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# Can the Children of Immigrant Mothers Have Levels of Health and Achievement as High as Those of Children of Mothers in the Host Population? Longitudinal Data from Australia

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## **Abstract**

The high levels of immigration currently experienced by many Western countries have seen the development and wellbeing of the children of immigrants become an important research issue. However, findings about the developmental trajectories and outcomes for children of immigrants are highly inconsistent. In addition, identifying the factors that predict these outcomes has been hampered by the widespread confounding of parents' immigration status with other predictors (e.g., mothers' education, and fluency in the language of the host country). Immigration to Australia offers a context in which the influence of some of these variables can be untangled. Most recent immigrants are highly educated and fluent in English, regardless of their region of origin. This research uses data from the Longitudinal Study of Australian Children to compare children of Australian-born mothers ( $n = 6,891$ ) with children of immigrant mothers born in other English-speaking countries ( $n = 1,234$ ), Continental Europe ( $n = 765$ ) and Asia ( $n = 428$ ) at 4, 6 and 8 years of age. At each age, children's physical health problems (rating of global health), psychosocial wellbeing (Strengths and Difficulties Questionnaire), proficiency in the English language (Adapted Peabody Picture Vocabulary Test-III) and cognitive skills (4 years: Who am I?; 6 and 8 years: matrix reasoning subscale, WISC-IV) were assessed. Children's outcomes, and the way these outcomes changed over time, were very similar regardless of their mothers' immigration status or, immigrant mothers' region of origin. In contrast, aspects of mothers' parenting, proficiency in English, level of schooling, and symptoms of psychological distress were associated with many child outcomes at all ages. This is an optimistic finding, since these predictors are amenable to change.

## **Introduction**

Recently, record numbers of regular (i.e. authorized) and irregular (i.e., unauthorized) immigrants have sought to increase their access to political freedom and social and economic opportunities by relocating to Western countries (e.g., Eurostat, 2015). As a result, children of immigrants constitute a significant and increasing percentage of the child population in many Western countries (e.g., Washbrook, Waldfogel, Bradbury, Corak, & Ghanghro, 2012). In many of these host countries, there is public concern about the perceived economic and social "burden" of immigration (e.g., Hammond, 2015). However, it remains unclear whether the children of immigrants fail to attain the health and educational outcomes of children of native-born parents, and what factors contribute to any such outcomes. This study seeks to clarify this issue.

Research findings concerning outcomes for children of immigrant are very inconsistent. It has been argued that children of immigrants might have poorer developmental outcomes than those of native-born mothers because their immigrant parents simulta-

neously move from an extended social support network, accumulated material resources, and a familiar cultural and physical environment to a context in which they are likely to encounter life stressors (e.g., search for new housing and employment), acculturation stress, a reduction in agency (especially if their qualifications are not recognized, or there is a delay in eligibility for citizenship) and discrimination. Research reporting that the children of immigrant parents have poorer outcomes in domains such as health and academic performance (e.g., Gagnon et al., 2013; Jonsson & Rudolphi, 2011) is consistent with this argument. Conversely, it has been argued that selection biases and other factors result in only the fittest members of a home country becoming immigrants, resulting in “the healthy immigrant phenomenon” (Kennedy, Kidd, McDonald & Bidle, 2014). Research reporting that children of immigrants show better physical health (e.g., Mendoza, 2009), mental health (e.g., Beiser, Hou, Hyman & Tousignant, 2002) and school performance (e.g., Georgiades, Boyle & Duku, 2007) than children of native-born parents is consistent with this argument. Still other studies report that outcomes for immigrant children are (e.g., Coll & Marks, 2012), or are not (e.g., Kao & Tienda, 1995) influenced by whether they were born in the home or host country, the domain of development under study (e.g., Sam, Vedder, Liebkind, Neto & Virta, 2008), their parents’ region of origin (e.g., Suárez-Orozco, Rhodes & Milburn, 2009), and/or their host country (e.g., Sabatier & Berry, 2008).

