a US citizen sibling (Taylor et al. 2011). I would expect that these families with both undocumented and US citizen children have longer periods of residence in the United States and so are more assimilated and have more knowledge of US public benefits and healthcare systems than families with only undocumented children. Again, I would expect that my results are an underestimate of the disadvantage experienced by undocumented children in the United States overall.

Additionally, immigration status is conflated in this sample with birth order. In nearly all cases, undocumented immigrant siblings are older than US-born, US citizen siblings. This introduces both age and birth order differences. I include controls for age, and explore some outcomes just for younger children, as a way to account for age differences between siblings. However, I cannot account, in these analyses, for birth order effects. In general, research has shown that parents tend to invest more time in first-born children than in subsequent children, and older siblings show superior educational performance than younger siblings (Booth and Kee

2009; Heiland 2009; Kantarevic and Mechoulan 2006; Price 2008). These prior findings would suggest that, if anything, my findings of an undocumented disadvantage are a bit conservative, though I cannot state this conclusively.

Finally, as is the case for all surveys, there is likely some under-coverage of undocumented families in the NHIS and MEPS both because undocumented families are more likely to move frequently than citizen families and so many be missed in sampling frames, and because undocumented parents may be too afraid of detection and deportation to answer questions by survey takers, particularly in a US-government sponsored survey. Since the most newly arrived families, with the lowest English proficiency, and least knowledge of US government systems would be most likely to avoid responding to a survey, this also likely makes my results conservative.

In conclusion, this paper adds to prior work by not only looking at the healthcare access of noncitizen children, in a nationally-representative survey, but also by examining the healthcare access of those children who are most likely to be undocumented. Most importantly, my family fixed effects design allows me to separate the effects of children's own immigration status on healthcare access from parent or family-level processes, to approximate causal effects. In doing so, I find a direct, significant relationship between children's lack of legal status and their access to health insurance and healthcare. Most, though not all, of differences in access to healthcare by children's legal status are driven by differences in access to public insurance, demonstrating, for the first time that children's immigration status and eligibility and not only parent-level factors are blocking undocumented children in the United States from preventive healthcare. The results also show that immigrant parents are taking the risk and making the effort to access public insurance and healthcare for their citizen children. Thus, even though there is

likely some chilled access to children's healthcare by immigrant and especially undocumented parents, insurance eligibility rules very clearly shape access to care.

To the extent that policymakers care about the health and well-being of the undocumented segment of the child population in the country – a segment that appears increasingly likely to remain in the United States to obtain higher education, begin their working lives, and age into adulthood – they face several policy options. Policymakers in the many states that do not provide public insurance to undocumented children face a choice of whether or not to extend access to insurance and, by extension, preventive healthcare to all children in the state. Federal policymakers could extend the use of public funds to cover preventive healthcare for all children in low-income families, regardless of immigration status. While such programs carry a substantial cost, undocumented parents and young adults are US taxpayers, already paying into the systems they would be accessing. Current evidence suggests that immigrants in the United States tend to consume less healthcare that US natives (Ku 2009; Mohanty et al. 2005).

Alternatively, federal policymakers could open a workable path to legal status for undocumented children, thus bringing them into the same insurance systems as other US children. To the extent that such a policy would allow undocumented parents access to legal status as well, we could expect that some portion of parents would find jobs that offer private insurance coverage for their families, reducing the share of children in need of public coverage. Also, we would expect tax revenues from formerly-undocumented parents to increase based on the upward job mobility their legal status would provide, partially defraying any increased insurance costs for their children. Until broad changes to US immigration laws succeed in reducing the number of children living in a marginalized status in the United States, child well-

being researchers should continue to increase the focus on the implications of child immigration status for children's own well-being, and for child inequality trends overall.

Chapter 4. Immigration Status and Children's Mental Health

Abstract

Although over five million children in the United States have at least one undocumented immigrant parent, very little research explores the ways in which being undocumented or having undocumented parents affects children's health and well-being. I examine the relationship between parents' and children's immigration status and children's mental health, utilizing one of the only population-based datasets to inquire about immigrants' precise legal status. I investigate whether the mental health advantage sometimes attributed to foreign-born children and children of immigrants in prior research extends to those with undocumented immigrant parents. I find that among children in Latino families in Los Angeles County, those in undocumented immigrant families, that is, those who are themselves undocumented immigrants, have greater overall, internalizing, externalizing, headstrong, and dependent behavioral problems compared to children in native families, and greater externalizing and headstrong behavioral problems than children in mixed-status families. Further, children in all types of immigrant families have greater overall, internalizing, and anxiety/depression behavioral problems than children in similar native families. Mother's mental health is strongly associated with children's mental health. The relationship between immigration status and children's mental health varies by age and neighborhood immigrant context, but not in expected ways.

Introduction

Recent policy changes, media coverage, and concerted organizing efforts by pro-migrant groups have combined to raise national attention to the fates of children of undocumented immigrants, born in the United States as US citizens, or brought to the country by their parents at young ages. There are currently an estimated 5.5 million children age 0 to 17 in the country who have at least one undocumented immigrant parent (Passel and Cohn 2011). Of these 5.5 million children, most (about 4.5 million) are themselves US-born US citizens, creating what are commonly called "mixed-status" families. The remaining 1 million children with undocumented immigrant parents are also undocumented immigrants themselves, living in what I will call "undocumented families" in the rest of this paper. In addition, there are an estimated 1 million youth age 18 to 30 in the United States who entered the country before the age of 16 and who are currently undocumented immigrants (Batalova and Mittelstadt 2012).

Until the past several years, there has been very little research on the well-being of children in mixed-status or undocumented immigrant families other than work exploring such families' rates of public benefits access and utilization. Scholars have now turned their attention to the difficult transition that undocumented youth make from the relatively protected state of childhood to experiencing the full brunt of their undocumented status as young adults in the United States (Gonzales 2011), and have started to study the cognitive repercussions of having undocumented parents for very young children in mixed-status families (Yoshikawa 2011). Despite these initial investigations, the well-being of children in mixed-status and undocumented families remains understudied (Suarez-Orozco et al. 2011).

In this paper, I focus on the mental health of children of immigrants, shedding light on the association between having undocumented immigrant parents or being an undocumented

immigrant and children's internalizing and externalizing behavioral outcomes. Past research on children of immigrants' mental health has sometimes pointed to a mental health advantage for foreign-born children, but given the particular stressors faced by children in mixed-status and undocumented immigrant families, this immigrant mental health advantage may not apply to children of undocumented immigrants.

Children's mental health affects children's, parents', and teachers' quality of life, of course, but also has important implications for inequality trends in the country, as poor mental health in childhood affects children's school performance (Currie and Stabile 2007) and is associated with poorer economic and educational outcomes in early adulthood (Currie et al. 2010; McLeod and Shanahan 1993; Turney and McLanahan 2012). Differences in childhood mental health by immigration status could exacerbate trends in later economic inequalities along lines of immigration status, even for children born in the country. As federal policymakers consider options for revising the country's visa allocation system and/or creating a path to legal status for some undocumented immigrants, they should consider the full range of implications of having a large undocumented immigrant population for the well-being of the country as a whole. Understanding the mental health consequences of undocumented status on children is an important part of this full understanding.

In this paper I make use of one of the only population-based, representative datasets that asks immigrants directly about their immigration status, in order to directly observe the relationship between immigration status and children's behavioral outcomes. I use the Los Angeles Family and Neighborhood Survey (L.A. FANS), to look at the overall, externalizing, and internalizing behavioral problems of children, and at several behavioral problem subscales. The L.A. FANS is representative of Los Angeles County, and asks parents whether they and

their children have US citizenship, lawful permanent resident status, or (for adults) another type of legal visa, leaving an identifiable undocumented immigrant population.

Prior research on the mental health of children of immigrants has been unable to investigate whether trends that hold true for children of immigrants overall hold true for those with undocumented parents or who are themselves undocumented. I take on this task, asking: 1) How does parents' and children's legal status affect children's mental health? 2) What parental or household factors mediate between parents' immigration status and children's mental health? 3) What neighborhood characteristics mediate the relationship between immigration status and children's mental health? 4) Are the effects of immigration status on mental health more severe for older children? and 5) Does living in an immigrant-heavy neighborhood protect children against the impact of immigration status on mental health, or exacerbate such effects?

Literature review

Mental health of children of immigrants. Prior literature generally finds that foreign-born children have a mental health advantage over US-born children, and that children of immigrants have a mental health advantage over children of natives. One study shows that foreign-born adolescents overall – of all immigration statuses from all world regions – experience less depression and more positive well-being than US-born children who share their racial/ethnic background and socioeconomic status. In this study, lower levels of depression but not greater positive well-being seem to be explained by greater religiosity, protective family connections, and social support of immigrant children (Harker 2001). An older exploration, however, found that foreign-born minority children experience poorer mental health – lower self-efficacy and

greater feelings of being unpopular or alienated at school – than native white children (Kao 1999).

Looking specifically at behavioral outcomes, data from the Early Childhood Longitudinal Survey – Kindergarten sample (ECLS-K), with a nationally representative sample, show that children from immigrant Asian and Latino families had fewer teacher-reported externalizing and internalizing problems than native white children (Crosnoe 2006), while data from a sample of young children in large US cities (the Fragile Families and Child Wellbeing Study) found that very young children born in the United States to foreign-born mothers have lower parent-reported externalizing problems than children born to US-born mothers, but have higher rates of internalizing behaviors (Jackson et al. 2012).

Existing research on immigration status and mental health. There is little research on the mental health implications of undocumented status. Evidence from a small sample of immigrant youth in North Carolina suggests that children in undocumented immigrant families experience higher anxiety than children who are legal immigrants, while experiences of discrimination are more closely associated with levels of depression than is children's legal status (Potochnick and Perreira 2010). Research on undocumented immigrant young adults shows strong threats to mental health as youth learn the full implications of their undocumented status, struggle to meet educational and work goals, and resign themselves to their severely proscribed opportunities in the United States (Gonzales 2011).

Even children who are themselves US citizens, in mixed-status families, may face threats to mental health because of their parents' legal status. In interviews, children in immigrant families in Ohio and New Jersey often expressed fear that their families would be split apart by deportation (Dreby 2012). A study of very young US-born children of immigrants in New York

City, on the other hand, found that children's behavioral problems did not vary meaningfully between children in Mexican, generally mixed-status families, children in Dominican, generally documented families, or children in native, citizen African American families (Yoshikawa 2011).

Despite this earlier work, a clear analysis of how parents' and children's immigration status affects children's mental health, in a large, population-based sample, has not been conducted. My study goes beyond current work by investigating the implications of parents' immigration status as well as the implications of children's own immigration status on the mental health of children age 3 to 17, using a population-based sample drawn from one of the largest concentrations of undocumented Latino immigrants in the country.

Fears, socioeconomic status, and neighborhoods of undocumented immigrants. There are numerous reasons why living in a mixed-status or undocumented immigrant family could threaten children's mental health. Undocumented immigrants and their families face a very real, very scary threat of deportation and/or family separation. Over 390,000 undocumented immigrants were deported in fiscal year 2011 (Office of Immigration Statistics 2012), including 46,486 parents of US citizen children in the first six months of 2011 (US Immigration and Customs Enforcement 2012). In addition, an estimated 5,100 children were in the foster care system in 2011 because their parents had been detained or deported (Applied Research Center 2011). Such trends were not so severe in 2000-2001, when the data I analyze were collected, but there were still over 180,000 immigrants deported per year in 1999-2001 (Office of Immigration Statistics 2012).

Undocumented immigrant children may have migrated to the United States at a very early age and have few memories of their "home" countries, and sometimes have limited proficiency in their native language. Many undocumented immigrant families left their home

countries due to violence, political instability, or severe poverty. The thought of being deported to sending countries is often very anxiety-provoking. Whether or not children are undocumented themselves and whether or not they are aware of their own or their parents' undocumented status, whatever stress and anxiety their parents experience due to their families' immigration status can affect children's well-being, since parental mental health affects children's mental health outcomes (Meadows, McLanahan, and Brooks-Gunn 2007).

The implications of immigration status may be particularly severe for undocumented immigrant teens. Ethnographic accounts and qualitative interviews suggest that the full implications of lacking legal status hit when youth find themselves unable to apply for a driver's permit and unable to work after-school or summer jobs as their peers do, and learn about the strong barriers they face to higher education and stable, well-compensated employment. Lacking a driver's license can also create immediate social embarrassment for undocumented immigrant teens because they must depend on friends for rides, have trouble going to R-rated movies or bars and clubs, cannot join school trips across the US border, and often invent lies to explain their nonparticipation. Some teens mention that they feel ashamed of their legal status, while others express great jealousy of siblings and friends who are able to pick the college of their choice and apply for scholarships and financial aid (Abrego and Gonzales 2010; Cebulko 2008; Gonzales 2011; Thorpe 2009).

In addition to the direct threats to mental health from undocumented status, being undocumented is also, of course, highly correlated with experiences of poverty in the United States, which can, in turn, affect mental health. Undocumented parents and teens lack work authorization, and so must take jobs off the books in the informal economy, or use false or stolen

documents to obtain employment. Such jobs are generally found in lower-paying, less-desirable, less-flexible occupations.

Parents also often work multiple jobs to cover basic costs of living. Parents' work situations and low incomes could affect children's mental health in several ways. First, substantial evidence has shown that children who live in poverty exhibit greater behavioral problems, and a longitudinal study of children's experiences with poverty demonstrated a causal relationship, with increases in income leading to decreases in children's externalizing behavioral problems (Dearing, McCartney, and Taylor 2006). Both current poverty and long-term poverty seem to affect children's mental health, with associations between long-term poverty and internalizing behavioral problems, and between current poverty and externalizing behavioral problems (McLeod and Shanahan 1993).

Second, the greater poverty experienced by mixed-status and undocumented families may lead to less-supportive living situations. Doubling up to save on rent can lead to overcrowded households (Hall and Greenman 2013), which have been tied to children's physical manifestations of stress and to behavioral problems (Yoshikawa 2011). On the other hand, children with foreign-born parents are more likely than children of natives to grow up in two-parent families, which are protective of children's mental health (Landale, Thomas, and Hook 2011). Undocumented and mixed-status families may also change residence more often than other families, due to difficulties paying rent, the need to find lower-cost, likely less-well-maintained rental units, or due to weaker negotiating power with landlords. To the extent that such moves disrupt children's daily patterns, friendships, or force them to change schools, frequent moves could have a negative impact on children's emotional well-being. Undocumented immigrant parents' undesirable work situations may also affect their parenting behaviors.

Research shows that parents with less self-direction and autonomy at work resort to less-responsive parenting techniques, which in turn affect children's well-being (Greenberger, O'Neil, and Nagel 1994; Yoshikawa 2011).

Low incomes can also lead families to live in poorer, less-stable, more heavily immigrant neighborhoods, with important implications for children's mental health. Adolescents who live in poor neighborhoods have higher rates of internalizing and externalizing mental health problems, an association mediated at least in part by exposure to neighborhood hazards such as gang and drug activity (Aneshensel and Sucoff 1996). Evidence from the Moving to Opportunity experiment, which offered randomly selected families in public or subsidized housing in poor neighborhoods in five cities a voucher to move to a low-poverty neighborhood, showed that moving from poor to a less poor neighborhoods reduced arrests and improved mental health for female youth, but increased non-violent arrests and risky behavior for male youth (Kling, Liebman, and Katz 2007; Kling, Ludwig, and Katz 2005). Residence in neighborhoods with higher turnover could lead to weaker networks of information and support, lessening parents' knowledge of and access to public and private resources to support their children. This could be particularly true if families live in neighborhoods without many other parents.

Children's residence in neighborhoods with high concentrations of other immigrants could also have protective or deleterious consequences for their mental health. On the one hand, ethnic and immigrant communities could protect against racial or ethnic discrimination, provide strong information networks, or provide access to employment, micro-loans, or other material assistance from within the ethnic economy, insulating against poverty (Portes and Rumbaut 2006; Portes and Sensenbrenner 1993). Neighbors who are also undocumented immigrants can share useful information on how to navigate official systems, and on what types of government

services are safe and not safe to access. On the other hand, if such immigrant neighborhoods have low levels of English speaking ability and are linguistically isolated, information networks may not extend to useful resources outside the immigrant community. Immigrant enclaves can also be resource-poor, leading to concentrations of poverty and disadvantage (Menjívar 2000).

Hypotheses

Based on this existing evidence, I expect to find the following:

1) *How does parents' and children's legal status affect children's mental health?*

H1) Unlike children of immigrants overall, children in mixed-status families and children in undocumented families will have worse mental health outcomes than children in native families. That is, I expect that parental immigration status and children's own immigration status will both be associated with children's mental health.

2) *What parental or household factors mediate between parents' immigration status and children's mental health?*

H2) Household poverty, residential instability, overcrowding, and mothers' mental health will mediate some of the relationship between immigration status and children's mental health.

3) *What neighborhood characteristics mediate the relationship between immigration status and children's mental health?*

H3) Neighborhood poverty, residential turnover, and neighborhood threats to safety (gangs and drugs) will explain some of the negative association between undocumented status and children's mental health.

4) *Are the effects of immigration status on mental health more severe for older children?*

H4) Being in an undocumented immigrant family will have a more negative impact on mental health for older children than for younger children, but age will not matter for children in legal immigrant or mixed-status families.

5) *Does living in an immigrant-heavy neighborhood protect children against the impact of immigration status on mental health, or exacerbate such effects?*

H5) Residence in a highly immigrant neighborhood may serve as a protective factor for children's mental health, lessening the relationship between immigration status and poorer mental health for children.

H6) Alternatively, residence in a disadvantaged neighborhood, whether highly immigrant or not, could exacerbate the relationship between disadvantaged immigration status and poorer mental health for children.

Methods

Data. The Los Angeles Family and Neighborhood Survey (L.A. FANS) is a survey of households in a stratified random sample of census tracts in Los Angeles County. The first wave of the survey, which I analyze here, was conducted in 2000-2001. I use the first wave of the survey, rather than the second, conducted in 2006-2008, because the sample of children of immigrants is substantially larger in the first wave of the survey. The second wave included a sample that was a mix of follow-up with wave 1 respondents and a cross-sectional sample of Los Angeles County. There was substantial attrition of the child sample between waves 1 and 2; in addition, some children aged out of the behavioral measures, which were only taken for children age 3 to 17. The utility of a panel dataset is impeded by the fact that only a handful of children experienced a change in their own or their parents' immigration status between wave 1 and wave

2, making true longitudinal analysis impossible. The cross-sectional sample in wave 2 is relatively small, and only contains 34 children who can be identified as living in undocumented families. Focusing on the first wave of the survey provides a larger, more useful sample of the county.

