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Birthing, Nativity, and Maternal Depression: Australia and the United States

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Abstract

This study analyzes two birth cohort surveys, the Longitudinal Study of Australian Children (n=3944) and Early Childhood Longitudinal Study (n=7700), to examine variation in maternal depression by nativity, duration of residence, age at migration, and English proficiency in Australia and the United States. Both countries have long immigrant traditions and a common language. The results demonstrate that US immigrant mothers are significantly less depressed than native-born mothers, but maternal depression does not differ by nativity in Australia. Moreover, the association between duration of residence and maternal depression is not linear: recent arrivals and long-term residents exhibit the highest depression levels. Lack of English proficiency exacerbates maternal depression in Australia, but protects against depression in the United States. Differences in immigration regimes and welfare systems likely contribute to the differing salience of nativity for maternal depression.

INTRODUCTION

Especially for first-time mothers, giving birth is generally a joyful event, but one that introduces new stresses to family life. O'Hara and Swain (1996) note that approximately 13 percent of all US mothers experience a postpartum depressive episode. In fact, maternal depression is the second most common reason for hospitalization among women ages 18 to 44 (Jiang et al. 2002). Maternal depression is associated with several psychosocial problems in children including developmental delays, behavior problems, social skills deficits, poor emotional regulation, and psychiatric disorders, some of which present during the neonatal period and others that affect child development through adolescence (Lyons-Ruth et al. 2000; Goodman and Gotlib 1999; Oyserman et al. 2002). However, early detection and treatment of maternal depression can help avert its myriad adverse consequences for child wellbeing (Miller 2002).

Despite the prevalence of this serious health issue, few studies examine maternal depression in immigrant mothers. In a recent review of postpartum depression among US immigrant women, Fung and Dennis (2010) draw attention to the dearth of evidence on maternal

depression among the swelling foreign-born population. Moreover, the limited research on nativity and maternal depression yields inconsistent results, in part due to differences in outcomes measured, target samples, and analytical methods. Although many studies show that international migration is also a stressful process that involves myriad cultural and socioeconomic adaptations over a protracted period of time (Berry 2006), to our knowledge, no US or Australian national study considers whether maternal depression varies according to duration of residence and age at arrival in the host society. It is conceivable that the inconclusive results about nativity differentials in maternal depression conceal systematic variation by level of adaptation—as measured by duration in host country, age at arrival, and language proficiency—as well as host country reception (Portes and Rumbaut 2006). A comprehensive review of health acculturation among immigrants identifies all three indicators as practical measures for understanding immigrant mental and physical wellbeing (Lara et al. 2005).

Accordingly, we address two questions that aim to reconcile contradictory findings in the sparse literature about nativity and maternal depression using nationally representative data for two of the largest immigrant receiving nations—Australia and the United States. First, are foreign-born women at higher risk of experiencing maternal depressive symptoms than native-born women, and is the association similar in both countries? Second, does the likelihood of experiencing depressive symptoms depend on length of residence in the host country and English proficiency? Length of residence and English proficiency are two of the most commonly used proxy measures for health acculturation in analyses based on large survey data (Lara et al. 2005).¹ As we explain below, differences in admission regimes and contexts of reception (Cornelius et al. 2004) have implications for the incidence of depressive symptoms among foreign-born mothers, particularly recent arrivals. Because experts disagree about what constitutes postpartum depression, we focus on maternal depressive symptoms in this paper (APA 2013).

BACKGROUND

Despite their long immigration traditions and common language, Australia and the United States represent distinct contexts of reception for newcomers. These differences are important for understanding nativity differentials in various outcomes, including health status. Both countries admit immigrants based on family, labor market and humanitarian criteria; however, Australia admits about two-thirds of its immigrants based on needed labor market skills while the United States admits the majority of its immigrants under family sponsorship without regard to age, economic potential, or proficiency in English (Wasem 2007; Freeman and Birrell, 2001). Because approximately two-thirds of Australia's immigrants are admitted on the basis of labor market needs, nativity differentials in education favor the foreign-born population; just the opposite obtains for the United States, where two-thirds of immigrants enter under family preferences and have education levels below the national average (Walsh 2008). That family members sponsor over two-thirds of

¹More nuanced and extensive measures of acculturation are available in customized immigrant-focused studies, but are not available in comprehensive nationally representative studies suitable for comparative analyses (Lara et al. 2005).

US immigrants may provide a ready source of support for recent arrivals, which could attenuate the likelihood of a depressive episode following childbirth.

Notwithstanding differences in admission criteria, the sex composition of immigrants is similar in both countries (United Nations 2011); moreover, Antecol et al. (2002) find minimal gender differences in levels of English fluency, education, and income in the United States and Australia. Unlike the United States, where English proficiency is required for naturalization but not for admission, Australia imposes strict English proficiency thresholds as an admission criterion except for humanitarian and a few family classes. As shown below, English proficiency appears to be consequential for depression experienced by Australian mothers.

Both Australia and the United States offer a variety of community-based services that cater to the needs of new immigrants; however, based on the generosity of benefits afforded to foreign settlers, Australia appears to be more immigrant-friendly in ways that can influence the stress associated with adaptation to a new country. For example, the 1996 revisions to U.S. welfare programs imposed a five-year moratorium on new immigrants' eligibility for many social benefits, including Medicaid, Supplemental Nutrition Assistance Program (SNAP or Food Stamps), and Temporary Assistance to Needy Families (TANF). Restrictions on means-tested medical care could also exacerbate economic strain for recent US immigrants who give birth during the period that the benefit moratorium is in force. Not only does Australia offer unrestricted access to health and social programs to permanent settlers (Australian Human Rights Commission 2008), but compared with the United States, it also offers all mothers more generous maternity leave and state-supported child care benefits (O'Connor, et al.1999: 82). Overall, Australia also scores higher than the United States on the Migrant Integration Policy Index, further demonstrating the more favorable context for integration in that country (MIPEX, 2010). These differences in family policy are relevant for understanding variations in maternal stress and depressive symptoms following childbirth.

Immigrant Health Advantage

General patterns in the health of immigrants are critical for further understanding the association between nativity status and maternal depressive symptoms. The US immigrant health advantage is pervasive in the health literature: several studies demonstrate immigrants' physical health and mortality advantages compared with natives in Canada, Australia and the United States (see review in Antecol and Bedard 2006; Escarce and Kapur 2006). The immigrant health advantage refers broadly to the phenomenon where immigrants to the United States are healthier than the native-born population, despite low socioeconomic status. There is emerging evidence that the immigrant health advantage also extends to mental health, which implies that immigrant mothers would experience less symptoms of depression than native-born mothers. For example, Lou and Beaujot (2005) find that Canadian immigrants exhibit better mental health than their native counterparts, but also that the advantage declines with time in Canada. In the United States, Alegria and associates (2008) documented better mental health for Hispanic immigrants compared to their native-born compatriots. Teitler et al. (2012) show that US immigrants' health advantage also

extends to birth outcomes; they find a higher prevalence of low birthweight infants among native-born than immigrant mothers.