Attempts to clarify how parents’ immigration status is associated with developmental outcomes for children, and to identify the factors that contribute to these outcomes have been hampered by the widespread confounding of parents’ immigrant status with the disadvantage associated with low parental education and poverty (Antecol, Cobb-Clarke & Trejo, 2003; European Union, 2011; Sum, Kirsch & Yamamoto, 2004).

Australia provides a context in which there is less confounding between immigration and socio-economic disadvantage. Regardless of their region of origin, most recent immigrants to Australia are highly educated, fluent in English, and have incomes comparable with those of the native-born population (Department of Immigration and Border Protection, 2013; Antecol, Cobb-Clarke, & Trejo, 2003; Green, Kler, & Leeves, 2007). It is noteworthy that the findings of Australian research on the children of migrants often contrast with those of research conducted in the USA and Europe. For example, the most recent Programme for International Student Assessment found that the 15-year-old children of immigrants in the USA and all countries in Western Europe performed more poorly than children of native-born parents in mathematics, science and reading (Organisation for Economic Co-operation and Development (OECD, 2012). In contrast, children of immigrants to Australia outperformed children of native-born parents in all three subjects (Thomson, De Bortoli, & Buckley, 2013). However, little is known about whether this academic advantage is gained at the expense of other domains of development (Lichtman, 2011) or is limited to a specific measure or period in development, or

about the developmental trajectories that allow such an advantage.

This research had four aims: First, to clarify whether parents' immigration status influences their children's developmental outcomes by comparing Australian children of immigrants with children of native-born parents on diverse developmental domains (physical health, psychosocial wellbeing, English language development, and cognitive skills) at 4, 6 and 8 years of age. Second, to examine whether these outcomes differ depending on immigrant parents' region of origin (other-English-speaking country, continental Europe, Asia). Third, to examine whether parents' immigration status influences their children's pattern of development by comparing changes over time for children of immigrants and children of native-born parents. Fourth, to identify maternal characteristics that predict individual differences in children's developmental outcomes.

## **Method**

### **Participants**

The sample was drawn from the Longitudinal Study of Australian Children, which collects biennial data from two nationally representative cohorts (infant cohort: born March 2003-February 2004; kindergarten cohort: born March 1999–Feb 2000) (Soloff, Lawrence & Johnstone, 2005). The current sample was constructed by pooling participants from both cohorts when the children were 4 ( $n = 9,320$ ) and 6 years of age ( $n = 8,650$ ) and also examining data for children in the kindergarten cohort at 8 years of age ( $n = 3,957$ ). All children were born in Australia to “native-born” mothers ( $n = 6,891$ ), or to mothers born in another English-speaking country (especially United Kingdom, New Zealand, and Canada;  $n = 1,234$ ), continental Europe (especially, Italy, Netherlands and Greece;  $n = 767$ ) or Asia (especially India, China, and Viet Nam;  $n = 428$ ). Children born in the host country to immigrant parents are sometimes referred to as “second-generation” immigrants.

## **Measures**

### **Children's development**

Children's health problems were measured by parents' ratings of their child's physical health using a single 5-point scale (“excellent” to “poor”), such that higher scores indicated greater health problems.

Children's psychosocial wellbeing was measured using the prosocial behaviour and emotional problems subscales from the Strengths and Difficulties Questionnaire (Goodman, 1997). Both scales contain 5 items. The parent who was most familiar with the child rated how true each item was for the child over the past six months using a 3-point semantic differential scale (“not true” to “certainly true”). Example items are “[child is] considerate of other people's feelings” (prosocial behavior) and “[this child has] many worries, often seems worried” (emotional problems). The range of possible scores was 0-10, with higher scores on the prosocial behavior subscale and lower scores on the emo-

tional problems subscale indicating greater psychosocial wellbeing. Normative data for Australian samples is available (Mellor, 2005). Both subscales had satisfactory internal consistency (Cronbach alpha = .65-.68).