The L.A. FANS survey oversampled households with children and in poor or very poor neighborhoods. In each household, one randomly selected adult was interviewed. In all households with children, the primary caregiver, usually the mother, was also interviewed, whether or not the primary caregiver was the randomly selected adult. Parents provided information on one randomly selected child, and if any siblings lived in the household, on one randomly selected sibling. Therefore, some households have information on one child in the household and others have information on two children in the household. Children age 9 and older were also interviewed directly.

Interviews were conducted in-person in English, Spanish, or a combination of English and Spanish. Ultimately 3,085 households were interviewed. The overall response rates for sampled and eligible respondents were 85 percent for randomly selected adults, 89 percent for primary caregivers, 87 percent for randomly selected children, and 86 percent for child respondents (Peterson et al. 2004). Undocumented immigrants from California are clearly not representative of all undocumented immigrants in the United States, but it is a good site for such a study. California has more undocumented immigrants than any other state, about 2.6 million (Passel and Cohn 2011). In 2004, over 1 in 10 school-aged children in California had an undocumented immigrant parent (Fortuny, Capps, and Passel 2007). California's undocumented population is heavily concentrated in the Los Angeles area – estimates from both 2001 and 2008

suggest that just over 900,000 undocumented immigrants resided in Los Angeles County (Hill and Johnson 2011).

Importantly, L.A. FANS asks parents about whether they have a temporary visa or refugee status, a green card for legal permanent residence, or US citizenship, and asks parents whether children have a green card for legal permanent residence or US citizenship. Because the survey was conducted only in English and Spanish, I exclude Asian immigrants and focus my analysis on families with roots in Latin America, picking families in which parents define themselves as Latino/a and were born in the United States, Mexico or Central America. I exclude those from South America or other parts of Latin America who may have migrated under very different selection regimes and circumstances than those from Central America or Mexico.

I assign children into four types of immigrant families. Children in "native families" are those who are US-born and whose parents are US-born, but who describe themselves as Hispanic/Latino/a, with origins in Mexico or Central America. Children in "legal immigrant" families have parents who have a green card or valid visa and children who are US-born or have a green card or US citizenship. Most children in this category are US born. "Mixed-status" families are those in which parents are undocumented (no green card or visa) and children are US-born, US citizens. Finally, "undocumented" families are those in which parents and children are undocumented. In the rest of the paper, I will sometimes refer to children in undocumented immigrant families as undocumented immigrant children, since all children in what I call "undocumented families" are undocumented immigrants themselves. I use comparisons between children in mixed-status families and children in either native or legal immigrant families a test of the impact of *parents'* immigration status on children's mental health. I use comparisons

between children in undocumented immigrant families and children in mixed-status families as a test of the impact of *children's* immigration status on children's mental health.

There are 3,864 children in the roster file. Of these 3,062 had valid interviews collecting parental characteristics and parents' reports of children's behavior. Selecting only children in families with Central American or Mexican origins reduced this sample to 1,898, and after selecting only children who could be identified as residing in one of these four types of immigrant families, selecting only children age 3 to 17, for whom the behavioral questions were asked, and selecting children whose parents answered behavioral questions, my analytic sample is 1,550. I use the Amelia program to multiply impute missing data in my independent variables (Honaker et al. 2012).

Dependent variables. I examine nine scales of children's parent-reported behavioral problems. Parents were asked about 28 different types of children's behavioral problems for children age 3 to 17, and were asked to list whether each behavioral problem was often true for the child (2), sometimes true (1), or never true (0), utilizing a child behavior checklist developed by Achenbach, a widely-used tool for assessing children's behavior (Achenbach and Edelbrock 1981). Behavioral subscales were generated to align with those included in the National Longitudinal Survey of Youth (NLSY). Each behavioral scale is made up of the mean of parents' answers to the individual behaviors that make up that scale, so the scales range from zero to two. Because the distribution of these scales was right skewed, I took the natural log of each scale, to get closer to a normal distribution.

I consider three broad behavioral scales: 1) overall – a scale made up of all behaviors measured; 2) externalizing, which measures misbehaving, acting out, and displaying anger; 3) internalizing, which measures anxiety, depression, and clinginess; and six behavioral sub-scales:

1) antisocial, measuring misbehavior and disobedience; 2) anxious/depressed; 3) hyperactive, measuring symptoms of attention deficit and hyperactivity; 4) headstrong, measuring whether the child has a temper or is argumentative; 5) dependent, measuring whether the child is clingy or demanding attention; and 6) peer, measuring whether the child has difficulty getting along with other children. The subscales do not stack neatly into the internalizing or externalizing subscales, but the antisocial and headstrong subscales are mostly comprised of externalizing behaviors, the anxious/depressed and dependent subscales mostly include internalizing behaviors, and the hyperactive and peer subscales contain a mix of internalizing and externalizing behaviors.

Independent variables: Controls. To control for other factors that might vary among children in different types of immigrant families and that affect child mental health, I first control for several child, family, and neighborhood-level factors before exploring my hypothesized mediators. First, I control for children's age and gender, and the language of the parental interview. Broad evidence suggests that behavioral problems are greater for younger than older children, and that mental health problems tend to be expressed as externalizing behaviors in boys, but as internalizing behaviors in girls (Crijnen, Achenbach, and Verhulst 1997).

Exploration of this dataset reveals that parents answering behavioral problem questions in Spanish tend to report greater behavioral problems than parents reporting in English. Because this measure is significantly correlated with reports of children's behavioral problems, while a measure of whether the family speaks only Spanish at home is not, I conclude that these language differences may be related to translation issues in the behavioral scales, rather than to real behavioral differences by mother's level of assimilation or English speaking ability. Therefore, I control for language of interview in all analyses.

I control for some aspects of the sample design, rather than including sample weights. I control for the number of households in the census tract where the child resides, and for the poverty strata of the census tract (very poor, poor, or not poor, as categorized in the survey design). I next control for household composition, including the number of siblings, whether the child lives with two parents, with a mother and stepdad, with a single mother, or in another type of family composition, and mother's age. Long-standing research has shown that children in two-parent families have better mental health than children with step-parents or one-parent families (Amato 2005; Dawson 1991). I next control for the highest educational attainment of an adult in the household (less than high school, high school, or some college or more). Finally, I control for immigration factors: How many years the mother has lived in the country (fewer than five, five to 10, 10-19, or 20 or more), and whether the child's family traces their origins to Central America versus Mexico.

Independent variables: Mediators. After controlling for these basic features, I explore which family and neighborhood characteristics mediate any remaining relationship between immigration status and children's mental health. I look at the role of family socioeconomic status by including measures of economic circumstances that may be affected by parents' immigration status. I account for household income, using the log of household income in order to transform this measure to have a more normal distribution. I also include a measure of whether the household is overcrowded (measured as more than two people per bedroom in the house), whether the family changed residence at all in the prior two years, and a scale created by averaging six measures of the interviewer's assessment of the interior environment of the child's home, such as whether the visible part of the home is clean, well-lit, safe for kids, etc.

I hypothesize that parents' poorer mental health, due to their undocumented immigrant status, could negatively impact the mental health of children in mixed-status or undocumented immigrant families. I explore this mechanism by including various measures of mothers' mental health and social support. I first include a binary indicator of whether the mother experienced two week stretches of depression or loss of interest in the past 12 months. I include mothers' sense of control over life, or self-efficacy, as measured by a weighted scale (weighted using principal components analysis) of mothers' answers to the seven-question Pearlin Self-Efficacy scale. To measure mothers' social support, I include a binary indicator of whether mothers say they have any source of emergency childcare should they need it, whether they say they have someone they could ask for money in an emergency situation, how often the mother reports seeing friends or family (once a week or more, a few times a month, once a month, a few times a year, or once a year or less), and whether mothers attend church at least monthly.

I include a variety of measures of parenting quality and mothers' feelings about parenting. I first account for mother's reports of aggravation from parenting, based on questions drawn from the Child Development Supplement of the Panel Study of Income Dynamics. In the L.A. FANS, these questions are asked with a 5-point Likert scale of responses. The questions are phrased as 1) "Being a parent is harder than I thought it would be," 2) "I feel trapped by my responsibilities as a parent," 3) "I find that taking care of my [child/children] is much more work than pleasure," and 4) "I often feel tired, worn out, or exhausted from raising a family." I take the mean of the four items to create my parenting aggravation scale. I include whether mothers report that they have consumed five or more alcoholic beverages at a time in the past month, which is the standard definition of binge drinking.

I also account for older children's (age 9 and older) reports of family conflict. There are six questions in the L.A. FANS that ask children about how their family settles arguments, whether they 1) fight a lot, 2) lose their tempers, 3) throw things, 4) calmly discuss problems, 5) say mean things to each other, or 6) hit each other. Children reported whether each behavior was true, sometimes true, or not true. I took the average of each child's reports on these six measures to create the family conflict scale. I include these measures of family conflict because immigrant parents may employ harsher parenting techniques than US-born parents because of cultural differences imported from their home countries or because undocumented immigrant parents may experience more controlling work situations, which have been shown to lead to harsher parenting (Yoshikawa 2011). I include this measure also because the quality of relationships between immigrant parents and their US-born immigrant children may be affected by processes of dissonant acculturation, in which children become more assimilated to the US context than their immigrant parents, leading to role reversal between parents and children, a potential breakdown of parental authority, and sometimes increased family conflict as parents and children renegotiate their roles (Portes and Rumbaut 2001). Such processes are likely not experienced to the same extent by native Latino families.

Finally, in order to account for differences in the neighborhoods experienced by children in different types of immigrant families, I add several measures of neighborhood characteristics, reported by older children, and from tract-level census data from the 2000 census. I include child-level reports of neighborhood quality from children age 11 and older, measuring whether they 1) feel safe in the neighborhood, 2) feel safe at school, 3) whether there are gangs in their neighborhood or school, 4) whether someone had tried to rob them in the last year, 5) whether someone had offered or sold them drugs in the last year, and 6) whether they saw someone get

shot or were shot at in the past year. Children could respond no, sometimes, or yes to the questions about neighborhood and school safety. I created a binary measure coded as 1 if children answered yes, and 0 if children answered sometimes or no. I also include two measures asked of all children age 9 and older: whether they know most adults in the neighborhood, and whether they know most kids in the neighborhood. For the questions on knowing kids and adults in the neighborhood, children were asked, "How many of the [adults or grown-ups / kids and teens] in your neighborhood do you know? Would you say you know most, some, or none of them?" I created a binary indicator equal to 1 for each measure if children answered "most" to the corresponding question.

I also merge on census data describing the census tract in which children reside. I create several factors of neighborhood characteristics, using revised versions of scales that were provided in the L.A. FANS data. First, I include the immigrant concentration in the neighborhood, which is a weighted scale of 1) the share of adults in the tract who are Spanish speakers, 2) the non-citizen share of the population, 3) the foreign-born share of the population, 4) the share of the population that is a recent immigrant, defined as someone who entered the United States to live after 1995, 5) the share of adults in the tract who are English only speakers, and 6) the share of adults who speak English very well. Next, I include the share of households headed by women with children. I also include the share of households in the neighborhood that have children in them.

The residential instability scale is a weighted scale of 1) the share of people in the tract who are living in the same residence as in 1995, 2) the share of residences that are owner occupied, 3) the share of households that are in multi-unit buildings, and 4) the share of households made up of non-family living arrangements. Finally, I account for the ethnic and

racial composition of the neighborhood, including the share of the neighborhood that is Latino, non-Hispanic white, non-Hispanic black, and Asian or other. I combine the share Asian with the share from other races and ethnicities because the Latino families in my sample tend to live in census tracts with a very low Asian share of the tract population.

Finally, to explore whether the effect of immigration status on children's mental health varies by age, I include interaction terms between immigration status and age 8 to 11 and immigration status and age 12 or older. To explore whether residence in an immigrant enclave protects against the negative impacts of undocumented immigrant status, I include an interaction effect between immigration status and the neighborhood immigration scale.

Analytic strategy. After looking at descriptive statistics of the analytic sample, my first set of analyses examine whether there is any relationship between parents' or children's immigration status and children's behavioral problems. I use ordinary least squares regression models in the log scale, with a random intercept at the household level to adjust standard errors to account for similarities between siblings, as there are an average of 1.5 children per household. I also ran models with both family and neighborhood-level random effects, but the neighborhood level accounted for very little of the variation between children, and the coefficients and standard errors were nearly identical between the models with and without neighborhood random effects.

I examine each behavioral scale and sub-scale separately. I first examine these relationships with controls just for children's age, children's gender, the language of interview, and the sampling design. Then, I add the rest of my controls to the model. Next, I add in blocks of mediating variables to investigate how family and neighborhood factors shape the relationship between immigration status and mental health. I explore the role of family socioeconomic status,

mothers' mental health and social support, parenting factors, and finally, neighborhood characteristics in shaping children's mental health. Finally, I investigate whether relationships vary by children's age or by residence in a more or less immigrant-heavy neighborhood.

Results

Descriptives: How do family and neighborhood characteristics vary by immigration status? Appendix 4.1 shows mean values and percentages for the variables used in my analysis, for the sample overall and by family immigration status. We see first that children in any type of immigrant family, whether legal immigrants, mixed-status, or undocumented, show greater overall and internalizing behavioral problems, while children in mixed-status and undocumented immigrant families show greater externalizing behavioral problems than children in native families. Children in immigrant families also show greater behavioral problems on many of the behavioral problem subscales. Looking at differences among children in different types of immigrant families, we see that children in mixed-status or undocumented immigrant families also have significantly higher behavioral problems than children in legal immigrant families on many of the scales.

There are a number of notable differences in the families and neighborhoods in which children are raised, by immigration status. Children in immigrant families live in poorer homes than children in native families, with lower family incomes and higher rates of overcrowding. About 83 percent of children in undocumented immigrant and 79 percent of children in mixed-status families live in an overcrowded household. About half of children in undocumented immigrant families changed residence in the prior two years. Incomes are lower in mixed-status and undocumented immigrant families than in legal immigrant families. Maternal depression is

higher in legal immigrant families than in native families, while mothers' self-efficacy is lower in immigrant families than in native families, and is particularly low in mixed-status families. Children in immigrant families, and particularly in mixed-status and undocumented immigrant families, live in neighborhoods that have higher concentrations of immigrants, more households with kids, more female-headed households, and lower residential stability (greater turnover of residents). They also live in neighborhoods that have higher shares of Latino/a residents and lower shares of white residents and residents from other races or ethnicities.

Regression: How does immigration status affect children's mental health? First, I explore how immigration status is correlated with children's mental health, setting aside all of these family and neighborhood differences. Table 4.1 shows the associations between parents' and children's immigration status and the nine mental health outcomes, controlling only for child-level measures (age and gender), the language of interview, and sampling design. Generally, we see that children with foreign-born parents have more behavioral problems, and that this is particularly true for children who are themselves undocumented. The mean overall behavioral index is 34 percent higher for children in legal immigrant families, 57 percent higher for children in mixed-status families, and 88 percent higher for children in undocumented immigrant families compared to children with native parents.

For the internalizing subscale, all children of immigrants have higher behavioral problems than children in native families, regardless of their parents' immigration status, while for the externalizing subscale, children in undocumented immigrant families have higher

Table 4.1. Associations between legal status and mental health for children in Latino families in Los Angeles County, 2000-2001

	Overall		Internalizing		Externalizing		Antisocial		Anxiety / Depression	
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)										
Legal immigrant	0.292*	(0.147)	0.466*	(0.207)	0.198	(0.176)	-0.253	(0.292)	0.525*	(0.237)
Mixed-status	0.453*	(0.176)	0.605*	(0.250)	0.385	(0.212)	-0.028	(0.354)	0.874**	(0.287)
Undocumented	0.631**	(0.197)	0.719**	(0.276)	0.688**	(0.236)	0.189	(0.394)	0.809*	(0.327)
Age	-0.026**	(0.009)	-0.023	(0.013)	-0.043***	(0.011)	-0.011	(0.018)	0.015	(0.015)
Female (ref = male)	-0.199**	(0.067)	-0.051	(0.095)	-0.316***	(0.085)	-0.633***	(0.140)	0.047	(0.120)
Constant	-1.419***	(0.168)	-2.921***	(0.234)	-1.092***	(0.204)	-2.590***	(0.336)	-3.384***	(0.275)
N	1550		1550		1550		1550		1550	

	Hyper		Headstrong		Dependent		Peer	
	(6)		(7)		(8)		(9)	
	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)								
Legal immigrant	-0.088	(0.271)	0.001	(0.274)	0.436	(0.278)	0.070	(0.284)
Mixed-status	0.266	(0.329)	0.201	(0.333)	0.335	(0.337)	0.122	(0.342)
Undocumented	0.644	(0.366)	0.738*	(0.365)	0.695	(0.365)	-0.007	(0.382)
Age	-0.077***	(0.017)	-0.023	(0.018)	-0.124***	(0.017)	0.072***	(0.018)
Female (ref = male)	-0.583***	(0.135)	-0.280*	(0.136)	0.161	(0.126)	0.003	(0.140)
Constant	-1.829***	(0.315)	-1.673***	(0.319)	-1.929***	(0.317)	-5.605***	(0.329)
N	1550		1550		1550		1550	

Notes: Standard errors in parentheses. Models include controls for sampling design (number of households in the census tract, the poverty level of the census tract) and the language of interview.

* p<0.05 ** p<0.01 *** p<0.001

behavioral problems. Differences between children in different types of immigrant families are not significant.

Looking next at behavioral problem subscales shows that children in immigrant families (of all types) have significantly higher behavioral problems on the anxiety/depression subscale, while children in undocumented immigrant families also have higher behavioral problems on the headstrong subscale, when compared to children in native families. There are not significant differences between children in different types of immigrant families on these subscales.

Do family characteristics explain these differences? I next add in my control variables and then explore whether family-level characteristics such as family socioeconomic status, mother's mental health and social support, or parenting factors explain the relationship between immigration and legal status and children's mental health. Table 4.2 shows these results for the overall, internalizing, and externalizing scales. Looking first at the overall behavioral scale, I find that after controlling for family structure, parental educational attainment, and the family immigration background, children in all types of immigrant families still show higher behavioral problems than children in native families (see model 1). Older children and girls have lower overall behavioral problems than younger children and boys, and parents reporting in Spanish report greater behavioral problems than those reporting in English. Living with a stepdad is associated with greater behavioral problems than living with two biological parents. However, controlling for these factors does not explain the greater behavioral problems of children in immigrant families.

