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Disability Among Internationally Adopted Children in the United States

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KEY WORDS

disability evaluation, adoption, immigration, children, adolescents

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WHAT'S KNOWN ON THIS SUBJECT: Disability rates for internationally adopted children are known for some clinical and country-specific populations. No previous study used a representative national sample to compare disability rates for children who were adopted from various countries with those who were adopted domestically.



WHAT THIS STUDY ADDS: Using restricted-access data from the Census 2000, this study estimated disability rates for internationally adopted children by country of origin, adjusting for various factors, and provides the first nationally representative estimates of these rates.

abstract

OBJECTIVES: The objective of this study was to estimate disability rates for internationally adopted children in the United States.

METHODS: We conducted an analysis of restricted-access data from the complete long form of Census 2000 for internationally adopted children aged 5 to 15 in 2000, estimating disability rates by country of origin, controlling for gender, age at adoption, current age, and parental characteristics.

RESULTS: Internationally adopted children have disability rates similar to those adopted domestically (11.7% vs 12.2%, respectively) and more than twice the rate for all children in that age range (5.8%). The adjusted odds of disability relative to domestic adoptees range from one half or less (China and Korea) to twice as large or more (Romania, Bulgaria, other Eastern Europe, and other Western Europe).

CONCLUSIONS: The population of internationally adopted children is relatively small and diverse, posing challenges for researchers who hope to reach generalizable conclusions. Nevertheless, health, education, and social service professionals, as well as adoptive and prospective adoptive parents, should be aware of the risk for disabilities among internationally adopted children to devote the resources necessary to addressing them. *Pediatrics* 2009;124:1311–1318

Since 1990, more than one quarter of a million children have entered the United States as orphan immigrants—the children of international adoption.¹ The United States is the leading recipient in a global flow of adopted children,² through which >20 000 children came here annually through most of this decade (although the number dropped below 17 500 in fiscal year 2008).³ Despite intensive research that comprised local surveys, clinical studies, reviews, and case studies, no published study has used a nationally representative sample to analyze the health status of this population. Using the combination of adoptive status, disability, and immigration questions available for the first time on the Census 2000 long form, we addressed the following questions: (1) Do internationally adopted children have different disability rates than US native adopted children? (2) Do disability rates differ among children who are adopted from different countries? (3) Do differences in age at adoption, gender, and family characteristics account for any such differences?

Research on well-being and international adoption once focused mainly on developmental problems among children from Romania, whose early deprivation was the subject of intense analysis,^{4,5} contributing to a tone of alarm regarding international adoption outcomes.⁶ Subsequent studies of health status examined relatively small numbers of adopted children in clinics,^{7,8} with many concentrating on children from a single country or region, such as Russia and Eastern Europe⁹ or China,¹⁰ or studying children in sending-country orphanages.¹¹ Studies of at-risk children or those that reported to clinics may have led to underreporting of positive outcomes.¹² In addition to clinical studies, some researchers have used administrative or adoption agency records to identify

adoptive families who were associated with a certain adoption program, agency, or region.^{13,14} Much of the research has reflected concerns about the challenges faced by transracial families¹⁵ or focused on social and psychological adjustment and behavioral problems more generally, rather than physical health.^{16,17}

Two overlapping pathways might lead internationally adopted children to acquire long-lasting disabilities. First, the health conditions and behaviors of birth parents before or during pregnancy might put children at risk for early health problems or disabilities. For example, in some countries, poor women—those most likely to relinquish children—have high documented rates of alcohol consumption, which may lead to developmental disabilities.^{18,19} Second, deprivation in the institutional care of orphanages (or, to a lesser degree, foster placements⁸) and longer exposure to such conditions might lead to long-term disabilities.^{5,16} A third factor that might contribute to an association between international adoption and disability is the intentional selection of children with disabilities for international adoption, either because domestic adoptive families cannot be found or because some US parents seek “special needs” adoptions for altruistic reasons.^{20,21} This may be connected with country-specific adoption programs, leading to higher observed rates of disability among children from those countries. The United States does not restrict the immigration of internationally adopted children on the basis of children’s disability.