Children's receptive English language skills were measured using an adaptation of the Peabody Picture Vocabulary Test-Third Edition (PPVT-III, Dunn & Dunn, 1997). The adapted edition had simplified administration procedures and contained only the most relevant 40 items for each age group, as determined by a pilot test (Australian Council for Educational Research, 2000). Pearson product-moment correlations between the full and adapted PPVT-III scores are high (0.91-0.93) (Rothman, 2009). Scores were created using Rasch modeling to ensure that scores represented real changes in functioning (Australian Council for Educational Research, 2000). The test was administered to children on the same day that data were collected from their mothers. The trained interviewer said each stimulus word, after which the child was shown a card containing black and white line drawings. The child's task was to choose which picture best matched the word. Words on the test became progressively more difficult. The test had good internal consistency (Cronbach alpha = .76-.78).

Children's cognitive skills were measured by different age-appropriate measures. At 4 years, pre-literacy and pre-numeracy skills were assessed using the Who am I? test (de Lemos & Doig, 1999). This requires the child to write his/her name, copy shapes, and write letters and numbers. The test had very good internal consistency (Cronbach alpha = .89). At 6 and 8 years, non-verbal intelligence was assessed using the matrix reasoning subtest from the Wechsler Intelligence Scale for Children (WISC-IV) (Wechsler, 2003). This test presents the child with an incomplete set of diagrams and requires him/her to select the picture that completes the set from five possible alternatives. The test contains 35 items of increasing complexity. Both the Who am I? and matrix reasoning measures are suitable for children with limited English. Predictors

Within-group analyses focused on six predictor variables. These included two resources that contributed to mothers' agency (self-rated proficiency in English; years of schooling), three domains of mothers' parenting (warmth, consistency and parenting self-efficacy), and maternal symptoms of psychological distress. Proficiency in English and years of schooling were measured only at 4 years. All other predictors were measured at 4, 6 and 8 years.

Proficiency in English and years of schooling were each measured by maternal self-report using single-item measures. Mothers rated their proficiency in speaking English using a semantic differential scale ("not at all" to "very well"), with lower scores reflecting greater proficiency.

Maternal warmth, consistency and parenting self-efficacy were measured using the relevant 4- (self-efficacy), 5- (consistency) and 6-item (warmth) sub-scales from the Child Rearing Questionnaire (Paterson & Sanson, 1999). Example items are "How of-

ten do you express affection by hugging, kissing and holding this child?” (warmth), “If you tell this child he/she will get punished if he/she doesn’t stop doing something, but he/she keeps doing it, how often will you punish him/her?” (consistency) and “Do you feel that you are in control and on top of things when you are caring for this child?” (parenting self-efficacy). In all cases, responses were rated on a 5-point semantic differential scale (“never/almost never” to “always/almost always”). At least one item on each subscale was reverse scored (warmth: 1 item; consistency: 3 items; parenting self-efficacy: 2 items). Item scores were averaged, with higher scores indicating greater warmth, consistency or parenting self-efficacy. The scales had satisfactory to good internal consistency (Cronbach alpha = .70-.84).

Psychological distress was measured using the Kessler-6 (Kessler, Barker, Colpe, Epstein, Gfroerer, Hiripi, et al., 2003). This is a 6-item screening tool in which the frequency of symptoms during the past month is rated on a 5-point scale (“None of the time” to “All of the time”), with higher scores indicating greater symptom burden. An example item is, “How often did you feel so sad that nothing could cheer you up?” The cut point for clinically significant levels of distress is a score of 19. The scale has been used widely across cultural groups, including in the World Mental Health Survey (Kessler, Green, Gruber, Sampson, Bromet, Cuitan, et al., 2010). It has also been used extensively in Australia (e.g., Furukawa, Kessler, Slade, Andrews, 2003). It had good internal consistency (Cronbach alpha = 0.81–0.84).

## **Procedure**

All data were collected in children’s homes. Parent-reports were obtained through questionnaires completed by interview. When necessary, families were provided with bilingual researchers or allowed to request that a familiar interpreter be present during data collection.

## **Results**

Due to the very high power of all statistical analyses, it was possible that trivial findings could reach the criterion for statistical significance ( $p < .01$ ). Results that explained  $< 1\%$  of variance were not considered to be meaningful (Cohen, 1988). All MANOVAs controlled for age and sex differences between groups.