There are several reasons why immigrant mothers might be at higher risk of depressive symptoms than native-born mothers. The migration-linked stress associated with adjustment to a new society, which may be especially acute for recent arrivals and those with thinner social support networks, may lead to higher incidence of depression among immigrants (Berry 2006). Migration may also exacerbate stress among immigrants who are not proficient in English by compounding difficulties navigating the health care system or communicating with health professionals when the need for mental health services arises (Bandyopadhyay et al. 2010; Berry 2006; Escarce and Kapur 2006). Because the immigrant health advantage is protective but immigrant status is associated with a host of risk factors, the net relationship between foreign-born status and depressive symptoms is indeterminate.

Immigrants and Maternal Depression

The evidence on maternal depression among foreign-born compared with native-born mothers is limited both because few studies consider the salience of nativity for mental health and, owing to diverse methodologies and samples, the empirical findings are mixed. For example in Australia, Bandyopadhyay et al. (2010) find a positive association between immigrant status and maternal depression, but other researchers (Heilemann et al. 2004; Huang et al. 2007; Davila et al. 2008) claim that foreign-born mothers are less likely than their native counterparts to experience a depressive episode following a birth. Stewart and associates (2008) find that Canadian immigrant mothers have about four times the risk of postpartum depression relative to their native-born counterparts. This study, which used the Edinburgh Postnatal Depression Scale (EPDS), recruited 341 participants from hospitals in Vancouver, Montreal, and Toronto and interviewed them 7 to 10 days following childbirth. In addition to its limited external validity, the study included a large share of refugees, which likely biased the estimates of maternal depression.

Bandyopadhyay and associates (2010) studied nativity differentials in maternal depression for a sample of mothers in Victoria, Australia using EPDS scores. They show that immigrant mothers exhibit worse mental health than natives six months after childbirth, but only if they were not English proficient. Although their results upheld in a multivariate analysis that included age, mode of delivery, and residence as controls, their inferences also may not be generalizable, both because of the low response rate for immigrant women (33 percent) and because the larger intervention study produced null findings for other localities in Victoria.

Compared with Australia, there are more studies about nativity variation in maternal depression for the United States, but the empirical evidence is likewise inconsistent. Davila et al. (2008) analyze the Center for Epidemiological Studies-Depression scale (CES-D) for a sample of pregnant and postpartum women of Mexican descent in San Antonio. They find that Mexico-born women are about half as likely to be depressed as their U.S.-born counterparts. That the authors combined pregnant women with mothers who were up to one-year post-partum conflates perinatal and postnatal depression, which may be triggered by different circumstances. Furthermore, it is unclear whether the experiences of Mexican immigrant women can be generalized to mothers of other national origins. Because

Mexicans dominate San Antonio's Hispanic population, it is also plausible that immigrant mothers can rely on thicker social networks that are less easily reproduced among smaller immigrant groups.

Given the inconsistent findings based on locality-specific studies, Vega and associates (1991) call for research using nationally representative samples with adequate sizes of native and immigrant populations (Vega et al. 1991). For the United States, Huang and colleagues (2007) use the nationally representative Early Childhood Longitudinal Study. They find that native-born mothers experience higher rates of moderate and severe depressive symptoms on the CES-D scale than foreign-born mothers one year following the birth of a child, but they acknowledge racial and ethnic variation in the propensity for depressive episodes. Consistent with evidence about the Hispanic health advantage (see Escarce, Morales and Rumbaut 2006), Huang et al. find no nativity differences in depression rates for non-Hispanic white mothers; however they find lower rates for the Hispanic immigrant versus native-born mothers and higher rates among Asian immigrant mothers versus their US-born counterparts. Although these authors did not conduct multivariate analyses of depression rates, nor did they consider whether the incidence of depression varied by length of US residence or English proficiency level, their descriptive results suggest that these immigration-related circumstances likely influence the likelihood of maternal depression among immigrant mothers.

Duration of Residence and English Proficiency

Although numerous studies use length of residence in the host country and English proficiency to assess whether immigrants' physical and mental health status converges with that of natives (Finch et al. 2000; Jasso et al. 2004; Lara et al. 2005; Teitler et al. 2012), it is striking that no national US or Australian studies consider whether the incidence of maternal depression varies by duration and language proficiency. One regional study of Vietnamese, Turkish and Filipino immigrant women in Victoria, Australia finds that shorter duration is associated with maternal depression on some measures of depression, but not others (Small, Lumley, and Yelland 2003). In Canada, immigrants who had been in the country less than 10 years had higher rates of postpartum depression than earlier arriving immigrants (Urquia, O'Campo, and Heaman, 2012), which is the opposite pattern of the well-documented immigrant health advantage.

These patterns in maternal mental health may represent how immigration disrupts social ties and requires adjustment to a new environment, a generally stressful process, particularly for groups that are culturally dissimilar to the host society. As newcomers "learn the ropes" in their host society, the stresses associated with newness attenuate (Berry 2006). Therefore, it is conceivable that the incidence of maternal depressive symptoms after childbirth differs by length of residence in the host nation as well as immigrants' human capital resources. Recent immigrants, particularly those with low incomes, low proficiency in English, and few relatives in their new destination may be at higher risk of maternal depression following the birth of a child.

Several US studies show that the length of residence in the host country is a strong correlate of health status, but the vast majority focus on physical health. On the one hand, there is

ample empirical evidence that recent immigrants have better health on a variety of physical health outcomes (Jasso et al., 2004; Antecol and Bedard, 2006). A handful of studies also show that Latino immigrants have better mental health status than the native-born population (Grant et al. 2004; Alegria et al. 2008). On the other hand, there is mounting evidence that the immigrant health advantages – both physical and mental – deteriorate over time (Finch, Kolody, and Vega 2000; Goel et al. 2004; Antecol and Bedard 2006; Escarce, Morales, and Rumbaut 2006; Acevedo-Garcia et al. 2010). Of particular note, Finch and colleagues (2000) examine depressive symptoms among Mexican immigrants in California and find that longer duration in the United States and acculturative stress are associated with increased depressive symptoms on the CES-D scale. Yet, no national US or Australian study has examined the influence of duration of residence on maternal depression.

Differences between the Australian and US immigration regimes also have implications for the ease of adjustment following migration and, consequently, for nativity variations in the incidence of maternal depression. Three noteworthy differences are the skill and English proficiency requirements for admission to Australia, the predominance of family sponsorship as the major gateway to the United States, and the five-year moratorium on access to means-tested benefits in the United States (Freeman and Birrell 2001; Wasem 2007). That family members sponsor over two-thirds of US immigrants potentially provides a ready source of support for recent arrivals, which could attenuate the likelihood of a depressive episode following childbirth. Restricted access to means-tested benefits may intensify stress for low-income US migrants, however. Australian labor immigrants have a skill advantage over their native counterparts, but this is not the case for most humanitarian migrants. Few, if any, refugees satisfy the language requirement and thus might be prone to higher stress following childbirth.

