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# Social and emotional outcomes of Australian children from Indigenous and culturally and linguistically diverse backgrounds

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The critical importance of early childhood mental health as a foundation for later health, social and educational outcomes is well recognised.<sup>1,2</sup> Longitudinal studies have identified that young children experiencing poor mental health are much more likely to experience mental health difficulties as adults.<sup>3</sup> Current projections estimate that depression will become the second most substantial cause of the global disease burden within the next 20 years.<sup>4</sup> Mental illness is also considered a key factor in understanding the impact of inequalities on health and other outcomes.<sup>5</sup> Early detection and intervention for mental health difficulties for young children is key to achieving significant population health gains and reducing health inequalities throughout the lifespan.<sup>6,7</sup>

The mental health of children under five years remains under-researched, with most population surveys of child and adolescent health focusing on school-aged children and adolescents.<sup>8</sup> Australian data indicate that childhood mental-health problems are highly prevalent, experienced by one in seven children aged 4-17 years, increasing to one in five for those from single-parent or low-income families.<sup>9</sup> There is an ongoing need for more comprehensive population data

regarding the mental health and wellbeing of young Australian children from Indigenous<sup>10,11</sup> and culturally and linguistically diverse (CALD) backgrounds, particularly those from immigrant and refugee backgrounds.<sup>12,13</sup> This is important given the high cultural and linguistic diversity of Australia's children, one-third of whom are either immigrants themselves or born in Australia to at least one immigrant parent,<sup>12</sup> and a further 4.5% of whom are Indigenous.<sup>14</sup> Between 2006 and 2010, 17.5% of permanent additions to the Australian population aged 0-17 years were from South-East Asia, 17.4% from Southern Asia, 12.0% from Southern and East Africa, 12.0% from North-East Asia and 5.2% from the Middle East.<sup>15</sup>

Throughout the world the prevalence of mental health difficulties is inequitably distributed among those of minority populations, including migrants and indigenous peoples, with these groups experiencing higher rates of mental illness than the rest of the population.<sup>16</sup> There is also substantial evidence from other developed nations that young children from indigenous and CALD backgrounds experience poorer health and wellbeing outcomes compared to their peers.<sup>17</sup> However, separating out the effects of ethnicity, culture and immigrant

## Abstract

**Objectives:** 1) profile the living environments and 2) examine the social and emotional outcomes of Australian children from Indigenous and cultural and linguistically diverse (CALD) backgrounds at school entry.

**Method:** Secondary analysis of cross-sectional data collected in Wave 1 of the Longitudinal Study of Australian Children (n=4,735). Child mental-health outcomes were measured using parent report of the Strengths and Difficulties Questionnaire (SDQ).

**Results:** Significant differences in family and neighbourhood characteristics, including parental income, maternal education, maternal parenting quality and neighbourhood safety, were found in children of Indigenous and CALD backgrounds compared to the reference group of Australian-born, English-speaking children. After controlling for family and neighbourhood characteristics, significant differences in parent-reported SDQ total difficulties were found for Indigenous children. Significant differences in emotional difficulties and peer problems subscales were found for children with overseas-born mothers regardless of English proficiency.

**Conclusions:** Children from Indigenous and CALD backgrounds experience poorer mental health outcomes at school entry than their Australian-born English-speaking peers. They are also more likely to be exposed to risk factors for poor child mental-health outcomes within their family and neighbourhood environments.

**Key words:** children, mental health, Indigenous, immigrant, Australia

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status on children's outcomes is extremely complex.<sup>18</sup> Given these inter-relationships are likely to be influenced by contextual factors within the host country, these international research findings are likely to have only limited transferability to Australian children. Building such knowledge is critical to inform policy and decision making across health, education and social contexts and in order to address health inequalities experienced by these at risk populations.