There was very little evidence that parents’ immigration status or their region of origin influenced their children’s developmental outcomes (Table 2). There were very small differences between the children of native-born mothers and those of immigrant mothers born in three different geographic regions at 4 and 8 years of age (Wilk’s Lambda: 4 years:  $F(15, 22162.2) = 31.1$ , partial  $\eta^2 = .019$ ; 8 years,  $F(15, 8047.4) = 9.2$ , partial  $\eta^2 = .015$ ). At 4 years of age this finding reflected differences that were very small (or not meaningful) in all child outcomes (health:  $F(3) = 20.5$ ; receptive English vocabulary:  $F(3) = 46.9$ , pre-literacy and pre-numeracy skills:  $F(3) = 54.4$ ; prosocial behaviour:  $F(3) = 4.0$ ; emotional problems:  $F(3) = 7.8$ ; all partial  $\eta^2 < .025$ ). At 8 years

of age, the difference reflected very small differences in health and non-verbal cognitive skills (health:  $F(3) = 21.2$ ; matrix reasoning:  $F(3) = 22.7$ ; both partial eta squared  $< .025$ ). There were no differences in children's outcomes at 6 years (Wilk's Lambda:  $F(15, 21245.7) = 1.1$ ).

**Table 1**

*Developmental Outcomes for Children of Native-Born and Immigrant Mothers at 4, 6 and 8 Years of Age*

| Child outcomes                       | Immigrants' region of origin |       |                  |       |                    |       |      |        |
|--------------------------------------|------------------------------|-------|------------------|-------|--------------------|-------|------|--------|
|                                      | Australian-born              |       | English-speaking |       | Continental Europe |       | Asia |        |
|                                      | M                            | (SD)  | M                | (SD)  | M                  | (SD)  | M    | (SD)   |
| 4 years                              |                              |       |                  |       |                    |       |      |        |
| Health problems                      | 1.6                          | (0.8) | 1.5              | (0.7) | 1.5                | (0.7) | 1.9  | (0.9)* |
| Psycho-social well-being             |                              |       |                  |       |                    |       |      |        |
| Prosocial behavior                   | 7.3                          | (2.3) | 7.2              | (2.3) | 7.4                | (2.1) | 6.9  | (2.4)* |
| Emotional problems                   | 1.2                          | (1.7) | 1.1              | (1.6) | 1.2                | (1.6) | 1.2  | (1.6)* |
| English language skills <sup>#</sup> | 64.7                         | (6.2) | 65.8             | (5.6) | 64.6               | (5.8) | 61.5 | (7.0)* |
| Cognitive skills <sup>^</sup>        | 64.3                         | (0.8) | 65.3             | (8.1) | 64.8               | (8.2) | 68.8 | (9.9)* |
| 6 years                              |                              |       |                  |       |                    |       |      |        |
| Health problems                      | 1.6                          | (0.8) | 1.6              | (0.7) | 1.8                | (0.8) | 1.6  | (0.7)  |
| Psycho-social well-being             |                              |       |                  |       |                    |       |      |        |
| Prosocial behaviour                  | 8.3                          | (1.7) | 8.2              | (1.7) | 8.0                | (2.1) | 8.4  | (1.7)  |
| Emotional problems                   | 1.7                          | (1.8) | 1.7              | (1.7) | 1.8                | (1.8) | 1.7  | (1.7)  |
| English language skills <sup>#</sup> | 74.1                         | (5.1) | 74.0             | (5.3) | 73.9               | (4.8) | 73.9 | (5.1)  |
| Cognitive skills <sup>^</sup>        | 13.6                         | (4.6) | 13.7             | (4.8) | 13.1               | (4.4) | 14.0 | (4.6)  |
| 8 years                              |                              |       |                  |       |                    |       |      |        |
| Health problems                      | 1.6                          | (1.0) | 1.5              | (0.9) | 1.6                | (0.8) | 1.8  | (1.3)* |
| Psycho-social well-being             |                              |       |                  |       |                    |       |      |        |
| Prosocial behavior                   | 8.3                          | (1.9) | 8.5              | (1.7) | 8.5                | (1.6) | 8.2  | (1.8)  |
| Emotional problems                   | 1.3                          | (1.9) | 1.2              | (1.8) | 1.2                | (1.7) | 0.7  | (1.2)  |
| English language skills <sup>#</sup> | 78.7                         | (4.9) | 79.5             | (4.8) | 78.5               | (4.6) | 78.3 | (5.3)  |
| Cognitive skills <sup>^</sup>        | 10.8                         | (3.1) | 10.6             | (3.3) | 10.4               | (3.1) | 11.0 | (3.1)  |