Escarce and Kapur (2006) show that English proficiency is strongly related to both acculturation status and the ability of Hispanics and immigrants to communicate with healthcare providers. In fact, Lansakara and associates (2010) and Bandyopadhyay et al. (2010) claim that because of difficulties communicating with caregivers, Australian immigrant mothers who lack English skills experience higher stress following a birth than either native-born or English-speaking immigrant mothers. In addition to the limited external validity of these studies, which are based on incidental samples in Victoria, neither examined variations in maternal depression by length of residence, which is a correlate of proficiency in host country language and familiarity with social welfare and health institutions. Whether an association between English language proficiency and maternal depression exists for the United States also is unclear. Escarce and Kapur (2006) note that over two-fifths of Hispanics considered Spanish-speaking ability when selecting a physician and that Spanish-speaking Hispanics average fewer mental health visits than non-Hispanics.

We improve on existing studies in several ways. First, for both countries we use nationally representative surveys that address the weak external validity of most existing studies. Second, we disaggregate nativity status by duration to examine whether this source of immigrant heterogeneity clarifies inconsistent associations between maternal depression and nativity observed in other studies. Third, because English proficiency is a crucial skill to navigate medical and social care systems (Escarce and Kapur 2006), we evaluate the

salience of English proficiency in predicting maternal depressive symptoms among new mothers. Finally, we provide the first comparative evidence about the association between maternal depression and immigration both to illustrate how mother's mental health status presents in Australia and the United States, two industrialized nations with long immigration traditions, and to call attention to the importance of this relatively understudied problem with potentially serious consequences for children.

DATA AND METHODS

We use two nationally representative surveys to assess the association between nativity status and maternal depression. For Australia we use the Longitudinal Study of Australian Children (LSAC), and for the United States, the Early Childhood Longitudinal Study-Birth Cohort (ECLS-B) survey. The ECLS-B is a nationally representative sample of approximately 10,000 children born in 2001 to mothers ages 15 and over and who are alive and residing in the United States at 9 months of age (Bethel et al. 2005; Snow et al. 2007). The ECLS-B survey, which interviewed primary parents, focuses on early child wellbeing, and contains rich measures on health, home life, and education. We analyze responses of 7,700 mothers after restricting to mothers' who responded to the battery of depression questions when the child was approximately 9 months old and responded to the question on age at arrival (asked in wave 2).²

The LSAC, which is a nationally representative study of Australian infants born in 2003–2004, is based on a sample of approximately 5,000 births taken from the Health Insurance Commission Medicare database (Soloff et al. 2006; Australian Institute of Family Studies 2009).³ The approach to data collection is similar to that of the ECLS-B. For Australia, the analyses are based on 3,944 cases where the primary parent interviewed is the birth mother. We analyze the first wave of the LSAC, which occurred when infants were approximately 9 months old.⁴

Operational Measures

Maternal depression—The ECLS-B uses a modified version of the Center for Epidemiologic Studies Depression Scale (CES-D) to measure maternal depressive symptoms. The CES-D has been validated for various demographic groups, including immigrants and persons with low literacy backgrounds (Radloff 1977; Finch et al. 2000; Grzywacz et al. 2006). The CES-D has also been used in previous studies documenting maternal depression among immigrant mothers (Huang et al. 2007). The ECLS-B asks the 12 questions used to construct the CES-D scale using a self-administered questionnaire. Each scale item asks about the way the respondent felt or behaved during the past week with four response options: rarely or never (less than 1 day); some or a little (1–2 days);

²All sample sizes for the US have been rounded to the nearest 50 as per National Center of Education Statistics contract regulations. The survey response rate was 74 percent for the first wave and 93.7 percent for the second wave.

³The survey response rate was 64 percent. Children from very remote postcodes were excluded from the study.

⁴Both surveys made specific efforts to include non-English speakers in order to achieve national representativeness. Recruitment brochures were included in different languages and bilingual interpreters were used in interviews when necessary. Additionally, the ECLS-B used bilingual interviewers to conduct interviews in Spanish.

occasionally or moderate (3–4 days); and most or all (5–7 days). The composite CES-D scale ranges from 0 to 36.

The LSAC survey uses the Kessler 6 (K6) scale to assess maternal depressive symptoms for Australian mothers. The K6 is a validated 6-question scale that asks how the respondent felt over the past 4 weeks using five response options: none of the time; a little of the time; some of the time; most of the time; or all of the time (Furukawa et al. 2003; Kessler et al. 2003). The K6 has been validated for use in numerous diverse national samples and is used in the WHO World Mental Health Surveys (see Kessler et al. 2002). The composite K6 scale ranges from 0 to 24. The K6 has been used in previous studies examining maternal depressive symptoms among new mothers (see Choi 2013). Both the modified CES-D and K6 scales have demonstrated validity as screening measures for depression, rather than providing a clinical diagnosis of depression, and due to their brevity are ideal measures for inclusion in large surveys such as the ECLS-B and LSAC.⁵ They ask different questions, but both ask about feeling “that everything one does is an effort” and feeling “sad,” among a variety of other questions. The measures also have demonstrated comparability (Sakurai et al. 2011). Both the CES-D and K6 scales measure depressive symptoms, but we will use the term “depression” in the interest of parsimony of exposition.

Nativity status and length of residence—In both the ECLS-B and LSAC we construct a dichotomous variable for nativity status (foreign- or native-born). Unfortunately, neither dataset includes information on the mother’s visa status. Using mother’s current age and age at arrival in the United States, we derive a continuous measure of duration for immigrant mothers in the ECLS-B. In the LSAC, we use interview year and arrival year in Australia to derive the continuous duration measure. Based on these measures, we construct four categories of host country duration: 0–4 years; 5–9 years; 10–14 years; and 15 years or more. These categories are based on the actual distribution of duration but also recognize the five-year moratorium on access to means-tested social programs in the United States. There is no comparable restriction to benefits in Australia.

English proficiency—Both surveys ask a question about English proficiency with four response options that range from “very well” to “not at all” (or “not well at all” in the United States). We categorized those who were either native English speakers or who report speaking English very well as English proficient and all other non-native English speakers as not proficient.⁶

Region of origin or race/ethnicity—The Australian data does not include questions on race/ethnicity. This is a common practice in many other countries, but poses problems for comparative studies with the United States. The only race/ethnic group identified in the LSAC is aboriginal (excluded from our analysis), and they constitute a very small proportion of the sample. However, the survey reports country of origin for all immigrant mothers. We use this measure to create four nativity-origin categories: native Australian, English-

⁵The CES-D and K6 have different metrics, though they are designed to measure similar constructs. We use the continuous measure rather than assigning cutpoints for depression due to these differences.