The limited Australian data available for children from CALD backgrounds suggest that those in families whose country of origin is English-speaking experience better health outcomes than those of other Australian children and that, in general, children in families from non-English speaking countries fare similarly or only slightly poorer.<sup>12</sup> Recent data from the Australian Early Development Index (AEDI) indicate children who are proficient in English and speak another language at home are less likely to be developmentally vulnerable compared to all other Australian children.<sup>18</sup> However, this classification of ethnicity based solely on language<sup>18</sup> creates highly heterogeneous groups of children, which are likely to include a diverse range of countries of origin and migration experiences. It is also thought that there are particular groups of children who experience substantial disadvantage – including racism, discrimination, identity issues, dislocation, trauma and poverty – related to their CALD background, particularly those arriving in Australia as refugees or humanitarian entrants.<sup>19,20</sup> Mental health data for these children are particularly limited<sup>21</sup> and the most recent population-based survey of child and adolescent mental health in Australia itself acknowledges that it provides limited data for those from non-English speaking families.<sup>9</sup> Several studies in Australia report that children from immigrant backgrounds experience similar or lower levels of mental health difficulties than other Australian children.<sup>22,23</sup> However, one also found low levels of parent-child concordance on reporting of symptoms of child mental distress, with Vietnamese children much more likely to report symptoms than their parents, at least in part suggested to be related to cultural understandings of mental health and illness.<sup>22</sup> More research is needed to examine mental health and wellbeing outcomes for Australian children across a range of cultural groups<sup>13</sup> as well as risk and protective factors influencing their outcomes.<sup>21</sup> A lack of consensus regarding the best ways of classifying participant cultural and linguistic background adds further complexity to these data limitations.<sup>24</sup> Studies under way with young children from refugee backgrounds<sup>25,26</sup> will provide important data about their outcomes in the future.

Poor mental health outcomes for Australian Indigenous children compared to the rest of the population have also been reported.<sup>10</sup> The 2000-01 Western Australian Aboriginal Child Health Survey (WAACHS) found 24% of Aboriginal children aged 4-17 years were at significant risk of social and emotional difficulties compared to 15% of their non-Aboriginal peers. Risk and protective factors for social and emotional difficulties identified included life stress events, quality of parenting, family functioning, carer health, child health and residential mobility.<sup>10</sup> The AEDI found Indigenous children were more likely to be developmentally vulnerable or at risk than

non-Indigenous children on the social competence and emotional maturity domains.<sup>18</sup> Although the representativeness of this sample of Indigenous children is not yet reported, the AEDI provides data for an estimated 92.7% of all Australian five-year-old children and has high potential to be representative.<sup>18</sup> The Longitudinal Study of Indigenous Children (LSIC) will also build important knowledge in this area.<sup>27</sup> Thus, there is an ongoing need for data regarding risk and protective factors for mental health and wellbeing outcomes across a range of social and geographical contexts for Australian Indigenous children.<sup>10,11</sup>

In this study, a large, nationally-representative cohort of Australian preschool-aged children enabled us to: 1) profile the living environments and 2) examine the social and emotional outcomes of Australian children from Indigenous and CALD backgrounds at school entry.

## Method

This paper uses data from the first wave of *Growing up in Australia: the Longitudinal Study of Australian Children (LSAC)*, collected in 2004.<sup>28</sup> LSAC is an ongoing longitudinal study, which aims to examine the impact of Australia's unique social, economic and cultural environment on children growing up in today's world. The essential focus of LSAC is on the early years of children's lives, and therefore the child is the primary sampling unit of interest.

## Sampling

Children born between March 1999 and February 2000 were eligible for participation in the 4-5 year cohort of the study. The sampling frame for LSAC was created using the Health Insurance Commission's (HIC) Medicare database, a comprehensive database of Australia's population. Using the database, a stratified sample of postcodes was generated, a sample of children selected, and their families invited to participate in the study. The final sample, comprising 54% of these families, was broadly representative of Australian children.<sup>28</sup> It has been noted that children from remote Indigenous communities are likely to be excluded from the sample frame.<sup>29</sup> However, comparison of LSAC and the 2006 Australian Population Census showed they are broadly very similar in terms of representation of children aged 4-5 years by key CALD characteristics.<sup>30</sup>

## Measures

LSAC includes a diverse range of measures related to: household composition; housing conditions; finances; parent education, employment, health and wellbeing; parents' relationship history; parenting practices; child health, wellbeing and development; social support and social capital.<sup>31</sup> Key measures used for analyses in the present paper are described below.