Adding in family socioeconomic status explains very little of these remaining greater behavioral problems, while accounting for mother's mental health actually increases the gap between the overall behavioral problems of children in undocumented immigrant families as

compared to children in native families. Maternal depression is significantly associated with greater behavioral problems, while greater maternal self-efficacy is significantly correlated with lower behavioral problems, but given that children in undocumented families have mothers who report relatively high self-efficacy compared to other immigrant mothers, adding these variables only strengthens the relationship between immigration status and children's behavioral problems. Adding parenting factors further strengthens the relationship. Higher aggravation with parenting responsibilities is associated with higher behavioral problems, but aggravation with parenting does not vary meaningfully by immigration status. With all household level variables, children in legal immigrant families have 43 percent higher behavioral problems than children in native families, while children in mixed-status and undocumented immigrant families have 61 percent and 113 percent higher behavioral problems respectively. Differences between children in different types of immigrant families remain not statistically significant. (See appendix 4.2 for the full model with all controls and mediators.)

Looking next at the internalizing behavioral scale, I find a very similar story. Household level factors do not mediate the higher behavioral problems of children in all three types of immigrant families. The same relationships between independent variables and children's behavioral problems appear as with overall behavioral problems, except here there are not gender differences and higher parental educational attainment is associated with lower internalizing behavioral problems. With all household level variables, children in legal immigrant families have 66 percent higher internalizing behavioral problems than children in native families, while children in mixed-status families have 85 percent higher behavioral problems, and children in undocumented immigrant families have 136 percent higher behavioral problems. Differences

between children in different types of immigrant families are still not significant with all household level variables. (See appendix 4.2 for the full model with all controls and mediators.)

The story shifts a bit for externalizing behavioral problems. Here, the difference in externalizing problems between children in legal immigrant or mixed-status families and children in native families is not significant. Children in undocumented immigrant families have significantly higher behavioral problems even when including the full set of household variables – 124 percent higher. Older children and girls have lower externalizing behavioral problems than younger children and boys, and maternal mental health and aggravation with parenting are again significantly correlated with children's behavioral problems. While for overall and internalizing behavioral problems, there were not significant differences between children in undocumented immigrant families versus children in mixed-status families, for externalizing behavioral problems, children in undocumented immigrant families have significantly higher externalizing problems compared to children in mixed-status families, once I account for mother's mental health. (See appendix 4.2 for the full model with all controls and mediators.)

Two of the subscales had shown significant differences in children's mental health by parental immigration status or children's immigration status. Table 4.3 shows how these coefficients have changed after adding in the full set of household and neighborhood level variables. Children in any type of immigrant family originally showed greater anxiety/depression behavioral problems than children in native families. With all mediators considered, children in legal immigrant and mixed-status, but not undocumented, families show higher anxiety/depression than children in native families. Differences between children in different types of immigrant families are not significant. Without any controls, children in undocumented

Table 4.2. Associations between legal status and three behavioral outcomes, with family and neighborhood mediating factors, for children in Latino families in Los Angeles County in 2000-2001

	Overall behavioral problems									
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)										
Legal immigrant	0.350*	(0.159)	0.364*	(0.160)	0.348*	(0.156)	0.356*	(0.155)	0.376*	(0.155)
Mixed-status	0.517**	(0.198)	0.518**	(0.199)	0.472*	(0.195)	0.475*	(0.195)	0.499*	(0.195)
Undocumented	0.724**	(0.228)	0.717**	(0.231)	0.748***	(0.223)	0.755***	(0.222)	0.761***	(0.223)
Controls										
Basic controls	Yes		Yes		Yes		Yes		Yes	
SES	No		Yes		Yes		Yes		Yes	
Mother's mental health and social support	No		No		Yes		Yes		Yes	
Parenting factors	No		No		No		Yes		Yes	
Neighborhood factors	No		No		No		No		Yes	
Constant	-1.466***	(0.329)	-1.703***	(0.370)	-1.842***	(0.431)	-2.391***	(0.452)	-1.773**	(0.574)
N	1550		1550		1550		1550		1550	

	Internalizing behavioral problems									
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)										
Legal immigrant	0.509*	(0.226)	0.518*	(0.227)	0.499*	(0.223)	0.508*	(0.222)	0.521*	(0.222)
Mixed-status	0.672*	(0.282)	0.654*	(0.284)	0.611*	(0.280)	0.614*	(0.279)	0.645*	(0.279)
Undocumented	0.851**	(0.322)	0.811*	(0.325)	0.853**	(0.318)	0.857**	(0.318)	0.878**	(0.318)
Controls										
Basic controls	Yes		Yes		Yes		Yes		Yes	
SES	No		Yes		Yes		Yes		Yes	
Mother's mental health and social support	No		No		Yes		Yes		Yes	
Parenting factors	No		No		No		Yes		Yes	
Neighborhood factors	No		No		No		No		Yes	
Constant	-3.097***	(0.465)	-3.332***	(0.524)	-3.852***	(0.609)	-4.580***	(0.640)	-3.828***	(0.808)
N	1550		1550		1550		1550		1550	

	Externalizing behavioral problems									
	(1)		(2)		(3)		(4)		(5)	
	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)										
Legal immigrant	0.269	(0.190)	0.278	(0.190)	0.257	(0.187)	0.266	(0.185)	0.313	(0.186)
Mixed-status	0.446	(0.236)	0.448	(0.238)	0.391	(0.234)	0.393	(0.232)	0.430	(0.233)
Undocumented	0.768**	(0.271)	0.764**	(0.274)	0.799**	(0.267)	0.805**	(0.265)	0.825**	(0.265)
Controls										
Basic controls	Yes		Yes		Yes		Yes		Yes	
SES	No		Yes		Yes		Yes		Yes	
Mother's mental health and social support	No		No		Yes		Yes		Yes	
Parenting factors	No		No		No		Yes		Yes	
Neighborhood factors	No		No		No		No		Yes	
Constant	-1.095**	(0.394)	-1.263**	(0.443)	-1.289*	(0.518)	-1.996***	(0.541)	-1.226	(0.687)
N	1550		1550		1550		1550		1550	

Note: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

immigrant families showed greater headstrong behavioral problems than children in native families. Again, this association persists even with the full set of household and neighborhood mediators. Further, children in undocumented immigrant families now show significantly higher headstrong behavioral problems than children in mixed-status families. With all mediators included, children in undocumented immigrant families also show significantly higher dependent behavioral problems than children in native families.

How do neighborhood contexts mediate the relationship between immigration status and mental health? Next I explore whether observed differences in neighborhood context explain any of the remaining differences in children's mental health by immigration status. Model 6 of table 4.2 shows these relationships. Accounting for neighborhood factors slightly strengthens the relationship between being in an undocumented immigrant family and having higher overall, internalizing, and externalizing behavioral problems. Most of the neighborhood factors do not show an independent relationship with children's behavioral problems (see appendix 4.2). However, living in a neighborhood with more white (versus Latino/a) residents is associated with lower internalizing behavioral problems.

Does the role of immigration status vary by children's age, or by neighborhood context? Table 4.4 explores whether older children, who are more likely to be aware of the implications of their own immigration status, are more negatively impacted by their immigration status. These models, with the full set of controls, show that the relationship between being in a legal immigrant family and overall and externalizing behavioral problems is stronger for older children, age 12 to 17, than for young children, under age 8. I did not expect that age would affect the relationship between being in a legal immigrant family and mental health.

Table 4.3. Associations between legal status and behavioral subscales, models with full controls, children in Latino families in Los Angeles County in 2000-2001

	Antisocial		Anxiety / Depression		Hyper		Headstrong		Dependent		Peer	
	(1)		(2)		(3)		(4)		(5)		(6)	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)												
Legal immigrant	-0.051	(0.310)	0.511*	(0.251)	0.079	(0.289)	0.233	(0.290)	0.505	(0.302)	0.204	(0.303)
Mixed-status	0.121	(0.392)	0.676*	(0.316)	0.283	(0.363)	0.317	(0.365)	0.459	(0.380)	0.157	(0.379)
Undocumented	0.632	(0.448)	0.695	(0.376)	0.769	(0.420)	1.108**	(0.417)	0.917*	(0.423)	0.237	(0.434)
Controls												
Basic controls	Yes		Yes		Yes		Yes		Yes		Yes	
SES	Yes		Yes		Yes		Yes		Yes		Yes	
Mother's mental health and social support	Yes		Yes		Yes		Yes		Yes		Yes	
Parenting factors	Yes		Yes		Yes		Yes		Yes		Yes	
Neighborhood factors	Yes		Yes		Yes		Yes		Yes		Yes	
Constant	-3.178**	(1.146)	-3.992***	(0.934)	-1.835	(1.070)	-1.765	(1.081)	-3.483**	(1.111)	-5.132***	(1.126)
N	1550		1550		1550		1550		1550		1550	

Note: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

Table 4.4. Associations between legal status and three behavioral outcomes, with age and neighborhood interactions, for children in Latino families in Los Angeles County in 2000-2001

	Overall				Internalizing				Externalizing			
	(1)		(2)		(3)		(4)		(5)		(6)	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Immigration status (ref = native)												
Legal immigrant	0.223	(0.182)	0.417*	(0.167)	0.416	(0.263)	0.712**	(0.238)	0.121	(0.221)	0.320	(0.199)
Mixed-status	0.404	(0.216)	0.575**	(0.206)	0.560	(0.312)	0.841**	(0.293)	0.360	(0.261)	0.514*	(0.246)
Undocumented	0.454	(0.299)	0.831***	(0.240)	0.388	(0.431)	1.046**	(0.342)	0.505	(0.366)	0.871**	(0.285)
Age interactions (ref = age 0-7)												
Legal immigrant * Age 8-11	-0.031	(0.145)			-0.104	(0.209)			0.002	(0.183)		
Legal immigrant * Age 12-17	0.515*	(0.201)			0.441	(0.286)			0.606*	(0.251)		
Mixed-status * Age 8-11	0.033	(0.188)			0.106	(0.269)			-0.129	(0.237)		
Mixed-status * Age 12-17	0.013	(0.335)			-0.263	(0.472)			0.205	(0.412)		
Undocumented * Age 8-11	0.258	(0.287)			0.500	(0.420)			0.317	(0.363)		
Undocumented * Age 12-17	0.599	(0.309)			0.829	(0.452)			0.615	(0.385)		
Neighborhood interactions												
Legal immigrant * neighborhood immigration factor			0.043	(0.048)			0.162*	(0.068)			0.025	(0.058)
Mixed-status * neighborhood immigration factor			-0.028	(0.064)			0.102	(0.091)			-0.103	(0.078)
Undocumented * neighborhood immigration factor			-0.014	(0.078)			0.140	(0.113)			-0.048	(0.095)
Controls												
Basic controls	Yes		Yes		Yes		Yes		Yes		Yes	
SES	Yes		Yes		Yes		Yes		Yes		Yes	
Mother's mental health and social support	Yes		Yes		Yes		Yes		Yes		Yes	
Parenting factors	Yes		Yes		Yes		Yes		Yes		Yes	
Neighborhood factors	Yes		Yes		Yes		Yes		Yes		Yes	
Constant	-1.508*	(0.591)	-1.776**	(0.574)	-3.520***	(0.834)	-3.879***	(0.807)	-0.970	(0.711)	-1.212	(0.687)
N	1550		1550		1550		1550		1550		1550	

Note: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

The neighborhood interactions do not show a strong story of immigrant neighborhoods protecting against negative legal status effects or exacerbating disadvantage. Instead, they show that children in legal immigrant families have higher internalizing behavioral problems if they live in neighborhoods with higher immigrant concentrations than if they live in more integrated neighborhoods. If anything, immigrant neighborhoods carry a disadvantage, at least for children in legal immigrant families.

Summary and conclusions

While prior research has suggested that children of immigrants and foreign-born children have superior mental health outcomes compared to children of US natives, no systematic analysis has shown whether or not this story holds for children with undocumented immigrant parents. I find that among children in Latino families in Los Angeles County, those in undocumented immigrant families, that is, those who are themselves undocumented immigrants, have greater overall, internalizing, externalizing, headstrong, and dependent behavioral problems compared to children in native families, and greater externalizing and headstrong behavioral problems compared to children in mixed-status families. Further, children in immigrant families of all types have greater overall, internalizing, and anxiety/depression behavioral problems than children in similar native families. There is not evidence that the relationship between living in a mixed-status or undocumented immigrant family and children's mental health varies by age or neighborhood immigrant context.

Children in immigrant families, and particularly in mixed-status and undocumented families grow up in conditions of greater poverty, with less well educated parents, lower incomes, more household overcrowding, and with mothers who report lower self-efficacy. They

also grow up in poorer, less stable, and more ethnically segregated neighborhoods. Yet controlling for household factors, I find that significant differences persist. Neighborhood factors also do not shape children's mental health very strongly.

These results confirm some of my hypotheses, while contradicting others. I expected to find, and did find, that both parents' and children's immigration status are correlated with children's mental health. I expected that family incomes, maternal mental health, household overcrowding, and changing residences more often would explain lower mental health of children in immigrant families. Lower family incomes in immigrant households do indeed explain some small portion of the poorer mental health of undocumented immigrant children, but my other hypothesized mediators did not seem to operate as expected. I expected that the association between living in an undocumented family and poorer mental health would be stronger for older versus younger children. This was not true, though age affects the association between being in a legal immigrant family and mental health, which I did not expect. Finally, I expected that residence in a highly-immigrant neighborhood might lessen or might strengthen the association between undocumented immigrations status and poorer mental health, and instead I found that children in legal immigrant families had poorer mental health when they lived in more highly immigrant neighborhoods than when they lived in more integrated neighborhoods.

Because I use cross-sectional data, the associations between legal status and mental health observed here are descriptive, and I cannot make causal claims. However, despite the cross-sectional nature of this analysis, the rich detail contained in the survey allows me to consider a wide variety of factors that might differ between parents who were and were not able to obtain legal status in the United States. A second potential concern is that foreign-born parents may assess mental health problems differently than native parents, or hold a different mental

standard of "normal" behavior for children. I do not believe that is a problem for my study. In the second wave of L.A. FANS, respondents are asked to rate the mental health of hypothetical people described in short vignettes. Using these questions, and categorizing families in the same way as I have done here, I find that parents in legal immigrant and mixed-status families tend to rate hypothetical mental health conditions as less problematic than native parents, while parents in (the few available) undocumented families rate them similarly to native parents. This suggests that if anything, the associations I find here are lower bound estimates of the association between immigration status and children's mental health.

An additional, related concern is that parents reporting behavioral problems in Spanish may have reported problems differently than parents reporting in English. The translation of the survey into Spanish was validated by bilingual linguists (Peterson et al. 2004), however, it is possible that even with a perfect translation, the connotations of Spanish and English words might differ enough to influence levels of reporting behavioral problems. I include the language of interview as a control in my analyses for this reason. I also compared analysis on the subset of children whose mothers answered the survey in Spanish to see if this showed different results. These analyses, available upon request, show generally very similar results, though the smaller sample size means that fewer relationships show statistical significance than with the overall sample.

An additional limitation is that I compare undocumented immigrant children to US-born children in mixed-status families as a way to disentangle the independent impacts of *parents*' immigration status and *children's* immigration status. However, there are additional differences between children in mixed-status and undocumented immigrant families that I cannot account for using these data. Undocumented immigrant children have, unlike their US-born peers in mixed-

status families, experienced an international move and separation from family and friends and the home country cultural and physical environment. Some undocumented immigrant children moved at such a young age that they have no memories of their "home" country, but others have memories of grandparents, aunts and uncles, or even siblings or other family members left behind, who they are unable to visit because of their legal status. Some children have also experienced stressful or violent situations in their home country or during the migration process that were not experienced by US-born children. Potochnick and Perreira's (2010) study of about 250 immigrant youth in North Carolina suggests that stressful migration events are correlated with greater anxiety problems up to five years past migration, but that time past migration may mitigate the effect of stressful migration on anxiety. Such family separation and traumatic migration experiences could be considered an inherent part of the undocumented immigrant experience rather than omitted variables, but my inability to control for such things inhibits my ability to make claims about the impact of the experience of *residing* in the United States as an undocumented immigrant on children's mental health.

Further, I am unable to examine how past undocumented status of parents or children affects children's mental health, or how the duration of lacking legal status affects children. Some portion of the legal immigrant families I examine may have previously lacked immigration status and later obtained legal visas or green cards, and some portion of the mixed-status families or undocumented families may have been legal immigrant families in the past, and then overstayed temporary visas, becoming undocumented. I would guess that having spent a spell of time with undocumented immigrant parents or as an undocumented immigrant might have lasting effects on children's mental health, but I am unable to examine such associations with the first wave of the L.A. FANS.

In sum, these data suggest that there are direct and indirect consequences of immigration status on children's mental health. Children with undocumented immigrant parents experience not only the anxiety and fear of potential detection and deportation, but also greater poverty and poorer neighborhood contexts than children in legal immigrant or native families. Family socioeconomic status is strongly associated with children's internalizing and externalizing behavioral problems, and maternal mental health is particularly important for children's mental health. While I would have expected that parental mental health was lowest in mixed-status and undocumented immigrant families, all foreign-born mother report low self-efficacy. Whether due to immigration status problems or due to the stresses experienced by all immigrant parents, working to address the mental health and social support needs of immigrant parents could have strong protective effects for their children. Yet these findings suggest that children in immigrant families, and particularly children in undocumented immigrant families, may still experience negative mental health consequences, no matter how healthy and supportive their mothers. As long as the country maintains a population of millions of children affected by the immigration status of their family members or of themselves, researchers must continue to examine how immigration status is affecting children's well-being, and continue to investigate factors open to policy intervention that could protect the well-being of this sizable subset of the US child population.