⁶Sensitivity analyses revealed similar results with alternative coding schemes.

speaking country of origin, Asian country of origin, and other country of origin. The ECLS-B data record mothers' ethnicity and race, from which we create five mutually exclusive categories for both native and foreign-born mothers: white, black, Asian, Hispanic, and other.

Other covariates—The theoretical discussion identified several factors that not only differ between immigrant and native mothers, but also influence the risk of depression following a birth. Therefore, our multivariate analyses include several additional covariates, including mother's age (at the time of childbirth), education, poverty income status, living arrangements and several attributes of the focal child, including age at survey (in months), parity, and birth weight. Low birth weight (<2500 grams) is included as a proxy measure for maternal and infant health that occurs before the time of survey. To measure household structure, we use mothers' current relationship status (married, cohabiting, or single) and a constructed indicator of family type (nuclear or extended). Extended households include one or more adult relatives other than the mother's partner.

In order to maximize comparability between the school systems of both countries, maternal education is measured categorically. We use four categories to represent variation in mothers' educational attainment: less than high school, high school diploma, some college, and bachelor's degree or higher. These categories are included in the US data, but the education categories included in the LSAC require recoding to render them equivalent. LSAC data include a measure for years of primary and secondary school completed as well as a qualifications indicator, which includes an option for a vocational diploma or a certificate. Following Choi and associates (2011), we coded the combinations in the following hierarchical manner: 11 years or less of schooling is equal to less than a high school diploma (whether or not a certificate was completed); 12 years of school is equal to a high school diploma (without a certificate or diploma); 11 years or more with a diploma and 12 years or more with a certificate are equal to some college; and the final category of bachelor's degree or higher is equivalent to the US category.

Additional maternal and household attributes known to influence maternal depression include mother's employment and household poverty income status. Maternal employment combines work status before and after the birth of the index child: work both before birth and at time of survey; work before birth only; work at the time of survey only; and never worked during the pregnancy or at the time of the interview. Both surveys measure household income in bands. Families in the lowest quartile of each country's weighted income distribution are designated as poor. The advantage of designating the lowest quartile as poor is two-fold: first, the lowest quartile is the most comparable cut-point for both surveys; second, this threshold aligns closely with the widely used measure of income poverty in international comparisons, namely 50 percent of median income.

Analytic Strategy

Weighted means of maternal depression are calculated for both the US (CES-D) and Australia (K6) in Table 2. Multivariate regression models are then estimated using the continuous maternal depression measure as the outcome. Table 3 presents regression

estimates for the association between foreign-born status and depressive symptoms, and Table 4 reports regression estimates for duration in the host country on depressive symptoms. All analyses are conducted using the `svy` commands in Stata SE 12.0 in order to adjust for the complex sampling design and response rates in both the ECLS-B and LSAC.

RESULTS

Table 1 summarizes sample characteristics for mothers interviewed for the LSAC and ECLS-B surveys. The Australian mothers are nearly three years older, on average, than U.S. mothers, and the foreign-born are about 1.5 years older than their native counterparts. In the United States there are no age differences by nativity.

Nativity differentials in the educational attainment of new mothers reflect the skill emphasis of the two countries' admission regimes. In Australia over one-third of recent mothers lack a high school diploma, compared with less than 20 percent in the United States, but nativity differences in maternal education differ between countries. In Australia lower shares of native-born mothers complete high school compared with immigrants, but in the United States the pattern is reversed. The skill emphasis of Australia's immigrant admission system is further evident in the shares of foreign-born mothers with college credentials—nearly 35 percent in Australia compared with 22 percent of foreign-born mothers residing in the United States. Furthermore, owing to Australia's English requirement as a condition of admission, only about 20 percent of recent foreign-born mothers indicated they were not fluent in English, compared with over half of foreign-born mothers in the United States. The vast majority of these are refugees, for whom a language requirement is not imposed.

US mothers also exhibit higher attachment to the labor market than their Australian counterparts. Only 20 percent of American mothers reported that they had never worked compared with 31 percent of Australian mothers. At the other extreme, nearly half of US mothers worked both before and after a birth, but only one-third of Australian mothers did so. In both nations labor force participation is higher among native-born mothers compared with immigrants.

Table 1 also presents several indicators representing the contexts of maternal childbearing that are potentially associated with maternal depression, including child birth weight, the number of prior children, and living arrangements. For example, a higher proportion of native-born mothers than immigrant mothers are single in both countries. Of particular note, the prevalence of low birth weight is higher in the United States compared with Australia, but the nativity differentials are reversed. The US differentials are consistent with a large body of evidence showing better birth outcomes for immigrant mothers compared with natives (Landale, Oropesa, and Gorman 1999; Weeks and Rumbaut 1991), but in Australia the healthy birth advantage corresponds to native-born mothers.

Table 2 presents mean depression scores for the mothers of both Australian and American birth cohorts. Because the surveys use different metrics to assess maternal depression, absolute differences in the magnitude of between-country differences in depression scores are not meaningful. Therefore, in highlighting patterns of differentials, we focus on variation

relative to the national averages—3.6 and 4.9 for Australia and the United States, respectively—and among the covariates theorized to attenuate and accentuate maternal depression.

Of particular substantive interest is the nativity variation in maternal depression between countries. The descriptive tabulations suggest that, except for mothers who resided in the country between 10 and 14 years, Australia's foreign-born mothers are not more depressed than their native counterparts. This is not the case in the United States: with the exception of recent arrivals, foreign-born mothers experience lower depressive symptoms than their native-born counterparts.

Despite the different metrics used across surveys, there are several noteworthy similarities between countries, such as the higher depressive symptoms scores among teen mothers compared with mothers in their prime reproductive years (25–34) and among poor compared with non-poor mothers. An additional cross-country similarity concerns the higher depression scores among mothers of low birthweight infants compared with women who give birth to normal weight infants (Halbreich 2005). In both countries mean depressive symptoms vary by country of origin (Australia) and race/ethnicity (United States). Australian immigrants from Asian countries average higher depression scores than other groups, but in the United States, the highest unadjusted depression scores correspond to black and mothers of other ethno-racial backgrounds.

A final noteworthy aspect of between-country variation in maternal depression is the apparent lack of an association between mother's educational attainment and maternal depression in Australia. This contrasts sharply with the clear monotonic pattern evident for the United States, where college-educated mothers have the lowest mean depression scores, and mothers without high school diplomas have the highest scores, following a birth.

Multivariate Results

Table 3 presents the multivariate regression results for maternal depression separately for Australia and the United States. The first specification considers the association between nativity and maternal depression; Model 2 adds English proficiency, a measure of immigrant adaptation to the host country and capacity to navigate the health system. To account for group differences in the association between immigrant status and depression, Model 3 adds country of origin for Australia and race/ethnicity for the United States. All specifications include a set of maternal, child and household characteristics shown by prior studies to influence postpartum depressive symptoms.