## Indigenous and CALD background

Primary carers reported Indigenous status, country of birth, and main language spoken at home for both children and mothers. In

addition, English language proficiency was reported by primary carers for all mothers. These data were used to create the following classifications: Australian born, English main language; Australian born, other main language; Indigenous; overseas born, English main language; overseas born, other main language, good English proficiency; overseas born, other main language, poor English proficiency. This study examined children's outcomes by mother's CALD status. While this may not fully denote the cultural and ethnic experiences of children, it provides a useful summary measure of the family environment within which children are being raised. This classification by mother's background only is consistent with other Australian analysis of outcomes for migrant children.<sup>23</sup> More than half the mothers with poor English language proficiency were interviewed with an interpreter.

### **Outcome: Child mental health**

Child mental health was evaluated with items from the Strengths and Difficulties Questionnaire (SDQ).<sup>32</sup> This is a 25-item questionnaire designed to assess the behaviour and emotions of 3- to 16-year-olds across five separate five-item subscales assessing emotional problems, conduct problems, hyperactivity, peer relationship problems and prosocial skills. It is particularly useful for large population studies as it is short in length, has strong psychometric properties and represents both strengths and difficulties of child mental health.<sup>32</sup> A modified SDQ used in the WAACHS has good internal validity and reliability, and is appropriate for Aboriginal children.<sup>33</sup> Information is limited about the reliability, validity or acceptability of the standard SDQ for Aboriginal children, although content acceptability has been shown for Aboriginal people in the Sydney region.<sup>34</sup> Psychometric properties of the SDQ for Australian children from CALD backgrounds are not yet available. While the SDQ can be completed by parents and teachers, this paper utilised parent-reported SDQ scores, given that most children in LSAC were aged four years and not yet at school. Primary carers respond on the basis of children's behaviour over the previous six months or the current preschool year with a three-point Likert scale response format of 'not true,' 'somewhat true' or 'certainly true.' High scores on the SDQ total difficulties scale and subscales of emotional symptoms, conduct problems, hyperactivity and peer problems indicate greater difficulties.

### **Other explanatory variables: child, family and neighbourhood characteristics**

To ascertain whether children from Indigenous and CALD backgrounds were disproportionately exposed to factors commonly linked to poorer mental health outcomes, a number of relevant variables were explored. Specifically, poorer outcomes were expected for boys (rather than girls), for children with lower parental income, lower maternal age and education, less supportive parenting styles and less advantaged neighbourhoods. These measures were defined as described below.

*Low income:* Consistent with the approach used elsewhere<sup>35</sup> families were considered 'low income' if their equalised<sup>36</sup> total

parental income was in the bottom 15% of the sample's income distribution. An indicator was included in the models to flag missing income data to retain data for these families in the analysis.

*Maternal age:* Maternal age was classified into 'less than 30 years of age', and '30 years or older'. This corresponds to the average maternal age of 30 years and three months at the time of her child's birth in this sample and the median age in the general population in 2000 (29.8 years).<sup>37</sup>

*Maternal education:* Maternal education was dichotomised into i) completed less than year 12; and ii) completed at least year 12.

*Maternal mental health:* Mother's psychological distress was measured via the Kessler K6 scale.<sup>38</sup> Those in the clinical range (here labelled 'low mental health') were compared to the remainder.

*Maternal warmth:* Mothers completed six questions about how often they displayed warm, affectionate behaviour towards their child. The scores on these 5-point responses were summed, and those falling in the lowest quintile were classified as indicating lower warmth.

*Angry parenting:* Four items were used to assess angry parenting, also on five-point scales. As above, these scores were summed, and those in the upper quintile of the summed scores were classified as indicating higher hostility.

*Parental consistency:* Five items assessed parental consistency each on a five-point scale. Those in the lowest quintile of the summed scores were classified as showing lower consistency.