Appendix 4.1. Description of children's family and neighborhood contexts, by immigration status, for children in Latino families in Los Angeles County, 2000-2001

	All families		Native		Legal immigrant		Mixed-status		Undocumented	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Behavioral outcomes										
Overall	-1.48	0.04	-2.03	0.12	**-1.50**	**0.05**	-1.14	0.06	-1.07	0.07
Internalizing	-1.98	0.05	-3.27	0.16	**-1.88**	**0.07**	-1.37	0.09	-1.30	0.12
Externalizing	-1.59	0.05	-1.97	0.13	**-1.67**	**0.06**	-1.28	0.08	-1.15	0.10
Antisocial	-3.67	0.07	-3.61	0.17	-3.84	0.10	-3.44	0.17	-3.44	0.23
Anxious/depressed	-2.01	0.06	-3.18	0.17	**-1.92**	**0.09**	-1.44	0.12	-1.44	0.18
Hyper	-2.57	0.07	-3.27	0.18	**-2.72**	**0.10**	-1.93	0.14	-1.78	0.19
Headstrong	-2.26	0.07	-2.31	0.17	-2.40	0.10	-2.12	0.16	-1.75	0.20
Dependent	-2.13	0.07	-3.48	0.19	**-2.04**	**0.10**	-1.39	0.14	-1.56	0.20
Peer	-5.07	0.07	-5.58	0.15	-5.00	0.10	-4.94	0.17	-4.75	0.23
Basic controls										
Age	9.21	0.11	9.00	0.25	**9.76**	**0.15**	7.16	0.19	**10.68**	**0.32**
Female	0.49	0.01	0.50	0.03	0.49	0.02	0.48	0.03	0.47	0.04
Survey in Spanish	0.72	0.01	0.07	0.02	**0.81**	**0.01**	0.96	0.01	0.98	0.01
Number of siblings in household	1.66	0.03	1.40	0.06	1.65	0.05	1.77	0.07	2.00	0.11
Family structure										
Two biological parents	0.66	0.01	0.54	0.03	0.71	0.02	0.66	0.03	0.68	0.04
Biological mom, stepdad	0.07	0.01	0.09	0.02	0.05	0.01	0.07	0.02	0.06	0.02
Single mom	0.23	0.01	0.31	0.03	0.21	0.01	0.24	0.02	0.21	0.03
Other	0.04	0.00	0.06	0.01	0.03	0.01	0.03	0.01	0.04	0.02
Mother's age	35.61	0.20	34.51	0.48	**37.90**	**0.29**	31.65	0.32	**33.97**	**0.57**
Highest parental education										
Less than high school	0.52	0.01	0.13	0.02	**0.56**	**0.02**	0.70	0.03	0.67	0.04
High school	0.23	0.01	0.30	0.03	0.23	0.02	0.19	0.02	0.17	0.03
Some college or more	0.25	0.01	0.57	0.03	**0.20**	**0.01**	0.11	0.02	0.17	0.03
Mother's place of birth										
United States	0.19	0.01	1.00	.	0.00	0.00	0.00	0.00	0.00	0.00
Mexico	0.63	0.01	0.00	.	**0.72**	**0.02**	0.82	0.02	**0.91**	**0.02**
Central America	0.19	0.01	0.00	.	**0.28**	**0.02**	0.18	0.02	**0.08**	**0.02**
Mother's years in the United States										
Fewer than five, or native	0.05	0.01	1.00	.	0.02	0.01	0.05	0.01	**0.31**	**0.04**
Five to nine	0.12	0.01	0.00	.	**0.07**	**0.01**	0.25	0.03	0.30	0.04
Ten to 19	0.36	0.01	0.00	.	**0.41**	**0.02**	0.60	0.03	**0.33**	**0.04**
20 or more	0.47	0.01	0.00	.	**0.50**	**0.02**	0.09	0.02	0.06	0.02

Appendix 4.1, continued. Description of children's family and neighborhood contexts, by immigration status, for children in Latino families in Los Angeles County, 2000-2001

	All families		Native		Legal immigrant		Mixed-status		Undocumented	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Family socioeconomic status										
Logged family income	9.37	0.10	10.50	0.16	**9.60**	**0.13**	8.69	0.28	7.54	0.51
Overcrowded house	0.59	0.01	0.36	0.03	**0.55**	**0.02**	0.79	0.02	0.83	0.03
Changed residence in last two years	0.26	0.01	0.26	0.03	**0.18**	**0.01**	0.34	0.03	**0.50**	**0.04**
Home environment quality (scored by interviewer)	0.32	0.00	0.32	0.01	0.31	0.01	0.34	0.01	0.33	0.01
Mother's mental health and social support										
Mother experienced depression	0.35	0.01	0.27	0.03	0.38	0.02	0.37	0.03	0.30	0.04
Mother's self-efficacy scale	-0.03	0.04	0.74	0.09	**-0.10**	**0.06**	-0.57	0.09	**-0.01**	**0.12**
Has source of emergency childcare	0.93	0.01	0.94	0.01	0.93	0.01	0.96	0.01	0.90	0.02
Has source of emergency money	0.89	0.01	0.92	0.02	0.87	0.01	0.92	0.02	0.90	0.02
How often sees friends/relatives										
Once a week or more	0.31	0.01	0.37	0.03	0.29	0.02	0.30	0.03	0.32	0.04
Two to three times a month	0.22	0.01	0.28	0.03	0.21	0.01	0.20	0.02	0.20	0.03
Once a month	0.14	0.01	0.18	0.02	0.14	0.01	0.12	0.02	0.15	0.03
Few times a year	0.24	0.01	0.14	0.02	0.28	0.02	0.27	0.03	0.22	0.03
Once a year	0.09	0.01	0.03	0.01	0.09	0.01	0.11	0.02	0.10	0.02
Mother goes to church at least monthly	0.67	0.01	0.55	0.03	0.72	0.02	0.64	0.03	0.70	0.04
Parenting factors										
Aggravation with parenting (scale)	2.49	0.02	2.50	0.04	2.48	0.03	2.53	0.05	2.41	0.06
Parent binge drank in last month	0.06	0.01	0.12	0.02	0.04	0.01	0.04	0.01	0.03	0.01
Family conflict scale (age 9 and older)	2.60	0.02	2.62	0.04	2.61	0.02	2.64	0.05	2.53	0.05
Neighborhood factors										
Feel safe in neighborhood (age 11 and older)	0.48	0.02	0.48	0.05	0.49	0.03	0.35	0.07	0.53	0.05
Feel safe at school (age 11 and older)	0.59	0.02	0.67	0.05	0.58	0.03	0.39	0.07	0.64	0.05
Gangs in neighborhood (age 11 and older)	0.53	0.02	0.50	0.05	0.54	0.03	0.44	0.08	0.59	0.05
Got robbed in neighborhood (age 11 and older)	0.33	0.02	0.33	0.05	0.34	0.03	0.28	0.07	0.35	0.05
Offered drugs in neighborhood (age 11 and older)	0.14	0.01	0.21	0.04	0.13	0.02	0.09	0.04	0.14	0.04
Saw someone shot in neighborhood (age 11 and older)	0.10	0.01	0.11	0.03	0.10	0.02	0.09	0.04	0.11	0.03
Knows adults in neighborhood (age 9 and older)	0.34	0.02	0.31	0.04	0.36	0.02	0.37	0.05	0.26	0.04
Knows kids in neighborhood (age 9 and older)	0.45	0.02	0.44	0.04	0.47	0.02	0.44	0.05	0.41	0.05
Share of households that are female-headed	0.13	0.00	0.10	0.00	0.13	0.00	0.14	0.00	0.14	0.00
Neighborhood immigrant factor	0.02	0.06	-1.66	0.14	**0.19**	**0.07**	0.68	0.10	0.89	0.13
Share of households with kids	0.50	0.00	0.46	0.01	0.51	0.00	0.52	0.01	0.53	0.01
Neighborhood stability factor	0.00	0.04	0.74	0.09	**-0.01**	**0.06**	-0.36	0.10	-0.57	0.12
Neighborhood ethnic composition										
Share Latino	0.70	0.01	0.59	0.02	0.72	0.01	0.73	0.01	0.75	0.01
Share white	0.12	0.00	0.21	0.01	**0.11**	**0.01**	0.09	0.01	0.08	0.01
Share black	0.08	0.00	0.06	0.00	0.08	0.00	0.09	0.01	0.08	0.01
Share Asian or other	0.10	0.00	0.13	0.01	0.09	0.00	0.09	0.01	0.09	0.01
N	1550		291		785		303		171	

Note: Shaded numbers indicate mean is significantly different than the mean for children in native families.

Numbers in bold indicate mean is significantly different than the mean for children in mixed-status families.

Appendix 4.2. Associations between legal status and three behavioral outcomes, with family and neighborhood mediating factors, for children in Latino families in Los Angeles County in 2000-2001, full models

	Overall		Internalizing		Externalizing	
	(1)		(2)		(3)	
	B	SE	B	SE	B	SE
Immigration status (ref = native)						
Legal immigrant	0.376*	(0.155)	0.521*	(0.222)	0.313	(0.186)
Mixed-status	0.499*	(0.195)	0.645*	(0.279)	0.430	(0.233)
Undocumented	0.761***	(0.223)	0.878**	(0.318)	0.825**	(0.265)
Controls						
Basic						
Age	-0.034	(0.019)	-0.003	(0.027)	-0.048*	(0.024)
Female	-0.168*	(0.067)	-0.024	(0.095)	-0.267**	(0.084)
Neighborhood poverty strata (ref = very poor)						
Poor	-0.136	(0.125)	-0.084	(0.174)	-0.254	(0.150)
Not poor	0.401	(0.265)	0.889*	(0.369)	0.246	(0.320)
Number of households in census tract	-0.000	(0.000)	0.000	(0.000)	-0.000	(0.000)
Survey in Spanish	0.271*	(0.137)	1.098***	(0.192)	0.131	(0.167)
Family structure, parental education						
Number of siblings in household	0.032	(0.035)	-0.002	(0.049)	0.052	(0.042)
Family structure (ref = two biological parents)						
Biological mom, stepdad	0.404**	(0.156)	0.397	(0.219)	0.419*	(0.188)
Single mom	-0.037	(0.103)	0.149	(0.142)	-0.055	(0.123)
Other	-0.183	(0.223)	-0.030	(0.313)	-0.254	(0.264)
Mother's age	-0.006	(0.006)	0.000	(0.009)	-0.012	(0.008)
Highest parental education (ref = less than high school)						
High school	-0.162	(0.105)	-0.299*	(0.146)	-0.107	(0.127)
Some college or more	0.027	(0.114)	-0.047	(0.158)	0.088	(0.137)
Immigration factors						
Mother's country of birth (ref = Mexico)						
Central America	-0.075	(0.116)	-0.001	(0.161)	-0.095	(0.137)
Mother's years in the United States (ref = fewer than five)						
Five to nine	-0.131	(0.216)	-0.063	(0.320)	-0.169	(0.260)
Ten to 19	0.049	(0.208)	0.098	(0.308)	0.002	(0.246)
20 or more	0.101	(0.231)	0.142	(0.339)	0.058	(0.274)
Family socioeconomic factors						
Logged family income	-0.003	(0.010)	-0.010	(0.015)	-0.010	(0.013)
Overcrowded house	-0.045	(0.094)	-0.020	(0.131)	-0.090	(0.114)
Changed residence in last two years	0.135	(0.100)	0.181	(0.141)	0.089	(0.120)
Home environment quality (scored by interviewer)	0.099	(0.267)	0.063	(0.373)	0.172	(0.320)

Appendix 4.2, continued. Associations between legal status and three behavioral outcomes, with family and neighborhood mediating factors, for children in Latino families in Los Angeles County in 2000-2001, full models

	Overall		Internalizing		Externalizing	
	(1)		(2)		(3)	
	B	SE	B	SE	B	SE
Mother's mental health and social support						
Mother experienced depression	0.438***	(0.087)	0.555***	(0.121)	0.534***	(0.105)
Mother's self-efficacy scale	-0.124***	(0.029)	-0.135***	(0.041)	-0.123***	(0.035)
Has source of emergency childcare	-0.077	(0.175)	0.143	(0.244)	-0.090	(0.211)
Has source of emergency money	0.200	(0.142)	0.221	(0.196)	0.222	(0.170)
How often sees friends/relatives (ref = once a week or more)						
Two to three times a month	0.257	(0.171)	0.165	(0.230)	0.265	(0.202)
Once a month	0.289	(0.188)	0.356	(0.259)	0.297	(0.221)
Few times a year	0.413*	(0.180)	0.362	(0.241)	0.390	(0.211)
Once a year	0.286	(0.171)	0.379	(0.230)	0.217	(0.202)
Mother goes to church at least monthly	-0.111	(0.088)	0.025	(0.123)	-0.130	(0.106)
Parenting factors						
Aggravation with parenting (scale)	0.194***	(0.055)	0.260***	(0.075)	0.254***	(0.065)
Parent binge drank in last month	0.282	(0.181)	0.351	(0.251)	0.336	(0.218)
Family conflict scale (age 9 and older)	-0.015	(0.065)	-0.108	(0.092)	-0.035	(0.082)
Neighborhood factors						
Feel safe in neighborhood (age 11 and older)	-0.067	(0.139)	0.010	(0.197)	-0.218	(0.175)
Feel safe at school (age 11 and older)	-0.101	(0.136)	-0.268	(0.193)	0.052	(0.171)
Gangs in neighborhood (age 11 and older)	0.092	(0.130)	-0.088	(0.185)	0.050	(0.164)
Got robbed in neighborhood (age 11 and older)	0.117	(0.131)	0.257	(0.187)	0.074	(0.165)
Offered drugs in neighborhood (age 11 and older)	0.160	(0.185)	0.302	(0.263)	0.424	(0.234)
Saw someone shot in neighborhood (age 11 and older)	0.142	(0.219)	-0.269	(0.312)	0.049	(0.276)
Knows adults in neighborhood (age 9 and older)	-0.063	(0.112)	0.107	(0.160)	-0.057	(0.141)
Knows kids in neighborhood (age 9 and older)	0.152	(0.107)	0.001	(0.153)	0.200	(0.135)
Share of households that are female-headed	-0.097	(1.403)	0.938	(1.952)	-1.514	(1.691)
Neighborhood immigrant factor	0.059	(0.059)	0.057	(0.081)	0.052	(0.071)
Share of households with kids	-0.751	(0.674)	-1.193	(0.938)	-0.610	(0.812)
Neighborhood stability factor	0.044	(0.046)	0.020	(0.065)	0.038	(0.056)
Neighborhood ethnic composition (ref = share Latino)						
Share white	-1.312	(0.672)	-2.804**	(0.935)	-1.377	(0.810)
Share black	-0.586	(0.691)	-0.194	(0.961)	-0.926	(0.834)
Share Asian or other	-0.238	(0.553)	-0.286	(0.770)	-0.027	(0.668)
Constant	-1.773**	(0.574)	-3.828***	(0.808)	-1.226	(0.687)
N	1550		1550		1550	

Note: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

Chapter 5. Immigrant Exceptionalism or Legal Disadvantage? Immigration Status and Children's Cognitive Skills in Latino Families

Abstract

Prior research has sometimes uncovered an immigrant advantage in academic achievement, with foreign-born youth, or children of immigrants outperforming those in native families. This story, however, does not always hold up so well for children in Latino immigrant families, who are also the most likely to be living in undocumented immigrant or mixed immigration status families. In this paper, I explore the role of this previously omitted explanatory factor, investigating the relationship between parents' and children's immigration status and children's academic performance, measured by cognitive letter word identification, reading, and math tests. I use the Los Angeles Family and Neighborhood Survey (L.A. FANS), a dataset representative of Los Angeles County that contains direct measures of parents' and children's immigration status to explore such relationships. I find that children in legal and undocumented immigrant families tend to show superior cognitive skills on letter word identification tests compared to children in native families, whether looking at children of all ages, younger children, or older children. Differences between children in legal immigrant, mixed-status, or undocumented immigrant families are generally not significant. Children in immigrant families show similar scores to children in native families on applied math tests and reading comprehension tests. This evidence suggests that the immigrant educational advantage found among children of immigrants in general may extend to children in Latino immigrant families in Los Angeles, even those in undocumented immigrant families.

Introduction

One of the least-explored factors affecting child well-being in the United States today is the country's immigration system. Due to a long-term mismatch between available visas and demand for migration from both sides of the border, there are an estimated 11 million immigrants in the United States today who lack a visa for legal residence and permission to work in the country. This large, steady undocumented immigrant population affects the lives of many US children, most directly, the estimated 5.5 million children who have at least one undocumented immigrant parent. Such children make up about 7 percent of the school-aged population today (Passel and Cohn 2009, 2011). Of these 5.5 million children, about 4.5 million are US citizen children living in mixed-status families (where children are US citizens and parents are undocumented), and 1 million are themselves undocumented immigrants (Passel and Cohn 2011). An additional 1 million young adults age 18 to 30 in the United States spent at least part of their childhood as undocumented immigrants, and have likely been affected by their childhood immigration status (Batalova and Mittelstadt 2012; Passel and Cohn 2011). The educational progress of children in mixed-status and undocumented immigrant families will have strong implications for future economic trends and economic inequality in the country.

Prior work has shown that children of immigrants and immigrant children sometimes exceed native-born children in their educational performance. This story, however, does not hold up as universally for children in Latino immigrant families, who are also disproportionately likely, among children of immigrants, to live in mixed-status or undocumented immigrant families. Broad trends observed in the past for children in Latino immigrant families, overall, may obscure disparate trends for children with legal versus undocumented immigrant parents, or for children who are themselves legal versus undocumented immigrants. Most prior work on the

educational performance of children of immigrants has not been able to uncover the role of parents' or children's immigration status in shaping children's educational trajectories.

In this paper, I use the Los Angeles Family and Neighborhood Survey (L.A. FANS) to fill this gap, and explore the relationship between parents' and children's immigration status and children's academic performance, utilizing the direct measures of immigration status available in the survey. In particular, I explore: 1) Is living in a mixed-status or undocumented immigrant family associated with children's cognitive abilities? 2) What aspects of life in an undocumented immigrant or mixed-immigration status family – at the family-level or at the neighborhood-level – mediate the relationship between immigration status and children's educational performance? And 3) Does the relationship between immigration status and children's educational performance differ for older versus younger children?

Prior literature

Immigrant educational advantage. Prior work on immigrant students in general has found evidence of an "immigrant paradox" in which immigrant children outperform native children of similar, or even superior, socioeconomic status. Foreign-born children and children of immigrants often outperform native (third or higher generation) children of their same ethnic group on grades and on standardized tests. Foreign-born children from most parts of Asia and Europe even outperform native white children. Limited English proficiency for foreign-born youth means this is more true for math-based measures of achievement than for reading/writing measures, but for some immigrant children, increases in English verbal skills come faster than for US-born children (Conger, Schwartz, and Stiefel 2007; Glick and Hohmann-Marriott 2007; Kao and Tienda 1995; Kao 1999; Leventhal, Xue, and Brooks-Gunn 2006; Schwartz and Stiefel

2006; Thomas 2009). Such gains have been attributed to "immigrant optimism," and high emphasis on educational performance among immigrant parents (Kao and Tienda 1995).