Compared to native-born mothers, immigrants in Australia have a similar risk of maternal depression, but in the United States foreign-born mothers face significantly lower risk of depression than their native counterparts (Model 1). The point estimates for US foreign-born mothers support the 'immigrant health advantage' documented for myriad physical health outcomes; moreover, the mental health advantage of US immigrant mothers is robust to controls for a wide variety of indicators of maternal, child, and household economic wellbeing.

There are other noteworthy differences in maternal depression risk in Australia and the United States. Most striking are the different education gradients in maternal depression between countries, which are presaged by descriptive results presented in Table 2. In the United States, higher levels of education protect mothers against depression; specifically, mothers with a bachelor's degree or more are significantly less likely than high school dropouts to suffer from depression after childbirth. This result is supported by a large and robust body of evidence on US education gradients in health. Yet the Australian education gradient is very clearly reversed, with college-educated women facing a significantly higher risk of maternal depression. The reasons for this result are not obvious, but may reflect the atypicality of highly educated women in a context where significant pluralities of mothers achieve high school or less.

As hypothesized, the mental health of recent mothers also depends on maternal employment status. In Australia, mothers who never worked are significantly more depressed than mothers who worked consistently before and after the birth. In the United States, this group of mothers also scores significantly higher on the maternal depression scale than mothers who worked before and after childbirth. Yet, mothers who worked before the birth but are not currently working also have an elevated risk of depression compared with mothers who worked consistently. Usdansky and associates (2011) suggest that the higher levels of depression among mothers who worked before but not since the birth could signal their loss of labor market rewards as they strive to find fulfillment in childcare.

The descriptive tabulations show that maternal depression varies by household structure, but the regression results provide clues why this may be so. Both cohabitating and single Australian mothers who do not live with extended relatives face significantly higher risk of depression compared with married mothers residing in nuclear families. In the United States, married mothers residing in nuclear families face significantly lower risks of depression following a birth compared with new mothers in all household types; however, single mothers in nuclear families face the highest risk of depression, suggesting that the lack of social support for lone mothers heightens their vulnerability for maternal depression.

Model 2 reveals the salience of English proficiency on maternal depression in both countries. Consistent with studies based on intervention samples (Bandyopadhyay et al. 2010), our results based on national data indicate that English proficiency protects mothers against depression in Australia; however, in the United States, English proficiency exacerbates mothers' risk of depression within a year of giving birth. Including English proficiency in the model reduces the magnitude of the coefficient on foreign-born status for US mothers, but it remains statistically significant. Although seemingly counterintuitive at first blush, this result is consistent with the dominance of family sponsorship as the main source of US immigrants and with evidence from other studies that mental health status declines as acculturation increases (Escarce, Morales and Rumbaut, 2006).

Model 3 adds country of origin for Australia and race/ethnicity for the United States. Unfortunately the ECLS-B and LSAC lack comparable race and ethnic indicators, but these indicators approximate ethnic and racial variations in maternal depression. For Australia, we find no significant variations in maternal depression by regional origins, but possibly this

reflects the crude measurement of ethnicity. Sensitivity analyses (not reported) further confirm the lack of statistically significant differences among immigrant groups (e.g., immigrants from English-speaking and Asian countries).

For the United States, by contrast, immigrant mothers' advantage in depressive symptoms is attenuated and rendered statistically insignificant by including race and ethnicity indicators in Model 3. The coefficients indicate that Asian mothers face a higher risk and Hispanic mothers a lower risk of depressive symptoms compared with non-Hispanic white mothers. These results underscore the importance of including all nationalities, not just Hispanics, when assessing nativity differences in mental health status for the United States. To further evaluate this inference, we conducted robustness checks to verify whether the findings hold when Mexico-born mothers are excluded from the sample. Results (available on request) confirmed that the association between foreign-born status and depressive symptoms holds when the dominant US immigrant group is excluded; however, lack of English proficiency is no longer protective against maternal depression. Two implications follow from this robustness check. First, for non-Mexican immigrant mothers, English proficiency is unrelated to mothers' depressive symptoms following a birth; second, for Mexican immigrant mothers, the apparent protective effect of limited English proficiency on maternal depression likely reflects the availability of high levels of social support among those in this immigrant group, despite less adaptation to the United States (Davila et al. 2008)

The second question we address is whether immigrant mothers' mental health advantage erodes with time in the host country. Table 4 presents the regressions of duration of residence on depression among immigrant mothers for both countries following the same nested model sequence as Table 3. For Australia there is no relationship between length of residence and depressive symptoms following childbirth; however, lack of English proficiency remains a statistically significant predictor of depressive symptoms among foreign-born mothers.

The story is more complicated in the United States, where immigrant mothers who have been in the country for five to nine years are significantly less likely to experience depressive symptoms compared with recently arrived mothers (0 to 4 years of U.S. residence). Although the coefficient signs indicate that durations of 10 or more years are associated with lower risks of depression following childbirth, the point estimates are statistically insignificant.⁷ This relationship holds in supplementary analyses that exclude the Mexican sample (available upon request). Substantively the duration coefficients indicate that the most recent immigrants may face greater migration-linked stress than mothers who have had more time to learn the ropes in their new country. Their higher depressive symptoms may also reflect stress associated with limited access to social and medical benefits during the five-year moratorium on public services, which does not apply to longer-term immigrants. For immigrant mothers who have lived in the United States beyond the five-year cut point, there is suggestive evidence that the protective aspects of immigrant status fade with time; however, the estimates are not statistically significant. Overall, the US

⁷Auxiliary analyses reveal that maternal depression among recent immigrants is similar to that of native mothers; these results are available upon request.

results are consistent with the growing literature on the erosion of immigrant health with longer exposure to the United States (Landale, Oropesa and Gorman 1999).

DISCUSSION

Given the different admission regimes and welfare benefits available to immigrants in the two Anglophone nations compared, it is not surprising that maternal depression varies by nativity status in the United States, but not in Australia. This is consistent with O'Connor, Orloff and Shaver's (1999) characterization of the American and Australian welfare states. Not only does the United States impose higher private responsibility for child care compared with Australia, but since the mid-1990s, attitudes toward immigrants have become less welcoming, as evident by the passage of the 1996 Illegal Immigration Reform and Immigrant Responsibility Act and the five-year moratorium on access to means-tested benefits for legal immigrants. Although Australia's admission regime emphasizes skills over family unification, permanent settlers enjoy most of the same benefits as citizens, except that two years of permanent residence is required in order to receive unemployment benefits, sick leave and stipends for postsecondary education (Australian Human Rights Commission 2008).