*Socioeconomic Index for Areas (SEIFA):* The ABS Socio Economic Index for Areas provides a summary measure of neighbourhood advantage or disadvantage using information collected in the 2001 Census. The LSAC distribution on the SEIFA index was divided into quintiles, and position in the lowest quintile was classified as reflecting high levels of neighbourhood disadvantage.

*Neighbourhood safety:* The 'neighbourhood safe' item is one item of a list of neighbourhood measures derived as 'yes' if the child's primary carer agreed or strongly agreed that their neighbourhood was safe, as opposed to disagree, strongly disagree or don't know. The second measure is based on the question 'how do you feel about your neighbourhood as a place to bring up children?' The item 'neighbourhood good for raising children' dichotomises responses into 'very good' or 'good' versus 'fair', 'poor' or 'very poor'.

### **Approach to analysis**

All analysis was conducted on data weighted to account for variations in response rate.<sup>39</sup> Analysis was conducted using Stata MP/11.0. As this paper focuses on the relationship between maternal characteristics and children's outcomes, children were excluded from analysis if their mother was not living in the family (n=84). Another 164 were excluded due to insufficient information for classification of the mother's CALD status. This left a final sample of 4,735.

First, by way of background, the association between children's Indigenous and CALD status and mothers' Indigenous and CALD status is examined (see Table 1). Then, in Table 2, the distributions of

the explanatory factors described above are compared across CALD groups. As the majority of children had Australian-born, English-speaking mothers, this group was established as the reference group, and the table indicates if the distribution in other CALD groups differs to that of this group, based on  $\chi^2$  test results.

Multiple linear regression was then used to explore variation in each of the child mental-health outcomes by mothers' Indigenous and CALD groups, after controlling for other explanatory variables. Each child mental-health outcome measure was analysed separately using ordinary least squares with variables entered in blocks. In the first block maternal Indigenous and CALD status and sex of child were entered, in the next block all other explanatory variables were entered. Only tested variables  $p < 0.05$  were included in the final model. Mental health outcomes for each CALD group were compared to the reference group and between each of the other CALD groups. Variance inflation factors of less than three for variables across all models indicated that multicollinearity was not present and that the models were not over parametrised.

## Results

As shown in Table 1, most of the children in the sample (84%) were Australian-born and spoke English as their main language at home. The next largest group were the Australian-born children who mainly speak a language other than English (8%). Only 4% of children aged 4-5 years identified as Indigenous (Aboriginal or Torres Strait Islander) and just 3% of children were overseas-born. Like the 4-5 year old children, most mothers were Australian-born and spoke English as their main language (71%). Not surprisingly, a higher proportion of mothers than children were overseas-born (24% compared to 3%) but when mothers were overseas-born with a main language other than English, Australian-born children had a relatively high likelihood (64%) of also mainly speaking a language other than English.

As shown in Table 2, significant differences in a number of family and neighbourhood characteristics were found between those from Indigenous and CALD backgrounds compared to the reference group of children with Australian-born English-speaking mothers. Compared to the reference group, both those children with an Indigenous mother and those children with an overseas-born mother with poor English proficiency were more likely to have low parental income, a mother with incomplete secondary education, a mother with low consistent parenting, and less likely to live in neighbourhoods rated as safe or as good for raising children. Children with an overseas-born mother with poor English proficiency were also more likely have a mother with low warm parenting and high hostile parenting.

Significant differences in mean SDQ-total difficulties were found for children with an Indigenous mother and for children with an overseas-born mother with poor English proficiency compared to the reference group in the basic model. In the full multivariable model controlling for family and neighbourhood characteristics these differences remained significant only for children with an Indigenous mother (Table 3).