\* When age and gender differences between groups were controlled,  $p < .01$ ; partial eta<sup>2</sup>  $< .025$  in all cases

# Adapted Peabody Picture Vocabulary Scale (3rd ed.)

<sup>^</sup> At 4 years of age, cognitive skills were assessed by the Who am I? test; at 6 and 8 years of age, cognitive skills were assessed using the Matrix Reasoning subscale of the Wechsler Intelligence Scale for Children (4th ed.)

In addition, there was no evidence that children of native-born mothers and children of immigrant mothers born in three different geographic regions differed with respect to changes in outcome variables between 4, 6 and 8 years of age. Repeated measures ANOVAs, controlling for gender differences between groups and with Greenhouse-Geisser correction, failed to find an age x group interaction for any child outcome

(Table 2). There was a large age effect for proficiency in English (partial  $\eta^2 = .262$ ). However, the statistically significant age effect for prosocial skills was not meaningful (partial  $\eta^2 = .001$ ) and the age x gender interaction for proficiency in English was very small (partial  $\eta^2 = .010$ ).

**Table 2**

*Differences between Children of Native-Born and Immigrant Mothers from Four Geographic Regions in the Pattern of Developmental Change Between 4, 6 and 8 Years of Age: Summary of Results from Repeated Measures ANOVAs with Greenhouse-Geisser Correction*

| <b>Child outcomes</b>                          | <b>df</b> | <b>F</b> |
|--|-----------|----------|
| <b>Health problems</b>                         |           |          |
| Age  | 1.9       | 3.3      |
| Age x gender                                   | 1.9       | 2.7      |
| Age x group                                    | 5.7       | 1.7      |
| <b>Psycho-social well-being</b>                |           |          |
| <b>Prosocial behavior</b>                      |           |          |
| Age  | 1.9       | 2.3      |
| Age x gender                                   | 1.9       | 8.9*     |
| Age x group                                    | 5.7       | 2.6      |
| <b>Emotional problems</b>                      |           |          |
| Age  | 1.9       | 3.5      |
| Age x gender                                   | 1.9       | 3.4      |
| Age x group                                    | 5.8       | 0.8      |
| <b>English language skills<sup>#</sup></b>     |           |          |
| Age  | 1.9       | 1184.7*  |
| Age x gender                                   | 1.9       | 33.5*    |
| Age x group                                    | 5.7       | 1.0      |
| <b>Cognition: Matrix Reasoning<sup>^</sup></b> |           |          |
| Age  | 1         | 0.5      |
| Age x gender                                   | 1         | 2.5      |
| Age x group                                    | 3         | 1.3      |

<sup>^</sup> Data available only at 6 and 8 years of age

Before seeking to identify maternal characteristics that predicted individual differences in children's outcomes, group differences in maternal characteristics were examined. There were few meaningful differences between native-born mothers and immigrant mothers born in three different geographic regions (Table 3). Although there was a statistically significant difference between the groups at all ages (Wilk's Lambda: 4 years:  $F(18, 3009.9) = 8.2$ , partial  $\eta^2 = .044$ ; 6 years:  $F(18, 20557.5) = 139.1$ , partial  $\eta^2 = .103$ ; 8 years:  $F(18, 9173.1) = 99.6$ , partial  $\eta^2 = .155$ ), this mainly reflected differences in mothers' proficiency in English (4 years:  $F(3) = 31.4$ , partial  $\eta^2 = .081$ ; 6 years:  $F(3) = 914.3$ , partial  $\eta^2 = .274$ ; 8 years:  $F(3) = 634.5$ , partial  $\eta^2 = .369$ ). There was also a difference in one or more aspects of parenting at each age, but in every