US foreign-born mothers have significantly lower levels of depressive symptoms following a birth compared with their native-born counterparts; moreover, the protective effect of foreign birth is robust across several specifications that consider maternal, child, and household characteristics. In line with prior studies (e.g., Huang et al. 2007), supplementary analyses reveal that Mexicans are the immigrant group most protected from maternal depression in the United States. Even when Mexicans are excluded, foreign-born status results in less depressive symptoms. By comparison, foreign-born Australian mothers are not protected from depressive symptoms following the childbirth, and in fact, appear to be at higher risk of depression following childbirth than native-born mothers, particularly if they are not proficient in English.

Lack of English proficiency is associated with the risk of maternal depression in both countries, albeit in opposite ways. That Australian immigrant mothers who do not speak English are at significantly higher risk of depression than English-fluent mothers is consistent with the linguistic homogeneity of the nation, despite the fact that nearly one in four residents are foreign-born. Stated differently, because English proficiency is a criterion for admission, mothers who do not speak well are at a considerable disadvantage in procuring needed social and emotional support following childbirth. The results for Australia are robust to alternative model specifications, including sensitivity analyses that exclude refugees who are less likely to speak English and more likely to be depressed.⁸ Although language can be a formidable barrier in the United States as well, the existence of large co-ethnic social networks where home country languages proliferate, may facilitate new mothers' procurement of social supports that reduce stress following childbirth. The association between lack of English skill and reduced maternal depression appears to be specific to Mexican immigrant mothers, perhaps because there are large communities of

⁸Auxiliary analyses that exclude immigrants from refugee and asylum sending countries are available upon request.

Mexican immigrants in the United States where social support is more available than it is for other immigrant groups with smaller populations. Because we lack geo-coded information about linguistic concentration of native- and foreign-born mothers, we cannot evaluate this claim directly, however.

Length of residence in the host country is not monotonically associated with the risk of maternal depression in either country, as predicted by straight-line assimilation theory. In the United States, recent immigrants experience the highest risk of depression and are similar to natives in this regard, but there is also evidence that the immigrant protective influence against maternal depression fades after about a decade. Other studies (e.g., Jasso et al. 2004; Teitler et al. 2012) also find a nonlinear association between length of residence the United States and health status. This nonlinear relationship suggests that health acculturation is a more complex phenomenon than previously thought. Therefore, future studies into the immigrant health advantage should consider nonlinear specifications of length of residence and immigrant health in the United States. Unlike English proficiency, length of residence does not differentiate risks of maternal depression in Australia.

As rather distinct contexts of reception (Portes and Rumbaut 2006), Australia and the United States prove instructive for understanding the association between nativity and maternal wellbeing following childbirth. In Australia, English proficiency is a required skill and mothers who are not fluent are at an increased risk for maternal depression. Conceivably these mothers face high levels of social isolation compared with immigrant mothers who are able to communicate in English. The contrasting results in the United States suggest that immigrant mothers, and Mexicans in particular, are likely to be socially connected even without English proficiency compared to their Australian counterparts, perhaps an artifact of family reunification migration as the dominant pathway to U.S. permanent residence. Our results also suggest that lack of English proficiency is a protective (Mexican immigrants) or neutral (non-Mexican immigrants) factor for maternal depression in the United States, as it is for a wide variety of other health outcomes; yet it is a clear risk factor for maternal depression in Australia, where the majority of newcomers acquire some proficiency in English before admission.

It is difficult to disentangle further what aspects of immigrant social policy drive the salience of nativity as a correlate of maternal depression. Australian immigrant women qualify for most benefits immediately and all benefits after two years of residence, which may partly explain why length of residence is not a major determinant of maternal depression. In the United States, it appears that recent immigrants (less than five years of residence) do not enjoy the protective effect of foreign-born status on maternal depression, as their risks are similar to native-born mothers. It is plausible that the lack of access to social benefits and healthcare, coupled with migration-linked stress, exacerbates depression risk for recent arrivals compared with immigrants who have been in the country for longer periods. How the expansion of health care coverage for women and children under the Affordable Care Act (ACA) will play out is yet for immigrants is unclear, but should be further investigated as the consequences of ACA are evaluated.

Like many prior studies, ours features several limitations that warrant discussion and further research. First, the two datasets do not use identical measures and definitions of maternal depressive symptoms, thus we are unable to conduct a direct comparison of the prevalence of maternal depression in the United States and Australia. It would be useful for future comparative work if these surveys could employ the same measurement scales. That said, the LSAC and ECLS-B are remarkably similar in many ways, which allowed for creation of identical or very similar measures for all major theoretical constructs.

Second, although both the LSAC and ECLS-B are longitudinal studies, we are limited in our ability to exploit the temporal ordering in the data because both studies first interview mothers about one year after the birth. Third, the LSAC and ECLS-B do not include measures of either legal status or entry visa for the foreign-born respondents, therefore the direct effect of migration policies and paths of migration, including unauthorized entry, cannot be tested with these data. Fourth, mental health history is unavailable in either survey. Because previous episodes of mental illness are one of the major predictors of maternal depression, our results may be subject to omitted variable bias. That our findings for the United States are consistent with many other studies about nativity and health status inspires confidence in the results even without a measure of prior mental health status. Finally, while our analyses compare two countries with different immigrant policies and contexts of reception, we are unable to determine the direct impact on maternal depression of specific policies.

Notwithstanding these limitations, our analysis fills a major gap in the literature on maternal depression among immigrants by using nationally representative data for the United States and Australia, including length of residence and English proficiency, and directly comparing two countries with distinct admission and immigrant reception policies. Future research should consider the influence of length of residence and English proficiency in studies of immigrant health based on our findings. International studies that can directly compare prevalence of maternal depression among immigrant mothers, by including identical depression scales, would significantly move this field of research forward.

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Table 1

Sample Characteristics: Means or Percent (standard errors)

	Australia n=3944		United States n=7700 ^a	
	Native n=3156	Foreign n=788	Native n=6050	Foreign n=1650
Mother's Characteristics				
Mother's Age	29.8 (0.1)	31.4 (0.2)	27.4 (0.1)	27.8 (0.2)
Duration of Residence				
<5 years		21.0		34.8
5–9 years		22.5		23.7
10–14 years		27.4		29.2
15+ years		29.1		12.3
Education				
<HS	37.4	29.3	13.3	29.0
Diploma	12.7	15.6	27.4	27.2
Some college	20.2	20.5	31.5	22.3
BA+	29.8	34.7	27.9	21.5
Work Status				
Work Before and After	35.5	29.2	51.7	35.9
Work Before Only	30.5	26.1	25.3	22.7
Work After Only	5.2	4.4	4.9	7.2
Never Worked	28.8	40.3	18.1	34.3
Not English Proficient	0.3	21.2	0.6	54.4
Country of Origin (Australia)				
Australian	100.0			
Anglo Country of Origin		36.3		
Asian Country of Origin		27.3		
Other Country of Origin		36.4		
Race/Ethnicity (US)				
White			72.1	14.5
Black			14.3	6.4
Asian			0.6	14.7
Hispanic			10.0	64.1
Other			3.0	0.3
Child Characteristics				
Child Age in Months	8.8 (0.0)	8.8 (0.1)	10.5 (0.0)	10.4 (0.1)
Low Birth Weight	5.5	6.1	7.3	6.9
Birth Order				
First	41.1	41.7	40.1	42.3
Second	36.3	34.8	34.7	30.9
Third +	22.6	23.5	25.2	26.8
Household Characteristics				
If Bottom Income Quartile	22.7	26.2	21.4	28.7