However, immigrant educational exceptionalism does not always apply to Latino immigrant children or children of immigrants (Fuligni 1997; Kao and Tienda 1995; Leventhal et al. 2006). School-age children of Mexican immigrants in Chicago have similar verbal test scores to children in native Mexican families, but slower growth in verbal scores over their elementary and secondary school years (Leventhal et al. 2006). Gaps in educational achievement by national origin group open up very early, with children of Mexican and other Latino immigrants scoring lower on kindergarten math and reading tests than children of US-born Latinos or white children, while children in Asian immigrant families score similarly to, or higher than, native white children (Glick and Hohmann-Marriott 2007; Han 2008; Yiu 2011). On the other hand, nationally representative evidence suggests that children of Mexican and Central American immigrants see faster improvements in math and reading scores over their early elementary school years than native, white children, narrowing gaps (Han 2008). And Latino children with foreign-born parents have lower high school drop-out rates than children in native Latino families (Driscoll 1999; Perreira, Harris, and Lee 2006).

Different trends by national origin are not explained away by the higher average socioeconomic status of Asian immigrant families nor the lower socioeconomic status of Latino immigrant families (Crosnoe and Turley 2011). Existing explanations for the sometimes lower academic performance of young Latino students in immigrant families, net of socioeconomic status, focus on school and neighborhood quality, parenting styles, and access to center-based early childcare (Crosnoe and Turley 2011), but in existing evidence, such factors have not

completely accounted for remaining gaps. The ability of Latino children in immigrant families to catch up to their native-born peers, despite disadvantages, has also not been fully explained.

Undocumented immigrant educational disadvantage? One additional, little-studied, factor that disproportionately affects Latino immigrant families and may have implications for children's cognitive development is the role of undocumented immigrant status in shaping children's educational performance. The limited existing evidence suggests that living in a mixed-status or undocumented immigrant family may lead to lower academic performance. One study of young adult children of immigrants in Los Angeles found that those whose parents remained undocumented had about a year lower educational attainment than those whose parents entered the country legally or obtained legal status (Bean et al. 2011). This paper does not investigate the mechanisms driving this relationship.

An earlier, unpublished analysis of the L.A. FANS data shows that having an undocumented immigrant mother is associated with poorer performance on both math and reading cognitive scores, but not on vocabulary tests (Pan 2009). This paper does not explore the role of children's own immigration status and selects only pre-1986 migrants, leaving out a substantial share of the undocumented immigrant population in the L.A. FANS sample. It further uses mother's migration in 1982-1986 as an instrument for current undocumented status, rather than relying on the direct measure available in the survey. This methodological approach leads to an analytic sample of only 312 children.

Evidence from New York City, comparing largely-undocumented Mexican immigrant families, to generally-documented Dominican immigrant families, as well as native, citizen African American families found that at two and three years old, children with undocumented parents had lower cognitive skills than children with legal parents, mediated by parents'

economic hardship, psychological distress, and difficult work situations, as well as by children's lower access to center-based care (Yoshikawa 2011).

I am not aware of any research on the educational performance of children who are themselves undocumented, except for work looking at undocumented youth in their late teens. Research on undocumented immigrant teens and young adults suggests that lacking legal status and work authorization leads to greater high school drop-out rates, lower college enrollment, and slower progress in college, partly explained by blocked access to affordable in-state tuition rates at public colleges (Abrego and Gonzales 2010; Conger and Chellman 2011; Gonzales 2011; Kaushal 2008; Potochnick 2011). My paper builds on this prior work by examining children with undocumented parents in a very different context from New York City, by exploring cognitive scores for older children, as well as very young children, by exploring the role of children's own immigration status, in addition to the role of parents' immigration status, and by employing a larger, population-based sample that permits exploration of a wider set of factors that may mediate between immigration status and educational performance.

Why might immigration status matter? There are a number of reasons why parents' or children's immigration status may affect children's educational performance, including family, mother, child, and neighborhood level influences that are shaped by immigration status and may in-turn, affect children's cognitive development. Undocumented parents generally work in low-skill, low-wage jobs, often in the informal economy, leading to low household incomes. Living in a low-income or poor family, and particularly in a family that experiences long periods of poverty, is associated with greater developmental delay and learning disabilities for children (Brooks-Gunn and Duncan 1997). Undocumented immigrant families are generally ineligible for public supports such as housing assistance, cash assistance, Medicaid, and food stamps,

compounding the effects of low incomes. Citizen children with low-income undocumented immigrant parents, that is, in mixed-status families, are eligible for public supports, but their undocumented parents may not always take up available benefits due to fears, lack of necessary paperwork demonstrating income, confusion about eligibility criteria or transportation or other barriers. Furthermore, amounts of such benefits are scaled back to serve only eligible household members, so mixed-status families that do access public benefits receive lower amounts than otherwise-similar native families.

Low household incomes and lack of access to housing supports can lead families to double up, or rent small spaces, leading to housing overcrowding, which is higher among undocumented immigrants than legal immigrants and US natives in the United States overall (Hall and Greenman 2013). Household overcrowding has been shown to be been associated with lower academic achievement (Yoshikawa 2011). Reliance on low-cost rentals and potentially lower ability to negotiate with landlords can also lead to higher rates of instable housing, which could potentially force children to switch schools more often, potentially harming children's educational performance (Hanushek, Kain, and Rivkin 2004).

Undocumented immigrant parents and children also experience substantial fear and stress associated with their immigration status, due to the very real threat of detection and deportation to a country that undocumented children may not remember. Deportation of one or more parents can also separate families, or even force children into the foster care system. Though immigrant deportations were lower during the period when the data I employ were collected than they are today, there were over 180,000 immigrants deported per year in 1999-2001 (Office of Immigration Statistics 2012). Parents' fears about their immigration status can affect children, as parental mental health has been shown to affect child well-being (Meadows et al. 2007). In

addition, fears about interacting with official institutions may lead parents to avoid participating in their children's schools, avoiding parent-teacher conferences, classroom volunteering opportunities, parent teacher association meetings, or school events.

The stress and anxiety associated with living in a mixed-status or undocumented immigrant family might also directly affect children's own mental health, which could, in turn, affect their ability to concentrate and learn in school. Prior analysis of the L.A. FANS showed that children in undocumented immigrant families exhibited greater behavioral problems than children in other types of immigrant families, suggesting an association between children's own immigration status and mental health (Gelatt 2013). Further, as undocumented immigrant youth approach the end of high school, and become aware of the limitations their immigration status may place on their lives, they may experience increasing depression and anxiety (Gonzales 2011). Children in undocumented immigrant or mixed-status families may also experience poorer health (Gelatt 2013). Both physical and mental health have been shown to affect children's cognitive development (Crosnoe 2006). More generally, conditions of poverty, scarcity, and stress have been shown to affect individuals' ability to allocate attention to tasks at hand, which could be reflected in scores on cognitive tests (Shah, Mullainathan, and Shafir 2012).

Children with undocumented immigrant parents may have very different early childhood and later childhood educational experiences as well, which could shape their educational attainment. Immigrant parents are less likely than US-born parents to enroll children in Head Start or other center-based early childhood education programs, which are associated with better school preparedness (Crosnoe 2007; Magnuson, Lahaie, and Waldfogel 2006). Due to lack of information, low incomes, or fears, undocumented immigrant parents may be even less likely

than other immigrant parents to take their children to center-based care. Children with undocumented immigrant parents may also attend poorer quality schools when they reach school age, due to residence in poor neighborhoods and parents' limited ability to advocate for better options for their children because of fear, language limitations, or lack of familiarity with the US school system. Prior work suggests that school environments shape children of Latino immigrants' ability or lack of ability to close test score gaps relative to native, white children (Han 2008).

Finally, undocumented immigrant and mixed-status families, due to limited English proficiency, reliance on immigrant networks to locate housing, and due to low incomes, may reside in neighborhoods that are poorer, with greater presence of drug trade and gang activity, and that contain heavy concentrations of other disadvantaged residents, which could affect cognitive development. Children residing in poor and particularly in dangerous neighborhoods show lower academic performance than children in safer neighborhoods (Bowen and Bowen 1999; Henry et al. 2008; Shumow, Vandell, and Posner 1999). Alternatively, residence in neighborhoods with a high concentration of co-ethnic immigrants could be protective for children with undocumented parents, as residents in such neighborhoods may have stronger ties to other immigrant families who can provide vital information on navigating available educational systems and accessing resources to support children's healthy development (Portes and Rumbaut 2006; Portes and Sensenbrenner 1993).

Hypotheses

Drawing on existing literature, I hypothesize the following:

1) *How does parents' and children's legal status affect children's cognitive abilities?*

H1: I expect that once controlling for parents' pre-migration characteristics such as place of birth and educational attainment, children in mixed-status and undocumented immigrant families will have lower educational performance than children in legal immigrant or native families. I expect that children who are themselves undocumented, that is, living in undocumented immigrant families, will have lower educational performance than children who are US-born, living in mixed-status families.

2) *What aspects of life in an undocumented immigrant or mixed-immigration status family – at the family-level or at the neighborhood-level – mediate the relationship between immigration status and children's educational performance?*

H2: At the child and family level, I expect that a negative association between living in a mixed-status or undocumented immigrant family and children's cognitive scores will be mediated by lower household income, lower access to public benefits, household overcrowding, switching schools, mothers' mental health, mother's lower participation in children's school, lower utilization of center-based early childcare, and poorer quality schools. I expect that a negative correlation between children's own immigration status – that is, living in an undocumented immigrant family – and their cognitive scores will be partially mediated by children's mental health.

H3: At the neighborhood level, I expect that residence in more disadvantaged (poorer, more dangerous) neighborhoods could mediate the relationship between immigration status and children's cognitive scores, while residence in neighborhoods with higher concentrations of Latinos and other immigrants will be protective of children's educational attainment, by connecting families to information and supportive resources.

3) *Does the relationship between immigration status and children's educational performance differ for older versus younger children?*

I am not sure whether to expect greater, smaller, or similar impacts of legal status on children's academic performance for older versus younger children. On the one hand, we might expect that as with foreign-born Latino children overall, children of undocumented immigrants may start school with greater cognitive gaps, but catch up over time. On the other hand, evidence suggests that undocumented immigrant children become discouraged by their blocked futures and suffer academic declines in their teen years. Other hypothesized influences may or may not have differential impacts by age.

Methods

To explore the relationship between children's and parents' immigration status and children's educational trajectories, measured through cognitive scores, I draw on the Los Angeles Family and Neighborhood Survey (L.A. FANS). This study interviewed a stratified random sample of households in Los Angeles County in 2000-2001 and again in 2006-2008, oversampling households in poor or very poor census tracts and households with children. One randomly selected adult and one randomly selected child were interviewed in each household. In households with children, the primary caregiver – usually the mother – was also interviewed if the primary caregiver was not the randomly selected adult. The primary caregiver was interviewed about herself and about the randomly selected child and up to one randomly selected sibling to that child. Children age 9 and older were also interviewed directly if they were either the randomly selected child or the randomly selected sibling.

I use this survey because it is one of the only population-based datasets in the country that asks respondents directly about their precise immigration status. Foreign-born adults were asked whether they had US citizenship, a green card for legal permanent residence, or a valid temporary visa. Parents were asked whether foreign-born children had US citizenship or a green card. Using these measures, I am able to identify children who are themselves undocumented immigrants and children who have undocumented immigrant parents. The first wave of the survey interviewed 3,085 households. The response rate for randomly selected adults was 85 percent, for primary caregivers was 89 percent, and for children was 86 percent (Peterson et al. 2004).

The second wave of the survey followed up with wave 1 respondents. Detailed information was collected from wave 1 respondents who remained in Los Angeles County, while less detailed information was gathered for wave 1 respondents who left the county. Wave 2 also included a new, representative cross-sectional sample of Los Angeles County. However, because the wave 2 cross-sectional sample was smaller, there are only 34 identifiable undocumented immigrant children in that wave. The utility of following wave one respondents to wave two is limited by substantial attrition and by the fact that only a handful of undocumented parents or children were able to obtain legal immigration status between the two waves, prohibiting a causal look at the relationship between immigration status and children's cognitive skills.

Sample selection. I use the measures of immigration status for parents and children to classify children into four types of families: native, legal immigrant, mixed-status, and undocumented. Native families are those in which parents and children were born in the United States. Legal immigrant families are families where parents are foreign-born and have US citizenship, a green card for permanent residence, or a valid, temporary visa. Children in legal

immigrant families may be US-born or foreign-born, but most are US-born. Mixed-status families are families in which parents are foreign-born, undocumented immigrants, and children are US-born, US citizens. In undocumented immigrant families, both parents and children are undocumented immigrants.

L.A. FANS was conducted in English and Spanish. As result, non-Latino immigrant families in the sample are biased toward those with strong English skills. I therefore utilize a sample of only Latino/a respondents. By using a Latino/a native reference group, I avoid making comparisons across groups with widely different cultural origins. There are 3,684 children in the household roster file for wave 1. I select only children age 3 to 17 with a Woodcock Johnson testing file and a valid parental interview, in Latino families from Mexico or Central America, in an identifiable native, legal immigrant, mixed-status, or undocumented family, who do not have a diagnosed developmental disability, and who completed the Woodcock Johnson assessment. This leaves a sample of 1,023 children. I imputed missing information on independent variables using Amelia, a multiple imputation program designed at Harvard University (Honaker et al. 2012).

Dependent variables. I explore children's educational trajectories using three measures of cognitive skills, drawn from the Woodcock Johnson Revised Test of Achievement, which is designed to measure scholastic achievement for people of all ages. Children age 3 to 17 were given age appropriate versions of the letter word identification (LWI) and applied problems (math) tests, while children age 6 to 17 were given the paragraph comprehension test. The letter word identification tests ask children to match pictures with words, as a measure of symbolic learning, and identify letters and words, as a measure of reading skills. The applied problems test involves practical mathematical problems. The paragraph comprehension test presents readers

with a brief text description that they must match with a picture and then presents readers with a short paragraph, and asks them to identify a missing word (Peterson et al. 2004). I use the standardized versions of test scores, which were standardized to have a mean of 100 and a standard deviation of 15.

Independent variables. I explore whether the relationship between immigration status and cognitive scores persist after controlling for a number of factors that differ in families by immigration status, but that are not the result of parents' or children's immigration status. Controls and mediators included in my models are described in full detail in table 5.1. I control for basic factors – children's age and gender, whether children had a low birth weight, and the language in which children took the cognitive tests. I also control for two aspects of the sampling design – the number of households in the census tract and the poverty strata of the census tract (very poor, poor, or not poor). I control for the number of other children in the household, family structure, parental educational attainment, mothers' standardized scores on the Woodcock Johnson paragraph comprehension test, whether mothers took the test in Spanish versus English, whether foreign-born mothers were born in Central America versus Mexico, and mothers' number of years in the United States.

I next explore whether a number of household-level factors mediate the relationship between parents' or children's immigration status and children's cognitive skills. I start by including several family characteristics that I would expect to be shaped by immigration status, including family income (logged), whether the mother works outside the home, whether the household is overcrowded, whether the family receives public benefits, and whether the child attended more than one school in the last year, which I take as a measure of residential instability affecting access to stable schooling. I next include two measures of mothers' mental health –

depression and self-efficacy, and a scale of mothers' level of participation in children's school, which I expect would be shaped, in part, by her level of fear about interacting with US institutions and public employees. I also explore the mediating role of children's mental and physical health, and children's educational experiences – whether children ever attended Head Start, whether children ever attended other center-based childcare, child-reported teacher quality, whether children in school attend private versus public school, and whether children report feeling safe at school.

Finally, I investigate the mediating role of child-reported neighborhood indicators, such as whether children say they 1) feel safe at school, 2) feel safe in their neighborhood, 3) there are gangs around, 4) someone tried to rob them last year, 5) someone offered or sold them drugs last year, or 6) whether they saw someone get shot last year. I also include measures of whether children know most adults in the neighborhood, and know most children in the neighborhood. I also explore the role of various characteristics of the neighborhood, as measured by the 2000 census, using revised versions of scales that were provided in the L.A. FANS data. I control for a scale of the immigrant concentration in the neighborhood, the share of households in the neighborhood with children, and a scale of residential instability. I also control for the racial/ethnic composition of the neighborhood.