Except for exposure to institutional care (which we approximate with age at immigration), we could not identify these mechanisms directly, but we expected them to affect disability rates by country of origin. Differences in health outcomes by country of origin also may reflect factors that are period specific, so in a cross-sectional

design, the differences between countries may be confounded with current age and age at adoption. For example, in Romania, concern over conditions in orphanages led to a spike in adoptions in the late 1980s and early 1990s, followed by state restrictions on adoption.¹⁴ A similar wave of concern followed by increased adoptions happened in China, which responded by improving conditions in orphanages.¹⁰ In sum, country effects should be interpreted cautiously, because they may reflect diverse pathways for different countries rather than stable characteristics of countries or adoption programs. Despite such idiosyncratic histories, however, some persistent patterns have been found across some countries. In the 2 most frequently studied cases—Russia/Eastern Europe and China—lower rates of serious health problems have been found in China, although the studies are not strictly comparable. This difference has been attributed to younger age at adoption, differences in prenatal care, and improved institutional care in China during the 1990s.¹⁰ Prenatal conditions, early living conditions, and care provision are known to affect the odds of long-term disabilities. High levels of alcohol consumption¹⁸ pose a persistent problem for birth outcomes in Russia, for example,¹¹ where per capita alcohol consumption is more than twice as high as in China and >6 times as high as in Guatemala.¹⁹ Furthermore, duration of institutional care is positively associated with developmental delays. Although such effects may not be permanent,²² they have been found in many studies.^{8–10} We approximated duration of institutional care by using age at adoption, derived from year of immigration in the Census data (and thus not available for children adopted domestically). Other factors that may affect disability include gender, with

boys showing higher mental disability rates than girls,²³ although the effect among internationally adopted children has been mixed.^{16,18} Finally, parents with more education or wealth may have more resources with which to support their adopted children, but they also may have higher expectations or a lower threshold for defining disability.¹⁶

METHODS

We used the restricted-access full long form sample from the 2000 US Census, which covered ~16% of households. For the first time, Census 2000 included “adopted son/daughter” as a category of the relationship to householder item separate from “natural-born son/daughter” and “stepson/stepdaughter.”²⁴ We counted children as domestically adopted when they were listed as the adopted child of the householder and were born in the United States or were born abroad of US parents. Internationally adopted children were defined as foreign-born adopted children of the householder when those householders and their spouses (if present) were US native-born. This method yielded estimates of internationally adopted children that are close to the official records of visas granted to adopted children reported by US Citizenship and Immigration Services.¹ Our sample size was 13 054 internationally adopted children and 155 634 US native adopted children aged 5 to 15. When population weights are applied to our data, they correspond to ~82 220 internationally adopted children and 972 200 US native adopted children in the United States in 2000. No previous study used a nationally representative sample to study disability prevalence among internationally adopted children.

The health outcomes that we investigated are the 4 Census disability variables measured for children aged 5 to

15. The disabilities identified were sensory, physical, mental, and self-care. Sensory and physical disabilities were specified as “long-lasting conditions,” specifically, “blindness, deafness, or a severe vision or hearing impairment” (sensory), and “a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying” (physical). Mental and self-care disabilities were elicited with the following prompt: “Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities,” followed by separate check boxes for mental (“learning, remembering, or concentrating”) and self-care (“dressing, bathing, or getting around inside the home”).²³ Disability rates reported here are not strictly comparable to those collected in other surveys; however, very similar disability rates were measured in the Census Bureau’s American Community Survey.²⁵

We assessed longer term disabilities. Census questions are not designed to capture short-term developmental delays. Adopted children with developmental delays often “catch up” to their age peers, especially when they were adopted at young ages.²² We could not measure behavioral or psychological adjustment problems¹⁶ or arrested language development,^{5,26} which have been found to affect some internationally adopted children, but Census measures may capture some “attention problems” discussed in this literature.¹⁸

The Census 2000 long form asked where each person was born, and respondents specified the country for foreign-born children. We include separately countries with at least 50 cases of internationally adopted children in the data; other countries or regions are grouped together. We used year of immigration to estimate age at adop-

tion.²⁷ Important covariates also included current age and gender, as well as parents’ marital status, race/ethnicity, and educational attainment. Single parents might have fewer resources than married parents, with negative consequences for children’s health.²⁸ Children’s disabilities also might increase the odds of divorce and of children’s living with single parents,²⁹ and marital conflict that leads to divorce might negatively affect health.³⁰

Our indicator for single parents, which relied on reported current marital status, will have captured some unmarried couples whom we did not identify.³¹ In addition, we analyzed only children who lived with adoptive parents. In rare cases, internationally adopted children have had their adoptions disrupted and moved into foster care or to other families.^{6,32}

We assessed bivariate relationships between the characteristics that we already described and reported disabilities. We then tested odds ratios from multivariate logistic regression models for the odds of having any reported disability, first including US native and internationally adopted children and then only internationally adopted children. All analyses were weighted with the child’s person weight so that our estimates are representative of the population sampled, and SEs for the logistic regression models were adjusted by using a design effect that takes into account the Census 2000 sample design.³³ Logistic regression models were estimated by using a normalized weight.