	Australia n=3944		United States n=7700 ^a	
	Native n=3156	Foreign n=788	Native n=6050	Foreign n=1650
Household Structure				
Married Nuclear	68.9	73.5	64.3	57.2
Married Extended	2.5	7.1	4.4	14.0
Cohabitation Nuclear	17.4	11.9	10.0	12.0
Cohabitation Extended	1.4	1.1	2.4	7.0
Single Nuclear	7.1	3.7	9.5	4.1
Single Extended	2.7	2.7	9.5	5.8
Total Household size (Mean)	4.0 (0.0)	4.3 (0.1)	4.2 (0.0)	4.6 (0.1)

Sources: LSAC for Australia. ECLS-B for United States.

^aRounded to the nearest 50.

Table 2

Mean Depression Scores (standard errors)

	<u>Australia n=3944</u>		<u>United States n=7700^a</u>	
	Mean	SE	Mean	SE
Sample Mean	3.6	(0.1)	4.9	(0.1)
Mother's Characteristics				
Nativity Status				
Native-born	3.5	(0.1)	5.0	(0.1)
Arrived 0–4 yrs. ago	3.7	(0.3)	4.7	(0.5)
Arrived 5–9 yrs. ago	3.6	(0.3)	3.4	(0.3)
Arrived 10–14 yrs. ago	4.4	(0.5)	3.8	(0.4)
Arrived 15+ yrs. Ago	3.6	(0.2)	4.1	(0.3)
Mother's Age				
15–19	4.2	(0.4)	6.4	(0.3)
20–24	3.8	(0.2)	5.7	(0.2)
25–34	3.5	(0.1)	4.4	(0.1)
35+	3.6	(0.1)	4.0	(0.2)
Education				
<HS	3.6	(0.1)	6.0	(0.2)
Diploma	3.5	(0.1)	5.7	(0.2)
Some College	3.6	(0.1)	4.8	(0.2)
Bachelors +	3.5	(0.1)	3.5	(0.1)
Work Status				
Work Before and After	3.2	(0.1)	4.5	(0.1)
Work Before Only	3.3	(0.1)	5.4	(0.2)
Work After Only	3.6	(0.3)	5.1	(0.4)
Never Worked	4.1	(0.1)	5.2	(0.2)
English Proficiency				
Native or Proficient	3.5	(0.1)	5.0	(0.1)
Not Proficient	4.7	(0.3)	4.0	(0.3)
Country of Origin (Australia)				
Australian	3.5	(0.1)		
Anglo Country of Origin	3.3	(0.2)		
Asian Country of Origin	4.1	(0.3)		
Other Country of Origin	3.9	(0.2)		
Race/Ethnicity (US)				
White			4.7	(0.1)
Black			6.3	(0.2)
Asian			4.4	(0.2)
Hispanic			4.5	(0.2)
Other			5.8	(0.4)
Child Characteristics				

	<u>Australia n=3944</u>		<u>United States n=7700^a</u>	
	Mean	SE	Mean	SE
Birth Weight				
Normal	3.5	(0.1)	4.8	(0.1)
Low	4.1	(0.3)	5.7	(0.2)
Household Characteristics				
Poverty Status (Bottom Quartile)				
Poor	4.4	(0.2)	6.5	(0.2)
Not Poor	3.3	(0.1)	4.4	(0.1)
Household Structure				
Married Nuclear	3.3	(0.1)	4.1	(0.1)
Married Extended	3.9	(0.4)	4.8	(0.3)
Cohabitation Nuclear	3.8	(0.2)	5.8	(0.3)
Cohabitation Extended	4.4	(0.5)	6.3	(0.7)
Single Nuclear	5.0	(0.3)	7.5	(0.4)
Single Extended	4.5	(0.5)	6.5	(0.3)
Birth Order				
First	3.4	(0.1)	4.9	(0.1)
Second	3.6	(0.1)	4.8	(0.1)
Third +	3.9	(0.1)	5.0	(0.2)

Sources: LSAC for Australia. ECLS-B for United States.

^aRounded to the nearest 50.

Table 3

Multivariate Regression of Depression on Nativity: Australia and the United States^a (standard errors in parentheses)

	Australia (N=3944)			United States (N=7700)		
	(1)	(2)	(3)	(1)	(2)	(3)
Mother's Characteristics						
If Foreign-born	0.161 (0.155)	-0.006 (0.161)		-1.129 ** (0.227)	-0.669 * (0.263)	-0.594 (0.304)
Not English Proficient		0.871 * (0.378)	0.744 (0.41)		-0.929 * (0.375)	-0.645 ** (0.384)
Country of Origin (Australia) ^b						
Anglo Country of Origin			-0.152 (0.222)			
Asian Country of Origin			0.169 (0.340)			
Other Country of Origin			0.088 (0.238)			
Race/Ethnicity (US) ^c						
Black						0.051 (0.277)
Asian						0.687 * (0.320)
Hispanic						-0.641 * (0.275)
Other						0.099 (0.429)
Education						
H.S. Diploma	0.132 (0.181)	0.121 (0.181)	0.114 (0.181)	0.180 (0.309)	0.118 (0.311)	0.063 (0.311)
Some College	0.402 * (0.175)	0.412 * (0.175)	0.405 * (0.176)	-0.273 (0.326)	-0.368 (0.334)	-0.442 (0.335)
Bachelors +	0.517 ** (0.157)	0.523 ** (0.157)	0.507 ** (0.157)	-0.978 ** (0.351)	-1.089 ** (0.355)	-1.219 ** (0.359)
Work Status						
Work Before Only	0.064 (0.140)	0.063 (0.140)	0.059 (0.141)	0.457 * (0.200)	0.468 * (0.200)	0.457 * (0.199)
Work After Only	0.183 (0.269)	0.178 (0.266)	0.177 (0.266)	-0.389 (0.374)	-0.360 (0.373)	-0.328 (0.375)
Never Worked	0.534 ** (0.164)	0.477 ** (0.164)	0.470 ** (0.164)	0.545 * (0.230)	0.587 * (0.230)	0.590 * (0.230)
Child Characteristics						
Age (Months)	0.038 (0.024)	0.038 (0.024)	0.038 (0.024)	0.015 (0.042)	0.017 (0.042)	0.017 (0.042)
If Low Birthweight	0.514 (0.293)	0.510 (0.294)	0.503 (0.295)	0.530 ** (0.194)	0.517 ** (0.193)	0.508 ** (0.192)
Household Characteristics						
If Bottom Income Quartile	0.757 ** (0.189)	0.688 ** (0.192)	0.681 ** (0.193)	0.663 * (0.259)	0.728 ** (0.263)	0.737 ** (0.264)