case the effect size was very small or was not meaningful (4 years: warmth:  $F(3) = 7.3$ , partial  $\eta^2 = .020$ ; parenting self-efficacy:  $F(3) = 6.0$ , partial  $\eta^2 = .016$ ; 6 years: consistency,  $F(3) = 7.4$ , partial  $\eta^2 = .003$ ; 8 years: warmth:  $F(3) = 5.4$ , partial  $\eta^2 = .005$ ; consistency,  $F(3) = 33.4$ , partial  $\eta^2 = .030$ ). The statistically significant difference in mothers' psychological distress when the children were 8 years of age ( $F(3) = 5.0$ , partial  $\eta^2 = .005$ ) was also not meaningful.

**Table 3**

*Characteristics of Native-Born and Immigrant Mothers When Their Children Were 4, 6 and 8 Years of Age*

| Maternal characteristic             | Immigrants' region of origin |       |                  |       |                    |       |      |        |
|-------------------------------------|------------------------------|-------|------------------|-------|--------------------|-------|------|--------|
|                                     | Australian-born              |       | English-speaking |       | Continental Europe |       | Asia |        |
|                                     | M                            | (SD)  | M                | (SD)  | M                  | (SD)  | M    | (SD)   |
| 4 years                             |                              |       |                  |       |                    |       |      |        |
| Agency resources                    |                              |       |                  |       |                    |       |      |        |
| Proficiency in English <sup>^</sup> | 1.0                          | (0)   | 1.0              | (0)   | 1.4                | (0.7) | 1.6  | (0.8)* |
| Years of schooling                  | 11.4                         | (1.0) | 11.3             | (1.0) | 11.3               | (1.0) | 11.3 | (1.1)  |
| Parenting                           |                              |       |                  |       |                    |       |      |        |
| Warmth                              | 4.5                          | (0.5) | 4.5              | (0.5) | 4.5                | (0.4) | 4.3  | (0.5)* |
| Consistency                         | 4.2                          | (0.6) | 4.2              | (0.6) | 4.2                | (0.6) | 4.2  | (0.6)  |
| Parenting self-efficacy             | 3.9                          | (0.9) | 3.9              | (0.9) | 3.9                | (0.8) | 4.0  | (0.5)* |
| Psychological Distress              | 4.4                          | (0.6) | 4.4              | (0.5) | 4.4                | (0.6) | 4.3  | (0.6)  |
| 6 years                             |                              |       |                  |       |                    |       |      |        |
| Agency resources                    |                              |       |                  |       |                    |       |      |        |
| Proficiency in English <sup>^</sup> | 1.0                          | (0)   | 1.0              | (1.0) | 1.4                | (0.7) | 1.6  | (0.8)* |
| Years of schooling <sup>+</sup>     | 11.4                         | (1.0) | 11.3             | (1.0) | 11.3               | (1.0) | 11.3 | (1.1)  |
| Parenting                           |                              |       |                  |       |                    |       |      |        |
| Warmth                              | 4.5                          | (0.5) | 4.5              | (0.5) | 4.5                | (0.5) | 4.5  | (0.5)  |
| Consistency                         | 4.2                          | (0.6) | 4.2              | (0.6) | 4.2                | (0.6) | 4.2  | (0.6)* |
| Parenting self-efficacy             | 4.5                          | (0.6) | 4.4              | (0.6) | 4.4                | (0.6) | 4.5  | (0.5)  |
| Psychological Distress              | 4.5                          | (0.6) | 4.4              | (0.6) | 4.4                | (0.6) | 4.5  | (0.5)  |
| 8 years                             |                              |       |                  |       |                    |       |      |        |
| Agency resources                    |                              |       |                  |       |                    |       |      |        |
| Proficiency in English <sup>^</sup> | 1.0                          | (0)   | 1.0              | (0)   | 1.1                | (0.4) | 1.8  | (0.9)* |
| Years of schooling <sup>+</sup>     | 11.3                         | (1.0) | 11.3             | (0.9) | 11.3               | (1.0) | 11.4 | (1.3)  |
| Parenting                           |                              |       |                  |       |                    |       |      |        |
| Warmth                              | 4.4                          | (0.5) | 4.4              | (0.5) | 4.4                | (0.5) | 4.3  | (0.6)* |
| Consistency                         | 4.2                          | (0.6) | 4.2              | (0.6) | 4.2                | (0.6) | 3.9  | (0.6)* |
| Parenting self-efficacy             | 4.1                          | (0.7) | 4.2              | (0.6) | 4.1                | (0.6) | 4.0  | (0.6)  |
| Psychological Distress              | 4.5                          | (0.6) | 4.5              | (0.5) | 4.5                | (0.5) | 4.4  | (0.6)* |