RESULTS

Of the estimated 82 220 internationally adopted children, 11.7% are reported to have at least 1 disability (Table 1), not significantly lower than the 12.2% with a disability among the 972 200 US native adopted children and much

TABLE 1 Disability Status of Adopted Children Aged 5 to 15: 2000 US Census

| Parameter | Internationally Adopted | | US Native Adopted | |
|---------------------------|-------------------------|-------------|-------------------|-------------|
| | n (%) | 95% CI | n (%) | 95% CI |
| Total | 82 220 (100.0) | | 972 200 (100.0) | |
| No disabilities | 72 565 (88.3) | 87.61–88.99 | 853 915 (87.8) | 87.60–88.00 |
| Has at least 1 disability | 9655 (11.7) | 11.01–12.39 | 118 280 (12.2) | 12.00–12.40 |
| Has >1 disability | 1845 (2.2) | 1.89–2.51 | 21 560 (2.2) | 2.11–2.29 |
| Sensory disability | 1665 (2.0) | 1.70–2.30 | 14 080 (1.4) | 1.33–1.47 |
| Self-care disability | 1115 (1.4) | 1.15–1.65 | 15 915 (1.6) | 1.51–1.68 |
| Mental disability | 7965 (9.7) | 9.07–10.33 | 105 680 (10.9) | 10.71–11.09 |
| Physical disability | 1590 (1.9) | 1.61–2.19 | 15 605 (1.6) | 1.52–1.68 |

Categories for type of disability and having at least 1 or >1 disability are not mutually exclusive. Mental disability refers to difficulty learning, remembering, or concentrating. Data were weighted. CI indicates confidence interval.

higher than the 5.8% among all children in this age range.²³ Although the overall disability rates are very similar, internationally adopted children were significantly more likely to have sensory disabilities but less likely to have mental disabilities.¹⁶

Because these children were 5 to 15 years of age in 2000, their distribution largely reflects adoptions completed from the late 1980s through the mid-1990s, not contemporary immigration flows, which is why more than one third of the internationally adopted children in our sample were from Korea (Table 2). China was the leading country of origin from 1996 until 2007, representing more than one third of international adoptions to the United States in 2005, but the number has since declined.³

Disability rates for internationally adopted children were higher for boys and for children who were adopted between the ages of 2 to 4 and 5 to 9 (Table 3). There is substantial variation in disability rates by country of origin, as seen among 10 of the most common (Table 3). The highest point estimate for having at least 1 disability is 21.2% for Romania (which is not statistically higher than Mexico, India, Paraguay, or Russia); the lowest point estimate is 3.7% for China (which does not statistically differ from Peru). Among the less common countries of origin (Table 2), rates of approximately 1 in 4 were found among children from

other Eastern European countries (eg, Latvia, Hungary, Albania), other Western European countries (eg, England, Spain, Portugal), and Haiti and ~3%

among children who were born in Japan.

Multiple logistic regression analysis for the odds of having any disability (Table 4) tested the overall difference between domestically and internationally adopted children (model 1), the difference between children from each international country and those adopted domestically (model 2), and country-of-origin differences and other associations for those adopted internationally (model 3). Model 1 confirmed that the difference in odds of disability between internationally and domestically adopted children was not significant with these ad-

TABLE 2 Place of Birth and Disability Rates of Internationally Adopted Children Aged 5 to 15: 2000 US Census