	Australia (N=3944)			United States (N=7700)		
	(1)	(2)	(3)	(1)	(2)	(3)
Household Structure						
Married Extended	0.506 (0.380)	0.467 (0.382)	0.448 (0.381)	0.644 * (0.316)	0.677 * (0.315)	0.724 * (0.317)
Cohabitation Nuclear	0.499 ** (0.171)	0.546 ** (0.170)	0.555 ** (0.170)	1.064 ** (0.308)	1.076 ** (0.307)	1.136 ** (0.310)
Cohabitation Extended	1.020 (0.531)	1.082 * (0.529)	1.091 * (0.530)	1.728 * (0.761)	1.805 * (0.758)	1.890 * (0.759)
Single Nuclear	1.010 ** (0.345)	1.087 ** (0.346)	1.095 ** (0.347)	2.450 ** (0.419)	2.401 ** (0.421)	2.365 ** (0.446)
Single Extended	0.723 (0.539)	0.807 (0.542)	0.811 (0.544)	1.575 ** (0.373)	1.572 ** (0.373)	1.581 ** (0.391)
Birth Order						
First Birth	-0.236 (0.142)	-0.235 (0.142)	-0.237 (0.142)	-0.224 (0.187)	-0.209 (0.186)	-0.213 (0.187)
Third Birth +	0.247 (0.173)	0.245 (0.173)	0.248 (0.174)	-0.032 (0.218)	-0.040 (0.219)	-0.026 (0.218)
Constant	2.445 (1.704)	2.403 (1.700)	2.447 (1.701)	5.962 ** (1.935)	5.557 ** (1.922)	5.679 ** (1.924)
R-squared	0.003	0.038	0.040	0.070	0.071	0.073

Sources: LSAC for Australia; ECLS-B for United States

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p<0.01,

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p<0.05

^a Estimates net of mother's age and age_squared

^b Reference is native-born Australian

^c Reference is non-Hispanic white

Table 4

Multivariate Regression of the Depression on Duration in Host Country ^a (standard errors in parentheses)

	Australia (N=788)			United States (N=1650)		
	(1)	(2)	(3)	(1)	(2)	(3)
Mother's Characteristics						
Foreign Born ^b						
5–9 Years since Arrival	–0.052 (0.390)	0.023 (0.391)	0.025 (0.390)	–1.379 * (0.565)	–1.454 * (0.570)	–1.395 * (0.570)
10–14 Years since Arrival	0.726 (0.523)	0.817 (0.524)	0.799 (0.526)	–0.938 (0.709)	–1.081 (0.730)	–1.000 (0.728)
15+ Years since Arrival	0.048 (0.341)	0.318 (0.352)	0.311 (0.355)	–0.729 (0.631)	–0.966 (0.687)	–0.795 (0.685)
Not English Proficient		1.105 * (0.433)	1.025 * (0.462)		–0.512 (0.457)	–0.227 (0.484)
Country of Origin (Australia) ^c						
Asian Country of Origin			0.202 (0.404)			
Other Country of Origin			0.158 (0.323)			
Race/Ethnicity (US) ^d						
Black						0.449 (0.939)
Asian						0.689 (0.622)
Hispanic						–0.750 (0.633)
Other						–0.803 (1.696)
Education						
H.S. Diploma	0.570 (0.431)	0.509 (0.433)	0.483 (0.432)	0.962 (0.562)	0.898 (0.570)	0.834 (0.567)
Some College	1.512 ** (0.409)	1.546 ** (0.412)	1.521 ** (0.419)	1.373 (0.772)	1.235 (0.796)	1.056 (0.808)
Bachelors +	1.217 ** (0.363)	1.252 ** (0.365)	1.206 ** (0.373)	0.491 (0.714)	0.302 (0.714)	–0.142 (0.733)
Work Status						
Work Before Only	0.113 (0.348)	0.098 (0.348)	0.079 (0.352)	–0.173 (0.497)	–0.130 (0.494)	–0.141 (0.491)
Work After Only	0.827 (0.741)	0.823 (0.708)	0.821 (0.707)	–0.227 (0.794)	–0.186 (0.794)	–0.183 (0.801)
Never Worked	0.878 * (0.375)	0.660 (0.373)	0.635 (0.377)	0.026 (0.523)	0.068 (0.522)	0.112 (0.517)
Child Characteristics						
Age (Months)	0.030 (0.057)	0.029 (0.057)	0.028 (0.057)	0.008 (0.086)	0.010 (0.086)	0.002 (0.084)
If Low Birthweight	–0.003 (0.642)	–0.010 (0.651)	–0.024 (0.661)	0.456 (0.488)	0.470 (0.485)	0.501 (0.483)
Household Characteristics						

	Australia (N=788)			United States (N=1650)		
	(1)	(2)	(3)	(1)	(2)	(3)
If Bottom Income Quartile	0.661 (0.370)	0.447 (0.384)	0.438 (0.387)	0.403 (0.523)	0.480 (0.531)	0.526 (0.531)
Household Structure						
Married Extended	0.586 (0.581)	0.495 (0.583)	0.468 (0.583)	-0.098 (0.482)	-0.050 (0.481)	-0.034 (0.488)
Cohabitation Nuclear	0.630 (0.417)	0.784 (0.418)	0.817 * (0.413)	1.253 (0.723)	1.294 (0.721)	1.500 * (0.724)
Cohabitation Extended	1.700 (1.097)	1.812 (1.030)	1.836 (1.039)	1.844 (1.452)	1.955 (1.443)	2.133 (1.443)
Single Nuclear	1.789 (1.022)	1.915 (1.027)	1.933 (1.026)	0.229 (0.965)	0.167 (0.974)	0.231 (0.955)
Single Extended	1.474 (1.123)	1.677 (1.149)	1.683 (1.162)	2.007 (1.106)	2.032 (1.107)	2.046 (1.077)
Birth Order						
First Birth	-0.094 (0.315)	-0.055 (0.314)	-0.063 (0.314)	0.261 (0.439)	0.267 (0.438)	0.276 (0.440)
Third Birth +	0.727 (0.413)	0.724 (0.413)	0.729 (0.420)	0.770 (0.636)	0.787 (0.635)	0.838 (0.629)
Constant	2.890 (4.282)	2.422 (4.186)	2.502 (4.194)	1.882 (4.621)	1.522 (4.560)	1.750 (4.587)
R-squared	0.069	0.080	0.080	0.036	0.037	0.045

Sources: LSAC for Australia; ECLS-B for United States

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p<0.01,

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p<0.05

^aEstimates net of mother's age and age_squared

^bReference is 0-4 years since arrival

^cReference is Anglo country of origin

^dReference is non-Hispanic white