Analytic strategy. I first present descriptive statistics for the sample overall, and for children in each of the four types of families, by immigration status. Next, I use ordinary least squares regression analysis to explore the relationship between immigration status and children's cognitive scores, first with just my basic set of controls, and then as I add increasing sets of mediating factors. I use children in native families as the reference groups. I also test whether test scores differ among children in the three types of immigrant families. I rely on comparisons

Table 5.1. Independent variables used in analysis and their definitions

Name	Description
Controls	
Basic	
Age	
Female	
Neighborhood poverty strata	Poverty strata used in sampling design (very poor, poor, or not poor)
Number of households in census tract	Size of the household tract, part of sampling design
Had low birth weight	Birth weight under 2,500 grams
Took cognitive tests in Spanish	
Family structure, parental education	
Number of siblings in household	
Family structure	Lived with two biological parents, with a biological mom and stepdad, with a single mom, or in another type of arrangement
Mother's age	
Highest parental education	Highest educational attainment of a parent in the household, whether less than high school, high school, or some college or more
Mother's paragraph comprehension test score	Mother's score on paragraph comprehension cognitive test
Mother took cognitive test in Spanish	Whether the mother took this cognitive test in Spanish versus English
Immigration factors	
Mother's place of birth	Mother is born in US, Mexico, or in Central America
Mother's years in United States	For foreign-born mothers, the mother has lived in the United States for fewer than 5 years, 5-9 years, 10-19 years, or 20 or more years
Mediators	
Family socioeconomic status	
Logged family income	Natural log of total family income
Overcrowded house	More than 2 household residents per bedroom in the household
Attended more than one school in last year	
Mother is employed	Mother works outside the home
Family receives TANF or CalWORKs	Mother or any children in the household currently receive Temporary Assistance for Needy Families, or the California CalWORKs cash assistance
Family receives food stamps (SNAP)	Mother or any children in household currently receive food stamps
Mother's mental health and social support	
Mother experienced depression	Mother reported experiencing a two week stretch of depression or loss of interest in activities in the last 12 months
Mother's self-efficacy scale	Weighted scale of mother's answers to the seven-question Pearlin Self-Efficacy scale, weighted using principal components analysis
Mother participates in child's school (scale)	Mean of five binary indicators measuring whether or not the mother participated in the child's school in various ways, such as meeting with teachers, meeting with the principal, or attending events
Child health	
Internalizing behavioral problems (scale)	Natural log of the mean of mother's reports of children's internalizing behaviors (withdrawal, depression, clinginess, etc.) from the Achenbach child behavior checklist
Externalizing behavioral problem (scale)	Natural log of the mean of mother's reports of children's externalizing behaviors (acting out, hitting, displaying anger, etc.) from the Achenbach child behavior checklist
Parent-reported global health	Mothers' report of child's global health, whether fair or poor, good, very good, or excellent

Table 5.1, continued. Independent variables used in analysis and their definitions

Name	Description
Child's educational experiences	
Ever went to Head Start (age 4 and older)	Child is currently attending Head Start, or attended in the past
Ever went to other center-based childcare (any age)	Child is currently attending non-Head Start center-based childcare, or has attended such childcare in the past
Teachers at school are good (age 9 and older)	Child is age 9 years or older and reports that teachers at his/her school are good
Type of school attending	Child attends no school (because too young or dropped out), private school, or public school
Feel safe at school (age 11 and older)	Child is age 11 or older and reports feeling safe at school
Neighborhood factors	
Feel safe in neighborhood (age 11 and older)	Child is age 11 or older and reports feeling safe in his/her neighborhood
Gangs in neighborhood (age 11 and older)	Child is age 11 or older and reports there are gangs around in the
Got robbed in neighborhood (age 11 and older)	Child is age 11 or older and reports someone tried to rob him/her in last year
Offered drugs in neighborhood (age 11 and older)	Child is age 11 or older and reports someone tried to sell him/her drugs in
Saw someone shot in neighborhood (age 11 and older)	Child is age 11 or older and reports seeing someone shot in last year
Knows adults in neighborhood (age 9 and older)	Child is age 9 or older and reports knowing most adults in neighborhood
Knows kids in neighborhood (age 9 and older)	Child is age 9 or older and reports knowing most children in neighborhood
Neighborhood immigrant factor	Weighted scale of 1) the share of adults in the census tract who are Spanish speakers, 2) the non-citizen share of the population, 3) the foreign-born share of the population, and 4) the share of the population that is a recent immigrant, defined as someone who entered the United States to live after 1995, 5) the share of adults in the tract who are English only speakers, and 6) the share of adults who speak English very well from the 2000 US Census, weighted using principal components analysis
Share of households with kids	Share of households in the census tract that have children in them, from the 2000 US Census
Neighborhood stability factor	Weighted scale of 1) the share of people in the tract who are living in the same residence as in 1995, 2) the share of residences that are owner occupied, 3) the share of households that are in multi-unit buildings, and 4) the share of households made up of non-family living arrangements from the 2000 US Census, weighted using principal components analysis
Neighborhood ethnic composition	Share of census tract that is Latino, white, black, or Asian or other

between children in mixed-status and undocumented immigrant families, on the one hand, versus children in native families, on the other, to explore whether *parents'* immigration status is meaningfully associated with children's cognitive outcomes. I rely mainly on children in native families as the reference group for such comparisons, rather than children in legal immigrant families, because there is positive selection operating in terms of education, occupational training, and family connections in who is able to obtain a legal visa or US citizenship in the United States, so I believe the native reference group forms a better baseline. I compare children

in undocumented families to children in mixed-status families in order to determine whether *children's* immigration status is meaningfully associated with children's cognitive skills.

For all models, I include a household random intercept to adjust my estimates for the fact that unobserved household-level influences that affect siblings in the same family, given that the analytic sample contains about 1.5 children per household. After exploring relationships in the full sample, I repeat analyses for younger school-age children (age 6 to 11) and older children (age 12-17). As a robustness check, I repeat all analyses for only children who took cognitive tests in English versus Spanish. I further complete additional analysis for randomly selected children only (and not their siblings) for whom the survey asked additional questions about parenting practices.

Results

Descriptives. Table 5.2 shows mean cognitive test scores, for the overall analytic sample, and for children in the four types of families by immigration status. We see that scores on the letter word identification test are very similar for children in native, legal immigrant, mixed-status and undocumented immigrant families, while children in legal immigrant and undocumented immigrant families score significantly lower than children in native families on the applied problems math test. For the paragraph comprehension test, administered to children age 6 and older, we likewise see that children in legal and undocumented immigrant families score lower than children in native families, and that children in undocumented immigrant families score significantly lower than children in mixed-status families.

Appendix 5.1 shows means and standard errors for all independent variables used in my analysis. Several background factors that are not necessarily shaped by immigration status

nonetheless vary by immigration status, and may shape children's cognitive scores. Substantial shares of children in immigrant families took the cognitive tests in Spanish – 24 percent of children in legal immigrant families, 46 percent in mixed-status families, or 52 percent in undocumented immigrant families. Children in immigrant families also have parents with lower educational attainment, and significantly lower cognitive scores on the paragraph comprehension test than children in native families. Finally, there is a gradient of mother's duration of US residence by immigration status, with legal immigrant parents having resided in the United States for the longest, followed by mothers in mixed-status families, followed by mothers in undocumented families.

Table 5.2. Mean cognitive scores by immigration status, for children in Latino families in Los Angeles County, 2000-2001

	All Families		Native		Legal immigrant		Mixed-status		Undocumented	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Letter word identification	102.28	0.68	100.40	1.31	102.31	0.92	101.67	1.91	105.27	2.02
Applied problems	100.05	0.53	104.05	1.29	99.28	0.68	101.49	1.55	96.33	1.32
Paragraph comprehension	94.96	0.54	100.28	1.28	94.49	0.70	95.70	1.37	**89.15**	1.53
N	1023		190		517		198		118	

Note: Shaded numbers indicate mean is significantly different than the mean for children in native families.

Numbers in bold indicate mean is significantly different than the mean for children in mixed-status families.

Looking next at factors that may mediate between undocumented status and children's cognitive outcomes, we see that family income is significantly lower in immigrant families compared to native families, and lower in mixed-status and undocumented immigrant families than in legal immigrant families. Household overcrowding shows the same pattern of greater disadvantage in immigrant families, but particularly in families where parents lack legal status.

Over three-quarters of children in mixed-status and undocumented immigrant families in the sample live in an overcrowded residence. There is not strong evidence here that immigration status is highly correlated with maternal depression, but rather all foreign-born mothers report lower self-efficacy than native-born mothers.

Children of immigrants are less likely than their peers to have attended center-based childcare, and children in undocumented immigrant families are particularly unlikely to have attended either Head Start or other center-based childcare. Children in undocumented immigrant families are less likely to have attended Head Start than children in mixed-status families, while about 8 percent of children in undocumented families and 19 percent of children in mixed-status families had attended center-based care other than Head Start, compared to 47 percent in native Latino families. Children in immigrant families are less likely to attend private school than children in native families. Finally, children in immigrant families live in neighborhoods that have higher immigrant concentrations, higher turnover, and more Latino/a residents than children in native families.

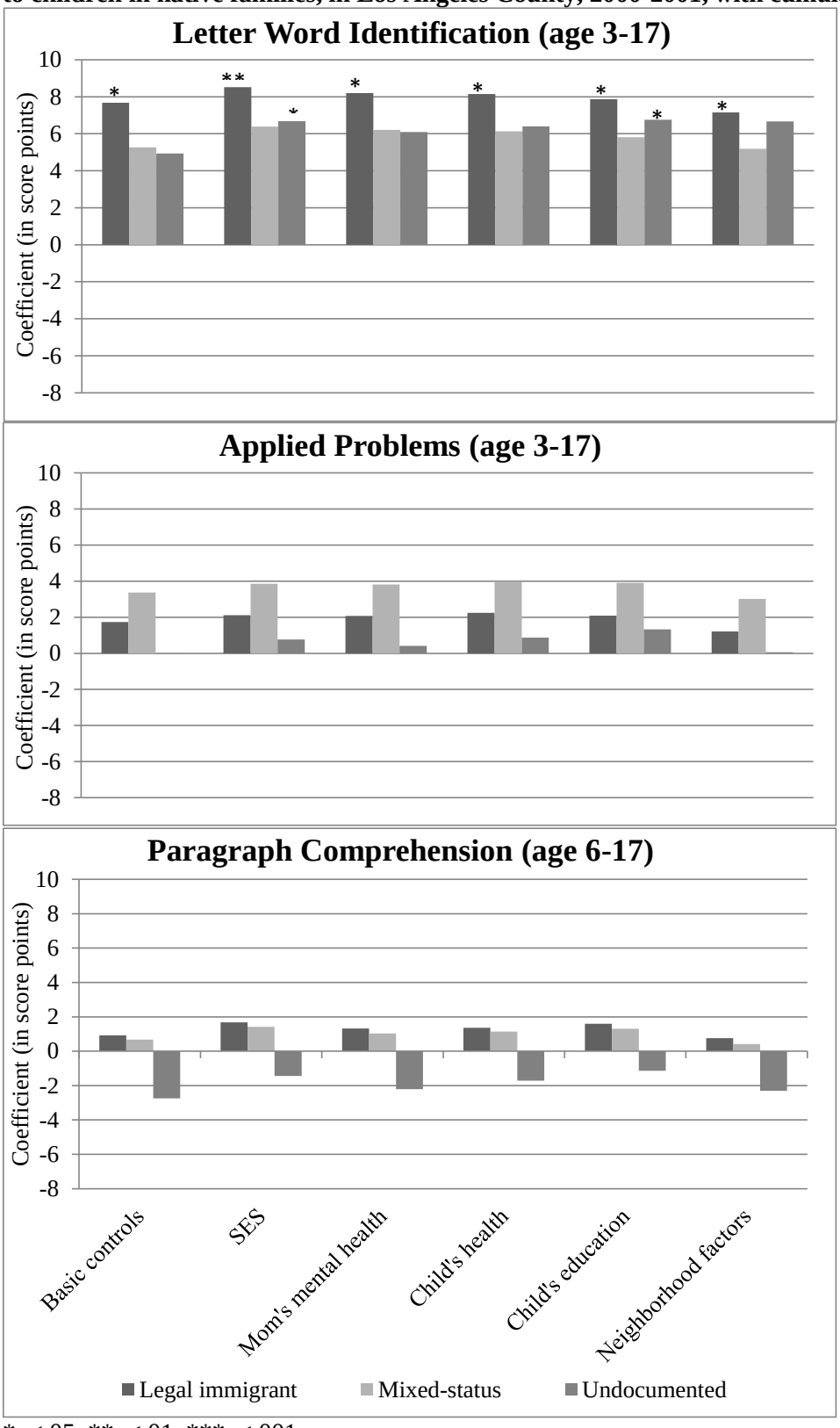
Immigration status and cognitive scores. Figure 1 shows how the relationship between family immigration status and children's cognitive scores changes as I add increasing sets of mediating factors, for children of all ages. Looking first at the graph for the letter word identification (LWI) test, we see that with just basic controls, children in legal immigrant families have significantly higher scores than children in native families, while children in mixed-status and undocumented immigrant families have higher scores, but the differences are not significant. These models show that children whose mothers have been in the United States longer have significantly lower cognitive scores, which is surprising. I explore this pattern more below.

After including my SES mediators, children in undocumented immigrant families also have significantly higher scores than children in native families. Higher household income is significantly associated with higher cognitive scores, so the fact that this relationship emerges after controlling for family income demonstrates that children in undocumented immigrant families have particularly high scores for their low family income. Children's greater externalizing behavioral problems are associated with poorer LWI scores, and having attended center-based childcare is associated with better LWI scores, but as these factors disadvantage children in immigrant families, and particularly children in undocumented immigrant families, adding them to models does not explain away the higher scores of children in legal immigrant or undocumented immigrant families. (Full models for the LWI cognitive scores are shown in table 5.3.)

This apparent immigrant advantage persists after adding in the rest of my hypothesized mediators. In models with the full set of controls and mediators, children in legal immigrant families and children in undocumented immigrant families have letter word identification scores about 7 points— or just under half a standard deviation – higher than children in native families, though this difference is only significant for children in legal immigrant families. Children in mixed-status families also seem to have higher scores, but the difference is not significant. Differences in scores between children in different types of immigrant families are not significant, suggesting parents' place of birth, rather than parents' or children's immigration status, may be most important in shaping children's LWI scores.

Turning to the middle portion of figure 5.1, we see that there are no significant associations between children's immigration status and applied problem math test scores once

Figure 5.1. Coefficients on cognitive scores for Latino/a children in immigrant families, compared to children in native families, in Los Angeles County, 2000-2001, with cumulating sets of controls



*p<.05 **p<.01 ***p<.001

including basic controls. Parents' cognitive scores are positively associated with children's higher math scores, as is child-reported teacher quality, and past attendance at center-based childcare. Looking at the bottom part of figure 5.1, showing paragraph comprehension scores, we see again that with just basic controls, there are no significant differences in cognitive scores by immigration status. Mother's tests scores are strongly associated with children's test scores on the paragraph comprehension test, as are having access to public benefits (TANF/CalWORKs), and prior attendance at center-based childcare (see table 5.3).

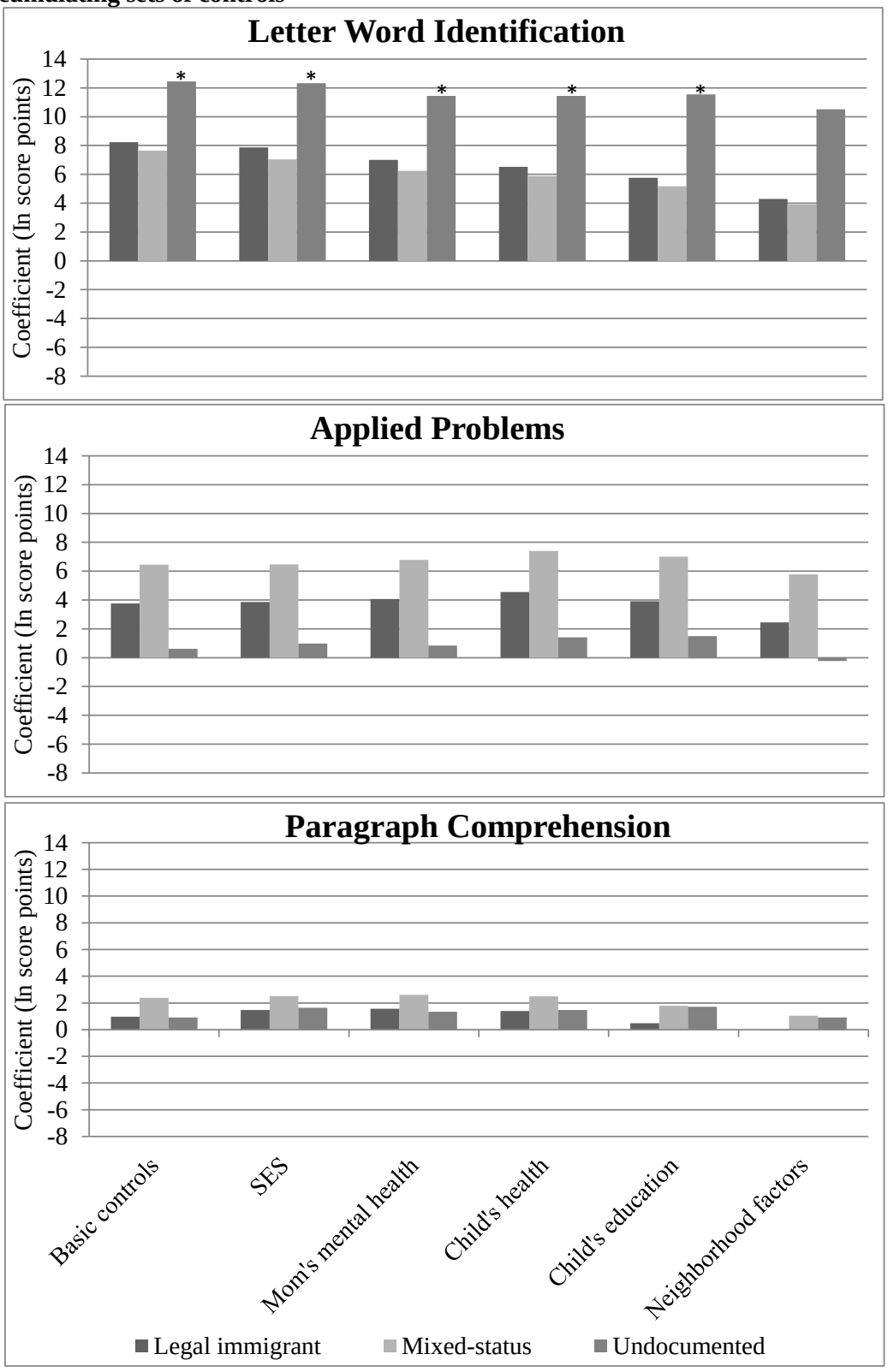
For each of the three tests, the language of the test was strongly correlated with children's cognitive scores. Children taking the LWI test in Spanish scored significantly higher than children taking the test in English, while for the applied problems and paragraph comprehension test, taking the test in Spanish was correlated with lower scores. In order to ensure that comparing children taking the test in two different languages was not biasing the results of my analysis, I repeated the analysis just for children taking the test in English. The same general results hold for all three cognitive test outcomes, though the smaller sample sizes means the differences between children in undocumented immigrant and native families are no longer significant. For the LWI test, with all mediators included, scores are 9 points higher for children in legal immigrant families, 6 points higher for children in mixed-status families, and 5 points higher for children in undocumented immigrant families than children in native families. There are no significant differences between children in legal immigrant, mixed-status, and undocumented immigrant families in these English-only LWI models. Results for the English test taking sample are available upon request.

Results for younger and older children. Generally, however, whether looking at all children, or just children who took cognitive tests in English, these results suggest that there is an

immigrant advantage operating, boosting the LWI scores of children in immigrant families, despite their poorer socioeconomic backgrounds, poorer maternal and child mental health, and poorer neighborhood contexts, while children in all four types of Latino families have similar scores on applied math tests and paragraph comprehension tests. Yet it is not clear that it is appropriate to compare all children, including 3-year-olds and 17-year-olds, to each other. Further, the negative association between mother's time in the United States and children's cognitive scores on the LWI test (and the other two tests to a much lesser extent) seems counterintuitive, and could potentially be an artifact of the positive association between children's and mothers' age and mother's duration of residence in the United States. And, we might expect that cognitive gaps would be larger or smaller for older children versus younger children. To avoid comparing children of very different ages and to explore age differences in the relationship between immigration status and cognitive scores, I repeated models for children of young school age (age 6-11, see figure 5.2) and for older children (age 12-17, see figure 5.3). I omitted very young children from these age specific analyses, since there are limited numbers of undocumented children at very young ages, and because it is possible that comparing children who have and have not yet entered kindergarten could muddy results.