| Place of Birth | n | % | 95% CI | % With at Least 1 Disability | 95% CI |
|----------------------|--------|-------|-------------|------------------------------|-------------|
| Total | 82 220 | 100.0 | | 11.7 | 11.01–12.39 |
| Korea | 29 735 | 36.2 | 35.17–37.23 | 7.1 | 6.19–8.01 |
| Russia | 8070 | 9.8 | 9.16–10.44 | 17.4 | 14.81–19.99 |
| China | 4285 | 5.2 | 4.72–5.68 | 3.7 | 1.93–5.47 |
| Colombia | 4205 | 5.1 | 4.63–5.57 | 12.7 | 9.55–15.85 |
| Romania | 4010 | 4.9 | 4.44–5.36 | 21.2 | 17.24–25.16 |
| India | 3730 | 4.5 | 4.06–4.94 | 16.2 | 12.50–19.90 |
| Guatemala | 3055 | 3.7 | 3.30–4.10 | 11.3 | 7.79–14.81 |
| Paraguay | 2310 | 2.8 | 2.45–3.15 | 12.5 | 8.28–16.72 |
| Mexico | 1995 | 2.4 | 2.07–2.73 | 15.6 | 10.61–20.59 |
| Peru | 1980 | 2.4 | 2.07–2.73 | 8.8 | 4.89–12.71 |
| Philippines | 1945 | 2.4 | 2.07–2.73 | 16.6 | 11.42–21.78 |
| Chile | 1575 | 1.9 | 1.61–2.19 | 14.2 | 8.80–19.60 |
| Brazil | 1510 | 1.8 | 1.52–2.08 | 18.1 | 12.02–24.18 |
| Honduras | 1360 | 1.7 | 1.42–1.98 | 16.9 | 10.66–23.14 |
| Vietnam | 820 | 1.0 | 0.79–1.21 | 8.9 | 2.80–15.00 |
| El Salvador | 785 | 1.0 | 0.79–1.21 | 19.1 | 10.50–27.70 |
| Thailand | 705 | 0.9 | 0.70–1.10 | 14.8 | 6.59–23.01 |
| Bulgaria | 700 | 0.9 | 0.70–1.10 | 21.9 | 12.31–31.49 |
| Japan | 680 | 0.8 | 0.61–0.99 | 3.2 | 0.00–7.34 |
| Poland | 610 | 0.7 | 0.52–0.88 | 20.3 | 10.32–30.28 |
| Ukraine | 610 | 0.7 | 0.52–0.88 | 10.7 | 3.01–18.39 |
| Germany | 430 | 0.5 | 0.35–0.65 | 6.5 | 0.00–13.78 |
| Ecuador | 395 | 0.5 | 0.35–0.65 | 21.2 | 8.60–33.80 |
| Bolivia | 385 | 0.5 | 0.35–0.65 | 9.6 | 0.40–18.80 |
| Lithuania | 375 | 0.5 | 0.35–0.65 | 13.3 | 2.57–24.03 |
| Haiti | 355 | 0.4 | 0.26–0.54 | 24.7 | 10.68–38.72 |
| Taiwan | 300 | 0.4 | 0.26–0.54 | 12.3 | 0.70–23.90 |
| Central America | 685 | 0.8 | 0.61–0.99 | 13.1 | 5.20–21.00 |
| Caribbean | 610 | 0.7 | 0.52–0.88 | 15.6 | 6.57–24.63 |
| Eastern Europe | 655 | 0.8 | 0.61–0.99 | 24.8 | 14.46–35.14 |
| Western Europe | 410 | 0.5 | 0.35–0.65 | 26.5 | 13.14–39.86 |
| Asia | 690 | 0.8 | 0.61–0.99 | 12.2 | 4.56–19.84 |
| USSR and former USSR | 575 | 0.7 | 0.52–0.88 | 15.2 | 6.01–24.39 |
| Africa | 545 | 0.7 | 0.52–0.88 | 16.8 | 6.99–26.61 |
| Other place of birth | 1120 | 1.4 | 1.15–1.65 | 8.9 | 3.67–14.13 |

Place of birth categories do not overlap. Data were weighted. CI indicates confidence interval.

TABLE 3 Disability Rates by Characteristic for Internationally Adopted Children: 2000 US Census