<sup>^</sup> Lower scores indicate higher self-rated proficiency

\*  $p < .01$ ; partial  $\eta^2 \leq .02$

Given these findings, it is not surprising that multiple regression analyses found that mothers' migration status (native-born/immigrant) made independent contributions to only two child outcomes. Both effects related to cognitive skills, and indicated that having an immigrant mother predicted higher levels of skill (Table 4).

**Table 4**

*Maternal Characteristics that Made an Independent Contribution to the Prediction of Child Outcomes at 4, 6 and 8 Years of Age*

| Maternal characteristic             | Child outcome   |      |                   |       |                              |       |                    |      |                    |       |
|-------------------------------------|-----------------|------|-------------------|-------|------------------------------|-------|--------------------|------|--------------------|-------|
|                                     | Health problems |      | Cognitive skills* |       | Receptive English vocabulary |       | Prosocial behavior |      | Emotional problems |       |
|                                     | B               | t    | B                 | t     | B                            | t     | B                  | t    | B                  | t     |
| 4 years                             |                 |      |                   |       |                              |       |                    |      |                    |       |
| Migrant status                      | -               | -    | 0.37              | 4.1   | -                            | -     | -                  | -    | -                  | -     |
| Agency resources                    |                 |      |                   |       |                              |       |                    |      |                    |       |
| Proficiency in English <sup>^</sup> | 0.19            | 5.2  | 1.87              | 4.6   | -3.13                        | -10.4 | -                  | -    | 0.26               | 3.4   |
| Years of schooling                  | 0.03            | 2.8  | 1.13              | -11.4 | -0.85                        | -11.5 | -                  | -    | 0.08               | 4.1   |
| Parenting                           |                 |      |                   |       |                              |       |                    |      |                    |       |
| Warmth                              | -0.11           | -5.5 | -                 | -     | -                            | -     | 0.26               | 4.2  | -0.15              | -3.6  |
| Consistency                         | -0.07           | -5.2 | 0.70              | 4.5   | 1.27                         | 11.0  | 0.30               | 6.7  | -0.23              | -7.9  |
| Parenting self-efficacy             | -0.07           | -6.9 | 0.41              | 3.5   | -                            | -     | 0.16               | 4.9  | -                  | -     |
| Psychological Distress              | -0.09           | -5.7 | -                 | -     | 0.68                         | 5.6   | 0.17               | 3.5  | -0.60              | -19.7 |
| 6 years                             |                 |      |                   |       |                              |       |                    |      |                    |       |
| Migrant status                      | -               | -    | -                 | -     | -                            | -     | -                  | -    | -                  | -     |
| Agency resources                    |                 |      |                   |       |                              |       |                    |      |                    |       |
| Proficiency in English <sup>^</sup> | -               | -    | -                 | -     | -                            | -     | -                  | -    | 0.53               | 3.1   |
| Years of schooling                  | 0.04            | 4.0  | -0.43             | -11.7 | -0.79                        | -12.8 | -                  | -    | -                  | -     |
| Parenting                           |                 |      |                   |       |                              |       |                    |      |                    |       |
| Warmth                              | -0.08           | -4.3 | -                 | -     | -                            | -     | -                  | -    | -                  | -     |
| Consistency                         | -0.13           | -8.8 | 0.29              | 4.8   | 1.05                         | 10.2  | 0.37               | 6.4  | -0.07              | -3.0  |
| Parenting self-efficacy             | -0.11           | -8.8 | -                 | -     | -                            | -     | 0.15               | 4.3  | -                  | -     |
| 8 years                             |                 |      |                   |       |                              |       |                    |      |                    |       |
| Migrant status                      | -               | -    | 0.37              | 4.1   | -                            | -     | -                  | -    | -                  | -     |
| Agency resources                    |                 |      |                   |       |                              |       |                    |      |                    |       |
| Proficiency in English <sup>^</sup> | 0.26            | 5.5  | -                 | -     | -1.22                        | -3.9  | -                  | -    | -                  | -     |
| Years of schooling <sup>+</sup>     | 0.07            | 5.3  | -0.49             | -9.0  | -0.81                        | -9.4  | -0.18              | -4.1 | 0.10               | 3.2   |
| Parenting                           |                 |      |                   |       |                              |       |                    |      |                    |       |
| Warmth                              | -0.06           | -2.7 | -0.29             | -2.9  | -0.48                        | -3.0  | -                  | -    | -                  | -     |
| Consistency                         | -0.08           | -3.9 | 0.35              | 3.8   | 0.58                         | 4.0   | 0.28               | 3.7  | -0.22              | -4.3  |
| Parenting self-efficacy             | -0.09           | -5.8 | -                 | -     | -                            | -     | 0.19               | 3.6  | -0.12              | -3.4  |
| Psychological Distress              | -0.08           | -3.9 | -                 | -     | -                            | -     | -                  | -    | -0.70              | -13.6 |