Among younger, school-aged children, we again see that after including basic controls, children in undocumented immigrant families have significantly higher scores on the letter-word identification test than children in native families. As we would expect since they reflect greater disadvantage for children in immigrant families, none of the mediators explain away the positive association between being in an undocumented immigrant family and higher scores on the letter-word identification test. With full controls, children in undocumented immigrant families score 10.5 points (about two-thirds of a standard deviation) higher than children in native families.

Figure 5.2. Coefficients on cognitive scores for younger Latino/a children in immigrant families (age 6 to 11), compared to children in native families, in Los Angeles County, 2000-2001, with cumulating sets of controls

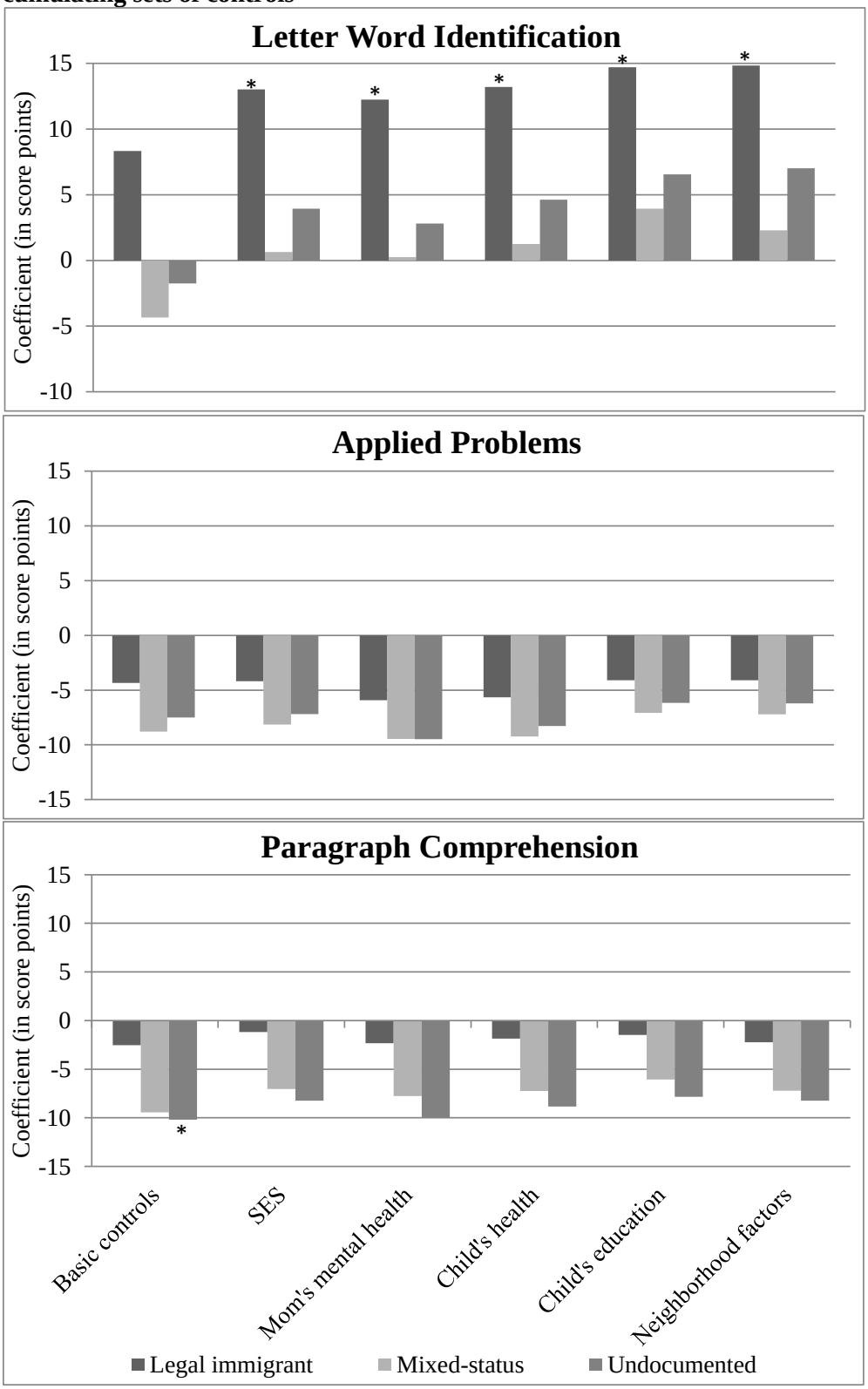


*p<.05 **p<.01 ***p<.001

Children who attended Head Start show higher scores on this test. Children in legal immigrant and mixed-status families also appear to have higher letter word identification scores compared to children in native families, but these differences are not statistically significant. Differences between children in different types of immigrant families are also not statistically significant. Looking just at children in this age group who took the LWI test in English shows a very similar story. There are still no significant differences in applied problems or paragraph comprehension scores by family immigration status once controlling for family structure and parents' educational attainment and cognitive scores, whether looking at all test takers or only English language test takers.

Among older children, age 12 to 17, models with just basic controls show no significant differences in in LWI scores by immigration status. Then, once controlling for family income, children in legal immigrant families show significantly higher test scores than children in native families. These relatively higher scores persist even after including the full set of controls and mediators. Ultimately, older children in legal immigrant families seem to have LWI scores almost 15 points, or a full standard deviation, higher than children in native families. Children in mixed-status families and undocumented immigrant families have higher LWI scores than children in native families, about 2 points and 7 points respectively, but these differences from children in native families are not statistically significant. The LWI scores of older children in legal immigrant families are significantly higher than those of children in mixed-status or undocumented immigrant families. A similar story holds in models including only children who took the LWI test in English. For these older children, there are still no significant differences in math test scores by legal status, once controlling for parental educational attainment and mother's cognitive test scores. For the paragraph comprehension test, children in undocumented

Figure 5.3. Coefficients on cognitive scores for older Latino/a children in immigrant families (age 12 to 17), compared to children in native families, in Los Angeles County, 2000-2001, with cumulating sets of controls



*p<.05 **p<.01 ***p<.001

immigrant families initially show significantly lower scores than children in native families, but this difference is no longer significant once accounting for family socioeconomic status. Differences between children in different types of immigrant families are not statistically significant for the applied problems or paragraph comprehension tests.

What explains observed differences in scores by immigration status? The results so far are somewhat unexpected. While there is precedent for finding an advantage in cognitive scores among foreign-born children or children with foreign-born parents, such advantages have been less evident among Latino/a children, and there is no reason why we would expect that children who are disadvantaged by having undocumented immigrant parents should have better cognitive scores than those with native parents. These higher scores persist in many cases even when considering the full range of factors I expected to mediate between immigration status and cognitive scores. Table 5.3 shows models of the letter word identification scores with the full set of independent variables to highlight the role of such mediators, for children overall, as well as younger and older children. These mediators show that mother's cognitive scores are significantly correlated with children's cognitive scores. Family income is also significantly correlated with children's cognitive scores. As noted earlier, children whose mothers have been in the United States longer tend to show lower cognitive scores. Higher externalizing behavioral scores are also significantly correlated with lower cognitive scores for children. There is some evidence that having attended center-based childcare, whether Head Start or another type, is associated with higher cognitive scores. Knowing other children in the neighborhood is also significantly correlated with lower cognitive scores. Yet even controlling for all of these factors, we see significant differences by immigration status.

Table 5.3. Letter word identification scores for the overall, young, and older samples of children in Latino families in Los Angeles in 2000-2001. Models with full controls

	Overall sample		Age 6 to 11		Age 12 to 17	
	(1)		(2)		(3)	
	B	SE	B	SE	B	SE
Immigration status (ref = native)						
Legal immigrant	7.149*	(3.328)	4.291	(5.782)	14.838*	(5.781)
Mixed-status	5.194	(3.589)	3.916	(6.008)	2.288	(7.005)
Undocumented	6.671	(3.468)	10.515	(5.969)	7.011	(6.239)
Controls						
Basic						
Age	0.836**	(0.274)	-0.513	(0.773)	-1.167*	(0.567)
Female	2.054	(1.059)	2.953	(1.595)	0.357	(1.734)
Neighborhood poverty strata (ref = very poor)						
Poor	0.013	(1.664)	1.891	(2.784)	-2.250	(2.604)
Not poor	0.004	(3.881)	-0.781	(6.294)	-2.702	(6.049)
Number of households in census tract	0.000	(0.001)	-0.001	(0.001)	0.001	(0.001)
Had low birth weight	0.946	(2.425)	-1.415	(3.607)	3.865	(4.089)
Took cognitive tests in Spanish	11.560***	(1.501)	16.861***	(2.555)	24.331***	(2.633)
Family structure, parental education						
Number of siblings in household	0.297	(0.512)	-0.038	(0.939)	-0.564	(0.790)
Family structure (ref = two biological parents)						
Biological mom, stepdad	0.143	(2.263)	-1.472	(3.463)	-2.654	(3.669)
Single mom	-2.105	(1.589)	-3.131	(2.838)	-0.713	(2.229)
Other	-3.260	(3.205)	3.271	(8.078)	-3.841	(3.559)
Mother's age	-0.089	(0.096)	-0.177	(0.169)	-0.002	(0.146)
Highest parental education (ref = < high school)						
High school	0.871	(1.531)	1.340	(2.694)	0.164	(2.267)
Some college or more	-0.508	(1.675)	1.099	(2.948)	-0.723	(2.599)
Mother took cognitive test in Spanish	1.270	(2.183)	2.667	(3.687)	3.892	(3.356)
Mother's paragraph comprehension test score	0.260***	(0.051)	0.291***	(0.087)	0.320***	(0.083)
Immigration factors						
Mother's place of birth (ref = Mexico)						
Central America	1.779	(1.611)	2.225	(2.596)	0.258	(2.514)
Mother's years in the US (ref = fewer than 5)						
Five to nine	-7.678**	(2.837)	-5.864	(4.844)	-13.685**	(5.170)
Ten to 19	-5.311*	(2.583)	-2.464	(4.432)	-11.362*	(4.560)
20 or more	-7.959**	(2.804)	-3.082	(4.850)	-16.041***	(4.622)
Family socioeconomic factors						
Logged family income	0.491**	(0.177)	-0.146	(0.374)	1.195***	(0.329)
Overcrowded house	-0.878	(1.369)	-1.275	(2.336)	1.756	(2.101)
Attended more than one school in last year	1.838	(1.705)	-3.202	(2.515)	2.285	(2.586)
Mother is employed	-0.327	(1.216)	-0.869	(2.108)	0.819	(1.810)
Home environment quality (scored by interviewer)	4.429	(3.725)	2.733	(6.169)	11.704	(6.229)
Family receives TANF or CalWORKs	1.076	(2.656)	2.235	(4.156)	0.752	(4.424)
Family receives food stamps (SNAP)	-0.019	(2.303)	-2.031	(3.567)	1.694	(3.824)

Table 5.3, continued. Letter word identification scores for the overall, young, and older samples of children in Latino families in Los Angeles in 2000-2001. Models with full controls

	Overall sample		Age 6 to 11		Age 12 to 17	
	(1)		(2)		(3)	
	B	SE	B	SE	B	SE
Mother's mental health and social support						
Mother experienced depression	-1.426	(1.278)	0.163	(2.218)	-0.964	(2.035)
Mother's self-efficacy scale	0.531	(0.406)	0.484	(0.716)	0.288	(0.621)
Mother participates in child's school (scale)	-3.425	(2.152)	-5.939	(3.434)	0.818	(3.020)
Child health						
Internalizing behavioral problems (scale)	0.289	(0.315)	-0.615	(0.498)	-0.084	(0.478)
Externalizing behavioral problem (scale)	-0.864*	(0.347)	-0.037	(0.549)	-0.722	(0.486)
Parent-reported global health (ref = fair or poor)						
Good	2.417	(2.376)	2.535	(4.217)	1.651	(3.652)
Very good	0.900	(2.479)	2.017	(4.327)	1.155	(3.945)
Excellent	1.726	(2.338)	1.931	(4.186)	3.757	(3.675)
Child's educational experiences						
Ever went to Head Start (age 4+)	0.769	(1.432)	4.431*	(2.215)	-4.443	(2.452)
Ever went to other center-based childcare	3.225*	(1.323)	1.881	(2.092)	3.038	(2.013)
Teachers at school are good (age 9+)	1.624	(1.387)	0.168	(2.264)	2.247	(1.883)
Type of school attending (ref = public)						
Private	0.776	(2.415)	1.035	(4.120)	2.293	(3.177)
Feel safe at school (age 11+)	-1.635	(2.074)			0.331	(2.281)
Neighborhood factors						
Feel safe in neighborhood (age 11+)	-3.970*	(2.022)			-2.271	(2.097)
Gangs in neighborhood (age 11+)	-0.565	(1.922)			3.344	(2.078)
Got robbed in neighborhood (age 11+)	-0.232	(1.909)			2.253	(1.847)
Offered drugs in neighborhood (age 11+)	-4.827	(2.766)			-4.444	(2.666)
Saw someone shot in neighborhood (age 11+)	-4.276	(3.091)			-4.576	(3.001)
Knows adults in neighborhood (age 9+)	0.663	(1.699)	0.046	(2.588)	0.072	(2.195)
Knows kids in neighborhood (age 9+)	-3.627*	(1.603)	-2.047	(2.465)	-4.559*	(2.089)
Neighborhood immigrant factor	-0.087	(0.812)	-0.662	(1.416)	0.071	(1.251)
Share of households with kids	11.941	(8.837)	27.899	(14.711)	0.341	(14.229)
Neighborhood stability factor	-0.262	(0.559)	-1.240	(0.976)	1.150	(0.870)
Neighborhood ethnicity (ref = share Latino)						
Share white	2.863	(8.938)	5.542	(15.820)	10.073	(12.782)
Share black	2.197	(9.667)	-3.002	(16.417)	1.684	(16.654)
Share Asian or other	6.715	(8.042)	7.946	(13.057)	-6.758	(12.603)
Constant	56.398***	(7.667)	69.118***	(14.090)	62.340***	(15.063)
N	1023		444		352	

Note: Standard errors in parentheses.

* p<0.05 ** p<0.01 *** p<0.001

One hypothesis for the higher cognitive scores of children in legal and undocumented immigrant families compared to children in native families is related to the immigrant optimism hypothesis, which states that immigrant parents and their children seek advancement through children's educational achievement and attainment, and are optimistic that that such advancement is possible, and so invest heavily in education. Some prior work supports this idea, finding that immigrant parents may place a higher emphasis on education than native parents. One might guess that such an emphasis could be particularly strong in families where parents have made the additional sacrifice of undocumented immigration, enduring substandard work conditions and legal marginalization as a way to provide a better future for their children. Such investments could take many forms, from enrolling children in supplemental educational programs, to emphasizing learning activities in the home, to working long hours to afford to send children to better schools or to save up for children's college. To explore this hypothesis, I analyze the most directly observable form of investment in children's education: education-oriented parenting practices.

Parenting practices were observed in the L.A. FANS only for the one randomly selected child per household. I use these measures to create two scales of parents' investments in children's education. The first consists of a weighted scale of how often the child reads for fun, how often the child goes to the library, how many books the child owns, and how often the parent talks to the child about what they watch on television, weighted using principal components analysis. The second, which applies only to younger children, consists of a weighted scale of how often parents read to children and how often others read to children age 6 to 9.

These results show that conditional on age and gender, children in mixed-status families had similar parental investments in education as children in native families, while children in

legal immigrant and undocumented immigrant families had lower, not higher, parental investments in education. (Results are available upon request.) Therefore, immigrant parents' disproportionate investments in children's education, at least measured somewhat narrowly through frequency of reading in the home, cannot explain the higher cognitive scores of children in immigrant versus native families in Los Angeles.

Another puzzling aspect of my results is the fact that children whose mothers have resided in the United States for a longer duration of time show lower cognitive scores than children whose mothers have resided in the United States for a longer period of time, even in the sample of English-only test takers. One potential explanation for this puzzling correlation could be that older cohorts of immigrants were more negatively selected than more recent cohorts, or alternatively, that immigrants tend to move out of Los Angeles County as they assimilate to the United States or move to higher income census tracts, leaving a negatively selected subset of longer-term immigrants in the L.A. FANS sampling frame. To investigate these two possibilities, I look at the relationship between duration in the United States and mother's cognitive scores. I do not find significant differences among foreign-born mothers by time in the United States. In remains unclear why duration in the United States should be associated with poorer cognitive scores. Future research would be needed to tease apart selection versus causal processes explaining this observed relationship.

Discussion and conclusions

Children of Latino/a immigrants in Los Angeles County, and particularly those with undocumented immigrant parents, live in poorer families, in more overcrowded households, with mothers with poorer mental health, and in more disadvantaged neighborhoods, and attend center-

based early childcare less than children in native families. Based on such disadvantage, we might expect that children in such immigrant families would score lower than their peers in native Latino families on cognitive tests. After controlling for parental education and mother's duration of residence in the United States, however, we observe that children in all types of immigrant families tend to show superior cognitive skills on letter word identification tests compared to children in native families, whether looking at children of all ages, younger children, or older children. For older children, this is particularly true for children in legal immigrant families. Children in immigrant families show similar scores to children in native families on applied math tests and reading comprehension tests. Taken as whole, this evidence suggests that counter to my expectations, the immigrant educational advantage found among children of immigrants in general does extend to children in Latino immigrant families in Los Angeles, even those in undocumented immigrant families.

There are several limitations to this analysis. First, because I use cross-sectional data, I cannot draw a causal link between independent variables and educational performance. Ideally, one would explore these relationships in children over time, to see whether children's educational trajectories differ by children's and parent's immigration status. Second, in order to separate the consequences of children's own immigration status from the consequences of parents' immigration status, I compare foreign-born, undocumented immigrant children to US-born, US citizen children with undocumented immigrant parents. Of course, children in these two types of families differ in ways other than their own immigration status. Children in undocumented immigrant families were born abroad, and spent at least part of their childhood in a very different context where their health and cognitive development may have been affected by poverty and potentially poorer nutrition, and where center-based childcare that supports

children's cognitive development may not have been available. If true, however, this only magnifies the resilience of undocumented immigrant children's cognitive scores.

Finally, the questions in the first wave of the L.A. FANS dataset do not allow me to analyze differences in the duration in which children have lived in undocumented or mixed-status families. Some currently in mixed-status or undocumented immigrant families may have had legal immigrant parents in the past, if their parents overstayed legal visas. Further, some children in the legal immigrant category may have had undocumented immigrant parents in the past, if their parents were able to successfully transition from undocumented to legal immigrant status. Past legal or undocumented immigrant status could conceivably affect children's cognitive development, but I am unable to analyze such processes.