| Parameter | % | 95% CI | Specified Characteristic ^a | | | | Specified Disability ^a | | | | | | | |
|--------------------------------|-------|-------------|---------------------------------------|-------------|---------------|------------|-----------------------------------|------------|-----------|------------|---------------------|-------------|----------|------------|
| | | | At Least 1 Disability | | >1 Disability | | Sensory | | Self-care | | Mental ^b | | Physical | |
| | | | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI | % | 95% CI |
| Total | 100.0 | | 11.7 | 11.01–12.39 | 2.2 | 1.89–2.51 | 2.0 | 1.70–2.30 | 1.4 | 1.15–1.65 | 9.7 | 9.07–10.33 | 1.9 | 1.61–2.19 |
| Gender | | | | | | | | | | | | | | |
| Male | 44.0 | 42.94–45.06 | 13.7 | 12.59–14.81 | 2.5 | 2.00–3.00 | 1.9 | 1.46–2.34 | 1.5 | 1.11–1.89 | 12.0 | 10.95–13.05 | 1.8 | 1.37–2.23 |
| Female | 56.0 | 54.94–57.06 | 10.2 | 9.33–11.07 | 2.0 | 1.60–2.40 | 2.1 | 1.69–2.51 | 1.3 | 0.98–1.62 | 7.9 | 7.13–8.67 | 2.0 | 1.60–2.40 |
| Age at immigration/adoption, y | | | | | | | | | | | | | | |
| 0 | 14.6 | 13.84–15.36 | 7.2 | 5.75–8.65 | 1.4 | 0.74–2.06 | 1.4 | 0.74–2.06 | 1.0 | 0.44–1.56 | 5.9 | 4.58–7.22 | 1.4 | 0.74–2.06 |
| 1 | 31.0 | 30.01–31.99 | 9.9 | 8.75–11.05 | 1.5 | 1.03–1.97 | 1.5 | 1.03–1.97 | 1.0 | 0.62–1.38 | 8.2 | 7.15–9.25 | 1.4 | 0.95–1.85 |
| 2–4 | 28.0 | 27.04–28.96 | 15.2 | 13.75–16.65 | 3.3 | 2.58–4.02 | 2.4 | 1.78–3.02 | 1.9 | 1.35–2.45 | 12.8 | 11.45–14.15 | 2.8 | 2.13–3.47 |
| 5–9 | 19.8 | 18.95–20.65 | 13.9 | 12.23–15.57 | 2.7 | 1.92–3.48 | 3.2 | 2.35–4.05 | 1.5 | 0.91–2.09 | 11.0 | 9.49–12.51 | 2.3 | 1.58–3.02 |
| 10–15 | 6.6 | 6.07–7.13 | 9.6 | 7.15–12.05 | 1.9 | 0.76–3.04 | 1.0 | 0.17–1.83 | 1.3 | 0.36–2.24 | 8.0 | 5.74–10.26 | 1.4 | 0.42–2.38 |
| Current age, y | | | | | | | | | | | | | | |
| 5–7 | 26.8 | 25.85–27.75 | 9.1 | 7.91–10.29 | 2.0 | 1.42–2.58 | 1.9 | 1.34–2.46 | 1.3 | 0.83–1.77 | 6.7 | 5.67–7.73 | 1.9 | 1.34–2.46 |
| 8–10 | 26.1 | 25.16–27.04 | 13.7 | 12.26–15.14 | 2.4 | 1.76–3.04 | 1.9 | 1.33–2.47 | 1.4 | 0.91–1.89 | 11.6 | 10.26–12.94 | 2.2 | 1.59–2.81 |
| 11–13 | 28.4 | 27.44–29.36 | 12.8 | 11.46–14.14 | 2.5 | 1.87–3.13 | 2.3 | 1.70–2.90 | 1.5 | 1.01–1.99 | 10.9 | 9.65–12.15 | 2.0 | 1.44–2.56 |
| 14–15 | 18.7 | 17.87–19.53 | 11.3 | 9.73–12.87 | 2.0 | 1.31–2.69 | 1.9 | 1.22–2.58 | 1.1 | 0.58–1.62 | 9.4 | 7.96–10.84 | 1.5 | .90–2.10 |