Significant differences in child mental-health outcomes were also apparent for all of the SDQ-subcales for children with Indigenous mothers and were most pronounced for emotional difficulties and peer problems subscales for those with an overseas-born poor English-speaking mother. Children with overseas-born mothers with good English-language skills also fared poorer on the emotional difficulties and peer problem subscales compared to the reference group. These differences in emotional difficulties and peer problems remained significant after controlling for family and neighbourhood characteristics for both groups of children with overseas-born mothers, irrespective of level of English proficiency (Table 3). Both groups of children with overseas-born mothers were less likely to experience conduct problems in the final model. In the multivariable model significant associations were identified between family and

**Table 1: Cultural and linguistic backgrounds of mothers and their 4-5 year old children.**

	Maternal characteristics						Total
	Australian born main language English	Australian born other main language	Indigenous	Overseas-born, English main language	Overseas-born, other main language, good English	Overseas-born, other main language poor English	
Total	71%	2%	3%	12%	9%	3%	100.0
Child characteristics							
Aust-born main language English	98%	34%	3%	87%	21%	6%	84%
Aust-born other-main language	0%	63%	0%	1%	64%	78%	8%
Indigenous	1%	1%	97%	1%	0%	0%	4%
Overseas-born main language English	1%	1%	0%	11%	3%	0%	2%
Overseas-born other-main language	0%	1%	0%	0%	13%	16%	1%
Total	100%	100%	100%	100%	100%	100%	100%
Sample size	3,396	91	129	388	116	129	4,735

neighbourhood characteristics and SDQ-total difficulties, although relationships varied across the different subscales (see Table 3).

## Discussion

This study provides data not previously available regarding the mental health outcomes of young Australian children from Indigenous and CALD backgrounds. It also describes factors within the family and neighbourhood contexts of these children and identifies potential risk and protective factors influencing their mental health outcomes.

Results of this study show that both children of mothers who are Indigenous and children of mothers who are overseas-born with poor English proficiency were more likely to have higher levels of total mental health difficulties compared to children with Australian-born English-speaking mothers. These differences remained for those with Indigenous mothers after controlling for family and neighbourhood characteristics but not for those from overseas-born mothers with poor English proficiency. This suggests that poorer outcomes for the latter group are explained in part by the family and neighbourhood characteristics of these children. The significant associations remaining for children of Indigenous mothers after accounting for these variables suggests that other risk and protective factors within their contexts are contributing to their poorer outcomes. Such factors identified elsewhere include extended family and kinship networks, cultural identity, and racism.<sup>10,34,40</sup>

After adjusting for family and neighbourhood characteristics significant differences in child mental-health outcomes were also apparent for all of the SDQ-subscales for children with Indigenous mothers and were most marked for emotional difficulties and peer problems subscales for those with an overseas-born mother regardless of level of English proficiency. Both groups of children with overseas-born mothers were also less likely to experience conduct problems in the adjusted models.

These findings for Indigenous children are consistent with those reported previously,<sup>10,18</sup> although it does so in the context of children from other CALD backgrounds, allowing comparison between groups as well as with Australian-born English-speaking children. The high levels of mental-health difficulties experienced by young children of overseas-born mothers with poor English proficiency, apparent on specific subscales even after controlling for family and neighbourhood characteristics, compared to their Australian-born English-speaking peers, contrasts with other studies that have found similar or fewer mental-health difficulties among migrant children in Australia.<sup>22,23</sup> These different findings may be influenced by classification of CALD groups within the individual studies as, while one study considered geographical region of origin and length of time in Australia, it did not consider maternal English proficiency as a variable.<sup>23</sup> Another study was solely with Vietnamese children aged 9-17 years and so findings may not be transferable to other migrant populations.<sup>22</sup>

**Table 2: Child, family and community characteristics by the mother's CALD status.**

Main language	Australian born			Overseas born			Total
	English	Other	Indigenous	English	Other, good English	Other, poor English	
Child characteristics							
Males	52%	57%	47%	51%	54%	43%	52%
Family characteristics							
Mother aged <30 years	18%	14%#	41%*	10%*	14%	14%	17%
Low parental income	14%	7%#	39%*	12%	24%*	35%*	15%
Mother incomplete secondary education only	28%	13%#*	49%*	17%*	15%*	52%*	26%
Maternal parenting style							
Low warm parenting	21%	19%#	20%	20%	26%	35%*	21%
High hostile parenting	12%	10%#	20%*	12%	21%*	24%*	13%
Low consistent parenting	20%	20%	40%*	20%	40%*	41%*	23%
Low maternal mental health	3%	4%#	6%#	2%#	4%#	3%#	3%
Neighbourhood characteristics							
Safe	92%	86%	79%*	91%	90%	83%*	91%
Good for raising child	74%	68%	48%*	74%	54%*	43%*	70%
Low SEIFA	25%	27%#	48%*	15%*	26%	41%*	25%
n	3,396	91	129	388	116	129	4,735