\* 4 years: *Who am I?* test of preliteracy and prenumeracy skills; 6 and 8 years: Matrix Reasoning

<sup>^</sup> Lower scores indicate higher self-rated proficiency

<sup>+</sup> Lower scores indicate higher years of schooling

In contrast, the consistency of mothers' parenting predicted all child outcomes at all ages, mothers' years of schooling predicted most child outcomes at all ages, and other aspects of parenting (warmth and parenting self-efficacy) and mothers' level of psychological distress affected many child outcomes. The size of most of these effects was very

small. Mothers' proficiency in English predicted children's health problems and English language skills at all ages, and almost all other child outcomes at 4 years.

## Discussion

In a context in which most immigrant mothers have similar years of schooling and similar levels of proficiency in the host language to native-born mothers, both groups of children show similar levels of physical health, psychosocial wellbeing, proficiency in the host language, and cognitive skills, and similar patterns of change in these outcomes between 4, 6 and 8 years of age. Within-group variability in outcomes and patterns of change were greater than between-group differences. That is, although immigration entails resource depletion and many stressful experiences, in the current sample, mothers' immigration status per se did not appear to disadvantage their children. When other variables were accounted for, migration status made few meaningful contributions to child outcomes.

In contrast, the quality of mothers' parenting and their mental health were related to a number of outcomes at all ages. This is an optimistic finding, because both are amenable to evidence-based interventions (e.g., Ceballos & Bratton, 2010; Griner & Smith, 2006; Renzaho & Vignjevic, 2011).

However, the current findings need to be interpreted in the light of the four main limitations of the study. First, because measures for predictor variables were very brief they may not have allowed adequate discrimination between developmentally significant differences in children's experiences. Second, the size of immigrant and native-born groups, and the size of immigrant groups from different regions, were very uneven. Third, the validity of the measures of maternal characteristics and child outcomes for the very diverse range of cultural groups represented in each of the immigrant groups is unknown. Finally, because a correlational research design was used, no causal inferences can be drawn from the findings. In particular, the absence of a developmental disadvantage for the children of immigrants cannot be attributed to Australia's highly controlled and selective pattern of immigration. However, it is noteworthy that similar findings have been reported in Canada. Worswick (2004) found no evidence that the children of immigrant mothers were disadvantaged in either proficiency in the host language or academic skills in the middle years of primary school. Immigration to Canada and Australia share some of the same distinctive features. This limitation is inevitable in research on outcomes following immigration, since neither immigrant status nor region of origin can be experimentally manipulated.

Despite these limitations this research provides important confirmation that previously documented disadvantages experienced by the children of immigrants are not inevitable. It also found no evidence that these children's positive outcomes in one domain of development are gained at the expense of development in other domains.

## Author note

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