| Parent characteristics | | | | | | | | | | | | | | |
| Single parent | 16.1 | 15.31–16.89 | 13.6 | 11.77–15.43 | 2.0 | 1.25–2.75 | 2.0 | 1.25–2.75 | 1.3 | 0.69–1.91 | 11.7 | 9.98–13.42 | 1.7 | 1.01–2.39 |
| Less than high school | 1.9 | 1.61–2.19 | 13.3 | 8.00–18.60 | 4.8 | 1.46–8.14 | 4.3 | 1.13–7.47 | 2.4 | 0.01–4.79 | 11.1 | 6.19–16.01 | 3.4 | .57–6.23 |
| High school or some college | 33.5 | 32.49–34.51 | 11.8 | 10.61–12.99 | 2.9 | 2.28–3.52 | 2.4 | 1.83–2.97 | 1.8 | 1.31–2.29 | 9.1 | 8.04–10.16 | 2.7 | 2.10–3.30 |
| Four-year college or higher | 64.7 | 63.68–65.72 | 11.7 | 10.84–12.56 | 1.9 | 1.54–2.26 | 1.8 | 1.45–2.15 | 1.1 | 0.82–1.38 | 10.0 | 9.20–10.80 | 1.5 | 1.18–1.82 |
| White non-Hispanic | 95.0 | 94.53–95.47 | 11.9 | 11.19–12.61 | 2.3 | 1.97–2.63 | 2.0 | 1.69–2.31 | 1.3 | 1.05–1.55 | 9.9 | 9.24–10.56 | 2.0 | 1.69–2.31 |
| Place of birth (10 selected) | | | | | | | | | | | | | | |
| Korea | 36.2 | 35.17–37.23 | 7.1 | 6.19–8.01 | 1.6 | 1.15–2.05 | 1.5 | 1.07–1.93 | 1.0 | 0.65–1.35 | 5.5 | 4.69–6.31 | 1.4 | 0.98–1.82 |
| Russia | 9.8 | 9.16–10.44 | 17.4 | 14.81–19.99 | 2.5 | 1.43–3.57 | 2.0 | 1.04–2.96 | 1.2 | 0.46–1.94 | 14.6 | 12.19–17.01 | 2.6 | 1.51–3.69 |
| China | 5.2 | 4.72–5.68 | 3.7 | 1.93–5.47 | 0.9 | 0.01–1.79 | 1.1 | 0.12–2.08 | 0.6 | −0.12–1.32 | 2.1 | 0.76–3.44 | 1.0 | 0.007–1.93 |
| Colombia | 5.1 | 4.63–5.57 | 12.7 | 9.55–15.85 | 1.8 | 0.54–3.06 | 2.4 | 0.95–3.85 | 0.9 | 0.01–1.79 | 10.2 | 7.34–13.06 | 1.5 | 0.35–2.65 |
| Romania | 4.9 | 4.44–5.36 | 21.2 | 17.24–25.16 | 3.5 | 1.72–5.28 | 1.9 | 0.58–3.22 | 2.5 | 0.99–4.01 | 19.1 | 15.29–22.91 | 1.8 | 0.51–3.09 |
| India | 4.5 | 4.06–4.94 | 16.2 | 12.50–19.90 | 3.3 | 1.51–5.09 | 3.2 | 1.43–4.97 | 1.7 | 0.40–3.00 | 12.9 | 9.53–16.27 | 2.6 | 1.00–4.20 |
| Guatemala | 3.7 | 3.30–4.10 | 11.3 | 7.79–14.81 | 1.4 | 0.10–2.70 | 1.2 | −0.01–2.41 | 0.9 | −0.15–1.95 | 10.3 | 6.93–13.67 | 0.9 | −0.15–1.95 |
| Paraguay | 2.8 | 2.45–3.15 | 12.5 | 8.28–16.72 | 0.7 | −0.36–1.76 | 0.8 | −0.34–1.94 | 0.2 | −0.37–.77 | 12.2 | 8.02–16.38 | 0.2 | −0.37–.77 |
| Mexico | 2.4 | 2.07–2.73 | 15.6 | 10.61–20.59 | 4.8 | 1.86–7.74 | 4.5 | 1.65–7.35 | 2.8 | 0.53–5.07 | 12.3 | 7.79–16.81 | 6.3 | 2.96–9.64 |
| Peru | 2.4 | 2.07–2.73 | 8.8 | 4.89–12.71 | 1.7 | −0.08–3.48 | 1.9 | 0.02–3.78 | 0.4 | −0.47–1.27 | 8.3 | 4.49–12.11 | 0.3 | −0.45–1.05 |