The finding that despite their disadvantages, even children in undocumented immigrant families show an immigrant advantage in cognitive skills, at least as measured by letter word identification tests, is surprising. This finding contradicts results from very young children in New York City (Yoshikawa 2011), but differences in the cognitive tests employed (use here, of the Woodcock Johnson tests versus the Mullen Scales of Early Learning used in Yoshikawa's study), in age, or differences in the reference group used for comparison (native Latino families of similar national origins, in my study, versus Dominican immigrant families and native African American families in the New York sample) may be sufficient to explain these divergent results. Alternatively, it could be that young children of undocumented immigrants will catch up to and surpass their peers in New York City and match the immigrant exceptionalism we observe in Los Angeles.

Prior studies uncovering an immigrant advantage pointed to parental educational expectations and immigrant optimism as boosting children's academic performance (Kao and

Tienda 1995). Such parental optimism and particularly parental expectations may be especially strong in mixed-status and undocumented immigrant families, in which parents' migration decisions often involved considerable sacrifice undertaken in hopes of improving the lives of their children. Undocumented immigrant parents may place strong pressure on their children to succeed in school and validate parents' long hours at difficult, low-paying jobs. Such concentrated investment in children's education does not show up in the measures of parental investments in children's learning included in the L.A. FANS dataset, but may be expressed in other ways, such as encouragement for studying and academic achievement, provision of positive role models, oversight of homework, long work-hours to pay for educational supports, or in other forms. To better understand the challenges faced by children of undocumented immigrants, and the sources of resilience they draw upon to overcome such challenges, future work, in a broader set of locations, is needed to explore the relationship between immigration status and children's well-being.

Appendix 5.1. Description of children's cognitive scores, family and neighborhood contexts, by immigration status, for children in Latino families in Los Angeles County, 2000-2001

	All Families		Native		Legal immigrant		Mixed-status		Undocumented	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Controls										
Basic										
Age	9.63	0.13	9.27	0.32	**10.19**	0.18	7.34	0.23	**11.63**	0.36
Female	0.50	0.02	0.50	0.04	0.51	0.02	0.47	0.04	0.48	0.05
Neighborhood poverty strata										
Very poor	0.42	0.02	0.18	0.03	**0.42**	0.02	0.56	0.04	0.53	0.05
Poor	0.40	0.02	0.36	0.03	0.44	0.02	0.36	0.03	0.39	0.05
Not poor	0.18	0.01	0.46	0.04	0.14	0.02	0.08	0.02	0.08	0.02
Number of households in census tract	2017.79	26.56	2046.41	65.53	2021.98	37.33	1983.41	53.41	2011.01	85.24
Had low birth weight	0.06	0.01	0.06	0.02	0.04	0.01	0.07	0.02	0.10	0.03
Took cognitive tests in Spanish	0.28	0.01	0.04	0.02	**0.24**	0.02	0.46	0.04	0.52	0.05
Family structure, parental education										
Number of siblings in household	1.67	0.04	1.38	0.08	1.66	0.06	1.76	0.09	2.05	0.14
Family structure										
Two biological parents	0.67	0.01	0.57	0.04	0.70	0.02	0.67	0.03	0.68	0.04
Biological mom, stepdad	0.07	0.01	0.08	0.02	0.07	0.01	0.08	0.02	0.07	0.02
Single mom	0.22	0.01	0.28	0.03	0.20	0.02	0.23	0.03	0.21	0.04
Other	0.04	0.01	0.06	0.02	0.03	0.01	0.02	0.01	0.05	0.02
Mother's age	35.72	0.24	34.79	0.59	**37.96**	0.35	31.47	0.33	**34.56**	0.71
Highest parental education										
Less than high school	0.53	0.02	0.14	0.03	**0.56**	0.02	0.74	0.03	0.67	0.05
High school	0.22	0.01	0.29	0.03	**0.24**	0.02	0.14	0.02	0.15	0.03
Some college or more	0.25	0.01	0.57	0.04	0.19	0.02	0.12	0.02	0.18	0.04
Mother's paragraph comprehension test score	79.22	0.44	87.79	1.16	**79.18**	0.55	72.36	0.93	**77.07**	1.13
Mother took cognitive test in Spanish	0.74	0.01	0.06	0.02	**0.84**	0.02	0.96	0.01	0.99	0.01
Immigration factors										
Mother's place of birth										
United States	0.19	0.01	1.00	.	0.00	.	0.00	.	0.00	.
Mexico	0.63	0.02	0.00	.	**0.72**	0.02	0.82	0.03	0.92	0.03
Central America	0.19	0.01	0.00	.	**0.28**	0.02	0.18	0.03	0.08	0.03
Mother's years in the United States										
Fewer than five, or native	0.23	0.01	1.00	.	0.02	0.01	0.04	0.01	**0.25**	0.04
Five to nine	0.11	0.01	0.00	.	**0.06**	0.01	0.26	0.03	0.30	0.04
Ten to 19	0.37	0.02	0.00	.	**0.41**	0.02	0.63	0.03	**0.36**	0.04
20 or more	0.26	0.01	0.00	.	**0.48**	0.02	0.07	0.02	0.06	0.02

Appendix 5.1, continued. Description of children's cognitive scores, family and neighborhood contexts, by immigration status, for children in Latino families in Los Angeles County, 2000-2001

	All Families		Native		Legal immigrant		Mixed-status		Undocumented	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Family socioeconomic factors										
Logged family income	9.63	0.11	10.68	0.13	**9.80**	0.12	8.95	0.29	8.31	0.48
Overcrowded house	0.57	0.02	0.32	0.03	**0.53**	0.02	0.76	0.03	0.82	0.04
Attended more than one school in last year	0.15	0.01	0.17	0.03	0.14	0.02	0.10	0.03	0.18	0.04
Mother is employed	0.48	0.02	0.63	0.04	**0.49**	0.02	0.28	0.03	**0.54**	0.05
Home environment quality (scored by interviewer)	0.32	0.00	0.31	0.01	0.31	0.01	0.35	0.01	0.32	0.02
Family receives TANF or CalWORKs	0.11	0.01	0.13	0.02	**0.09**	0.01	0.21	0.03	**0.04**	0.02
Family receives food stamps (SNAP)	0.17	0.01	0.14	0.03	**0.15**	0.02	0.30	0.03	**0.11**	0.03
Mother's mental health and social support										
Mother experienced depression	0.35	0.01	0.27	0.03	0.37	0.02	0.38	0.03	0.30	0.04
Mother's self-efficacy scale	0.00	0.05	0.77	0.11	**-0.07**	0.07	-0.55	0.11	**0.01**	0.15
Mother participates in child's school (scale)	0.50	0.01	0.56	0.03	0.49	0.02	0.54	0.04	0.41	0.03
Child health										
Internalizing behavioral problems (scale)	-2.00	0.07	-3.23	0.19	**-1.96**	0.09	-1.35	0.11	-1.29	0.13
Externalizing behavioral problem (scale)	-1.65	0.06	-2.01	0.16	**-1.74**	0.08	-1.31	0.11	-1.24	0.12
Parent-reported global health										
Fair or poor (reference)	0.06	0.01	0.02	0.01	0.07	0.01	0.06	0.02	0.09	0.03
Good	0.32	0.01	0.19	0.03	0.30	0.02	0.39	0.03	0.44	0.05
Very good	0.23	0.01	0.24	0.03	0.25	0.02	0.17	0.03	0.21	0.04
Excellent	0.40	0.02	0.55	0.04	0.37	0.02	0.39	0.03	0.27	0.04
Child's educational experiences										
Ever went to Head Start (age 4 and older)	0.20	0.01	0.19	0.03	0.22	0.02	0.23	0.03	**0.09**	0.03
Ever went to other center-based childcare (any age)	0.27	0.01	0.47	0.04	0.27	0.02	0.19	0.03	**0.08**	0.03
Teachers at school are good (age 9 and older)	0.58	0.02	0.65	0.05	0.56	0.03	0.60	0.06	0.56	0.05
Type of school attending										
None	0.16	0.01	0.19	0.03	**0.11**	0.01	0.28	0.03	**0.07**	0.02
Private	0.76	0.01	0.64	0.04	**0.82**	0.02	0.71	0.03	0.83	0.03
Public	0.07	0.01	0.15	0.03	**0.06**	0.01	0.01	0.01	0.05	0.02
Feel safe at school (age 11 and older)	0.63	0.02	0.74	0.05	0.59	0.03	0.53	0.10	0.68	0.05
Neighborhood factors										
Feel safe in neighborhood (age 11 and older)	0.20	0.01	0.18	0.03	**0.23**	0.02	0.06	0.02	**0.37**	0.04
Gangs in neighborhood (age 11 and older)	0.54	0.02	0.51	0.06	0.54	0.03	0.58	0.10	0.56	0.06
Got robbed in neighborhood (age 11 and older)	0.32	0.02	0.34	0.06	0.31	0.03	0.28	0.09	0.34	0.06
Offered drugs in neighborhood (age 11 and older)	0.14	0.02	0.24	0.05	0.10	0.02	0.11	0.06	0.16	0.04
Saw someone shot in neighborhood (age 11 and older)	0.11	0.02	0.13	0.04	0.10	0.02	0.11	0.06	0.11	0.04
Knows adults in neighborhood (age 9 and older)	0.33	0.02	0.31	0.05	0.34	0.03	0.39	0.06	0.27	0.05
Knows kids in neighborhood (age 9 and older)	0.43	0.02	0.44	0.05	0.44	0.03	0.41	0.06	0.43	0.05
Neighborhood immigrant factor	0.02	0.07	-1.61	0.18	**0.20**	0.09	0.65	0.13	0.80	0.16
Share of households with kids	0.51	0.00	0.46	0.01	0.51	0.00	0.53	0.01	0.53	0.01
Neighborhood stability factor	0.06	0.05	0.77	0.12	0.03	0.07	-0.22	0.12	-0.47	0.14
Neighborhood ethnic composition										
Share Latino	0.71	0.01	0.59	0.02	0.73	0.01	0.74	0.01	0.75	0.02
Share white	0.12	0.00	0.22	0.01	0.10	0.01	0.09	0.01	0.08	0.01
Share black	0.08	0.00	0.06	0.01	0.09	0.00	0.09	0.01	0.08	0.01
Share Asian or other	0.09	0.00	0.13	0.01	0.08	0.00	0.09	0.01	0.08	0.01
N	1023		190		517		198		118	

Note: Shaded numbers indicate mean is significantly different than the mean for children in native families.
Numbers in bold indicate mean is significantly different than the mean for children in mixed-status families.

Chapter 6. Conclusions

In this dissertation, I have explored the relationship between parents' and children's legal status and child well-being in the United States. In the following section, I will discuss my main findings and present future research directions, as well as implications for policy.

Immigration status, access to healthcare, and physical health

In the first two analytic chapters (chapters 2 and 3), I explore the relationship between parents' and children's immigration status and children's access to health insurance and healthcare. In chapter 2 I examine children's physical health outcomes. Prior research on children of immigrants has found some, albeit mixed, evidence that both immigrant children and children of immigrant parents have a physical health advantage over children of US-born parents. Yet there are strong reasons to believe such advantages might not extend to the growing number of children with undocumented parents, or to the 1 million undocumented immigrant children in the country.

I assess the relationship between both parents' and children's immigration status and access to healthcare in chapter 2, using the Los Angeles Family and Neighborhood Survey. I look more closely at the link between children's own immigration status and their access to healthcare in chapter 3 using the National Health Interview Survey and the Medical Expenditure Panel Survey. In both sets of analyses, I find that children's own immigration status strongly shapes access to health insurance and to having a usual healthcare provider, but that parents still seem to find a way to obtain basic annual health screenings for undocumented children at similar rates as for children who have legal status.

The higher rates of health insurance coverage and access to a usual healthcare provider for US citizen siblings compared to undocumented siblings in the same family, shown in chapter 3, along with the higher rates of health insurance coverage and access to a healthcare provider for children in mixed-status families compared to children in undocumented immigrant families, shown in chapter 2, suggest that undocumented immigrant parents do access insurance and healthcare for their US citizen children at high rates. This evidence contradicts suggestions that parents' misunderstandings or fears block children of undocumented immigrants from accessing insurance and healthcare, or that immigrant parents have vastly different conceptions of children's healthcare needs. Rather, parents of US citizen children are able to take advantage of the public insurance available to them, and thereby find steady access to healthcare providers, while real policy barriers make enrollment in public insurance impossible for many undocumented immigrant children in the country. The fact that undocumented immigrant children still seem able to obtain health screenings despite much lower rates of insurance coverage and despite often lacking a usual healthcare provider raises questions about where children are accessing care.

Chapter 2 also explores differences in children's physical health by immigration status. I find here that children all types of immigrant families have lower global physical health status compared to children in native families; that among older children, children in legal immigrant families have lower rates of being overweight compared to similar children in native families; but seemingly contradictorily, that children in undocumented immigrant families have lower rates of doctor's diagnoses of frequent ear infections. These data sometimes show a reversed relationship between family SES and rates of doctor diagnosed conditions, perhaps suggesting that children in more advantaged families have greater access to doctors who can diagnose

common health conditions. This finding raises questions about the types of medical providers that children in disadvantaged immigrant, and particularly undocumented immigrant, families are accessing.

Immigration status and children's mental health

In the fourth chapter, I explore the relationship between immigration status and a different aspect of child well-being: mental health. Some prior research has found a mental health advantage among children of immigrants and immigrant children, but these findings are very mixed. I explore whether legal status differences may help to explain why some datasets show superior mental health for children in immigrant families and other datasets show poorer mental health. Using the L.A. FANS data, I examine this relationship in a period (2000-2001) when policies and public attitudes toward immigrants were relatively more welcoming than they are today. I would expect, therefore, that any negative mental health implications I observe in this study would form a lower bound of the relationships that might be observed today.

I find that children in undocumented immigrant families have greater mental health problems, as measured by several different types of behavioral problems, compared to children in native families and compared to children in mixed-status families (who have undocumented immigrant parents, but are themselves US citizens). I also find that children in all types of immigrant families – legal, mixed-status, or undocumented – have greater overall and internalizing mental health problems compared to children in native families. Mother's mental health is strongly associated with children's mental health.

Immigration status and educational performance

In the fifth chapter, I explore a final dimension of child well-being: educational performance, measured through cognitive ability. Evidence to date has sometimes found an immigrant advantage in educational performance, but such findings are strongest among children in East Asian immigrant families, and weaker among children of Latino immigrants. I investigate whether legal status may explain these prior findings. Contrary to my expectations, instead of finding cognitive disadvantage among children in mixed-status or undocumented immigrant families, I find that all children of immigrants perform better than children in native families on

Table 6.1. Summary of findings

	How is having undocumented immigrant parents correlated with child well-being?	**How is being an undocumented immigrant correlated with child well-being?**
Access to healthcare	Not significantly associated	Lower access to health insurance, a usual care provider, and perhaps seeing a dentist
Physical health	Not significantly associated, though having foreign-born parents associated with poorer global health, lower rates of being overweight	Lower rates of doctor-reported frequent ear infections
Mental health	Not significantly associated, though having foreign-born parents associated with greater overall, internalizing, and anxiety/depression behavioral problems	Greater externalizing, headstrong, and dependent behavioral problems
Cognitive skills	Not significantly associated, though having foreign-born parents associated with higher scores on letter word identification test	Not significantly associated

one test of cognitive development, letter-word identification, but score similarly to native children on two other tests. These findings provide some limited grounds for optimism that despite their disadvantaged family origins, constrained access to healthcare, and mental health challenges, children of undocumented immigrants may progress in their educations, paving the way for better futures.

Future directions

The findings presented here raise as many questions as they answer. My reliance on observational, and often cross-sectional, data limits my ability to make causal claims. Recent policy changes, such as the Deferred Action for Childhood Arrivals program, which opened up work authorization and temporary relief from the threat of deportation for 1.5 generation undocumented youth, present the opportunity for longitudinal analysis of how obtaining quasi-legal status affects the mental health and educational and early career trajectories of some undocumented youth. Proposals to provide legalization to a large portion of the 11 million undocumented immigrants in the United States today, if enacted, would open many more opportunities for investigating causal links between parents' and children's immigration status and children's well-being.

In future work, I also plan to explore how the patterns I observe here, mainly in Los Angeles County, vary by policy and social context, across states and rural versus urban areas. Future qualitative work should explore where exactly immigrant families find healthcare for their undocumented immigrant children when they do not have access to health insurance. Portes et al. (2011) have documented some of these sources; such an investigation is needed in a broader set of contexts. Ideally, an investigation of the mental health of children in mixed-status and

undocumented immigrant families would explore whether this relationship has changed over time, as both national and state policy contexts have shifted, and national sentiment toward immigrants has oscillated between more and less welcoming attitudes.

Implications for policy

The findings presented here, bolstered with future research, could have important implications for US policy toward immigrants and families. First, as the country implements the Patient Protection and Affordable Care Act (ACA) of 2010, it will be important to keep in mind the need for healthcare services among the subset of the uninsured population who will remain ineligible for all public insurance programs due to their legal status, to understand which systems undocumented immigrant families currently rely upon for healthcare, and to carefully consider what to do about funding streams for such systems, even as more US citizens and legal immigrants are integrated into mainline healthcare systems.

Second, as policymakers consider measures to enforce immigration laws, they should keep in mind the implications of such measures not only for the undocumented immigrants they seek to deter from maintaining illegal residence and working in the United States, but also for the children of such immigrants, most of whom are US citizens. Separating parents from children, purposefully instilling fear in immigrant communities, or blocking access to the most basic of services, such as water and heating gas may generate negative mental health impacts for children that are much stronger than what I observe in this dissertation in immigrant-friendly Los Angeles County in a period of weaker immigration enforcement. Collateral consequences of immigration enforcement could strongly affect the large and growing segment of the child population that lives in a household with undocumented immigrant parents and family members, with strong

implications for the growth, development, and eventual economic contributions of the children of this generation.

Conversely, in deciding which benefits to provide to which currently undocumented immigrants under current federal law or under future immigration policy reforms, policymakers should consider the ways that economic supports and public benefits are shared within mixed-status households, and what the costs and return on investment of various types of economic supports might be for the children of undocumented immigrants. Finally, policymakers should keep in mind the resilience of immigrant communities to the setbacks inherent in settlement in a new country, and the determination of many children of immigrants to invest in their education and progress in the country, despite sometimes long odds against them.

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