^a Categories are not mutually exclusive.

^b The question asked whether the person has difficulty learning, remembering, or concentrating. Data are weighted.

justments. Boys, children aged 8 to 13, those who lived with single parents, and those with non-Hispanic white parents were most likely to have any disability. Because the sample in this model comprised mostly domestically adopted children, these associations primarily reflected that population.

Model 2 tested differences between domestically adopted children and those from the countries and regions that we were able to detail. Children who were adopted from 2 countries—China and Korea—had lower adjusted disability rates than domestically adopted children. Children who were adopted from Russia, Romania, Bulgaria, and other

Eastern European and Western European countries all had higher odds of having a disability than domestic adoptees.

Model 3 included only internationally adopted children. The age at immigration/adoption effect is particularly important because of intense attention in the medical and developmental research to length of exposure to institutional conditions. The model showed that children who were adopted as infants—that is, immigrating in the year they were born—had the lowest disability rates relative to those aged 2 to 9. Adoptive parents' education showed no significant effect in the in-

ternational adoptee models. Children who were adopted by non-Hispanic white parents had higher adjusted odds of disability.

No country had significantly lower adjusted disability rates than Korea, the reference group. The Asian countries of Japan, China, Vietnam, Taiwan, and other Asian countries all have rates that do not differ statistically from Korea. Outside of Asia, children from Peru, Bolivia, Germany, Ukraine, Lithuania, and Central America had rates that were not higher than Korea's. Odds ratios of ≥ 2.0 were found for children from Thailand, India, Philippines, and most Latin American countries. Odds

TABLE 4 Multiple Logistic Regression Analysis of Having Any Disability: Aged 5 to 15, 2000 US Census

| Parameter | Domestic and Internationally Adopted, Adjusted OR (95% CI) | | Internationally Adopted, Adjusted OR (95% CI) |
|--------------------------------|--|-------------------------------|---|
| | Model 1 | Model 2 | Model 3 |
| Female | 0.58 (0.56–0.61) ^a | 0.58 (0.56–0.61) ^a | 0.75 (0.64–0.88) ^a |
| Age at immigration/adoption, y | | | |
| 0 (reference) | — | — | 1.00 |
| 1 | — | — | 1.31 (0.98–1.75) |
| 2–4 | — | — | 1.80 (1.35–2.39) ^a |
| 5–9 | — | — | 1.45 (1.07–1.97) ^c |
| 10–15 | — | — | 0.94 (0.62–1.43) |
| Current age, y | | | |
| 5–7 | 0.78 (0.73–0.83) ^a | 0.76 (0.71–0.82) ^a | 0.56 (0.43–0.74) ^a |
| 8–10 | 1.08 (1.02–1.15) ^b | 1.06 (1.00–1.13) ^c | 0.87 (0.68–1.12) |
| 11–13 | 1.11 (1.05–1.18) ^a | 1.11 (1.04–1.18) ^a | 1.05 (0.83–1.32) |
| 14–15 | 1.00 | 1.00 | 1.00 |
| Parent characteristics | | | |
| Single parent | 1.43 (1.36–1.50) ^a | 1.42 (1.35–1.49) ^a | 1.15 (0.94–1.41) |
| Less than high school | 1.00 | 1.00 | 1.00 |
| High school or some college | 0.97 (0.91–1.04) | 0.98 (0.92–1.04) | 1.05 (0.60–1.84) |
| Four-year college or higher | 0.93 (0.86–0.99) ^c | 0.93 (0.86–0.99) ^b | 1.03 (0.59–1.80) |
| Non-Hispanic white | 1.28 (1.21–1.34) ^a | 1.27 (1.21–1.34) ^a | 1.62 (1.05–2.49) ^c |
| Place of birth ^d | | | |
| US native adopted | 1.00 | 1.00 | — |
| Internationally adopted | 0.98 (0.90–1.06) | — | — |
| Korea (reference) | — | 0.55 (0.47–0.64) ^a | 1.00 |
| Russia | — | 1.66 (1.35–2.04) ^a | 3.01 (2.25–4.02) ^a |
| China | — | 0.41 (0.23–0.72) ^b | 0.78 (0.43–1.44) |
| Colombia | — | 1.01 (0.73–1.39) | 1.87 (1.30–2.68) ^a |
| Romania | — | 1.97 (1.51–2.59) ^a | 3.54 (2.55–4.91) ^a |
| India | — | 1.36 (1.00–1.85) | 2.32 (1.64–3.30) ^a |
| Guatemala | — | 0.92 (0.62–1.37) | 1.80 (1.17–2.77) ^b |
| Paraguay | — | 1.03 (0.67–1.60) | 2.10 (1.31–3.37) ^b |
| Mexico | — | 1.26 (0.82–1.93) | 2.61 (1.62–4.19) ^a |
| Peru | — | 0.64 (0.37–1.11) | 1.27 (0.71–2.27) |
| Philippines | — | 1.41 (0.92–2.14) | 2.41 (1.53–3.79) ^a |
| Chile | — | 1.11 (0.68–1.83) | 2.06 (1.22–3.48) ^b |
| Brazil | — | 1.42 (0.90–2.26) | 2.71 (1.65–4.46) ^a |
| Honduras | — | 1.41 (0.85–2.33) | 2.58 (1.52–4.38) ^a |
| Vietnam | — | 0.76 (0.33–1.77) | 1.49 (0.62–3.55) |
| El Salvador | — | 1.51 (0.81–2.83) | 2.68 (1.40–5.15) ^b |
| Thailand | — | 1.26 (0.82–1.93) | 2.15 (1.01–4.59) ^c |
| Bulgaria | — | 2.13 (1.13–4.02) ^c | 3.68 (1.89–7.15) ^a |
| Japan | — | 0.26 (0.06–1.17) | 0.48 (0.11–2.19) |
| Poland | — | 1.86 (0.92–3.73) | 3.42 (1.66–7.04) ^a |
| Ukraine | — | 0.92 (0.37–2.27) | 1.61 (0.64–4.09) |
| Germany | — | 0.49 (0.13–1.89) | 0.98 (0.25–3.87) |
| Ecuador | — | 1.98 (0.84–4.63) | 3.60 (1.50–8.63) ^b |
| Bolivia | — | 0.90 (0.27–2.97) | 1.64 (0.49–5.51) |
| Lithuania | — | 1.16 (0.41–3.31) | 2.08 (0.71–6.06) |
| Haiti | — | 2.32 (0.99–5.44) | 4.14 (1.72–9.96) ^b |
| Taiwan | — | 1.14 (0.34–3.83) | 1.91 (0.56–6.53) |
| Central America | — | 0.99 (0.45–2.16) | 1.93 (0.86–4.32) |
| Caribbean | — | 1.22 (0.56–2.64) | 2.57 (1.15–5.73) ^c |
| Eastern Europe | — | 2.47 (1.32–4.62) ^b | 4.56 (2.37–8.81) ^a |
| Western Europe | — | 2.56 (1.18–5.54) ^c | 4.37 (1.96–9.74) ^a |
| Asia | — | 1.05 (0.47–2.34) | 1.73 (0.76–3.95) |
| USSR and former USSR | — | 1.47 (0.66–3.28) | 2.76 (1.20–6.34) ^c |
| Africa | — | 1.50 (0.68–3.30) | 3.13 (1.37–7.16) ^b |
| Other place of birth | — | 0.73 (0.35–1.49) | 1.38 (0.65–2.91) |

^a $P < .001$, ^b $P < .01$, ^c $P < .05$.

^d Categories do not overlap.

ratios of ≥ 3.0 were found for children from Russia, Bulgaria, Poland, and Africa. Children who were adopted from Haiti, Western Europe, and Eastern Europe had odds ratios of ≥ 4.0 compared with those who were adopted from Korea.

Because a small fraction of internationally adopted children (2.3% in our sample) lived in households with >1 disabled child, introducing the possibility of nonindependence in these observations, we reestimated our models including only 1 child with a disability from each of these households. The major findings were unchanged, although current age effects were reduced. These results are available on request.

DISCUSSION

Internationally adopted children, like those adopted domestically, have a wide variety of preadoption experiences—and join families with diverse characteristics—with important effects on their development. Overall, there was no difference in the rate of reported disabilities between domestically and internationally adopted children aged 5 to 15, although both had rates more than twice as high as the general population of children. Thus, international adoption by itself does not constitute a risk for any disability greater than domestic adoption; however, in unadjusted comparisons, internationally adopted children were significantly more likely to have sensory and physical disabilities but less likely to have mental disabilities than those adopted domestically.

We note that the comparison between domestic and international adoptee may mask the higher incidence of health problems among children who are adopted domestically through child welfare services relative to those who are adopted through private infant adoptions,¹⁷ which cannot be

distinguished in the Census data. Furthermore, Census disability data for children are based on proxy reports³⁴ and produce disability rates that differ from those obtained by professional evaluations²⁵; however, the 2000 data have been deemed adequate for use in needs assessments.³⁵ Finally, it is possible that some children who were reported as adopted were not legally adopted or were adopted within families or informally. We attempt to limit those cases by excluding internationally adopted children with a foreign-born parent.¹

Internationally adopted children come from many different countries, each with their own conditions and adoption history (and their own sources of internal variation). Our analysis showed that, in the presence of simple controls for gender, age at adoption, current age, and parental characteristics, the odds of disability relative to domestic adoptees range from one half or less (China, Korea) to more than twice as large (Romania, Bulgaria, Eastern Europe, and Western Europe).

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Future adoptions will take place under new conditions and programs, which frequently change. The composition of children who are adopted from China, for example, now includes many more children who are adopted with “special needs” designations (who may or may not have disabilities).³⁶ Nevertheless, we believe that this information is important for health, education, and social services professionals and for adoptive and prospective adoptive parents. Understanding reported disability rates may help policymakers assess the relative risks and challenges that these children and their families face and identify the resources necessary to address them.

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