# estimates with relative standard error > 25%

\* Significant difference at  $p < 0.05$  level compared to base category (Australian-born main language English)

Findings of this study also suggest that children with Indigenous mothers and children with overseas-born mothers with poor English proficiency are disproportionately exposed to family and neighbourhood-level risk factors for poor child mental-health outcomes. Moreover, the finding that these family and neighbourhood-level risk factors were significantly associated

with child mental-health difficulties in the multivariable model suggests these factors are important in understanding outcomes for children of diverse cultural backgrounds. Specifically, these factors include indicators of socioeconomic disadvantage such as low maternal education, low parental income and living in an unsafe neighbourhood, all of which are commonly recognised as associated

**Table 3: Child mental health outcomes, OLS coefficients (& 95% confidence intervals).**

	Total difficulties		Emotional difficulties		Conduct problems		Hyperactivity		Peer problems	
	basic 1a	full 1b	basic 2a	full 2b	basic 3a	full 3b	basic 4a	full	basic	full
<i>Mother's CALD status</i>										
<i>Australian-born</i>										
Other main language	0.4	0.7	0.5*	0.5*	-0.1	0.0	-0.2	-0.1	0.2	0.3
	[-0.7,1.6]	[-0.4,1.8]	[0.1,0.9]	[0.1,1.0]	[-0.5,0.3]	[-0.4,0.4]	[-0.7,0.3]	[-0.5,0.4]	[-0.1,0.5]	[-0.0,0.6]
Indigenous	3.3***	1.3**	0.7***	0.4	0.9***	0.2	1.1***	0.5*	0.6***	0.2
	[2.5,4.2]	[0.5,2.2]	[0.3,1.1]	[-0.0,0.8]	[0.6,1.2]	[-0.2,0.6]	[0.7,1.5]	[0.1,1.0]	[0.3,0.9]	[-0.1,0.5]
<i>Overseas-born</i>										
Main language English	-0.5*	-0.2	-0.2*	-0.1	-0.2	-0.1	-0.1	0.0	-0.1	0.0
	[-1.0,-0.1]	[-0.6,0.3]	[-0.3,-0.0]	[-0.3,0.0]	[-0.3,0.0]	[-0.2,0.1]	[-0.3,0.1]	[-0.2,0.2]	[-0.3,0.0]	[-0.2,0.1]
Other main language, good English proficiency	1.2***	0.4	0.5***	0.4***	0.0	-0.3**	0.0	-0.1	0.6***	0.5***
	[0.6,1.8]	[-0.1,0.9]	[0.3,0.7]	[0.2,0.6]	[-0.2,0.2]	[-0.5,-0.1]	[-0.2,0.3]	[-0.4,0.1]	[0.4,0.8]	[0.3,0.7]
Other main language, poor English proficiency	2.2***	0.4	0.8***	0.5*	0.1	-0.5*	0.5*	-0.1	0.9***	0.5**
	[1.2,3.2]	[-0.7,1.5]	[0.4,1.1]	[0.1,0.9]	[-0.3,0.5]	[-0.9,-0.0]	[0.0,0.9]	[-0.6,0.4]	[0.6,1.2]	[0.2,0.8]
<i>Child characteristics</i>										
Males	1.3***	1.1***	0.0	0.0	0.2***	0.2**	0.8***	0.8***	0.2***	0.2***
	[1.0,1.6]	[0.8,1.4]	[-0.1,0.1]	[-0.1,0.1]	[0.1,0.4]	[0.0,0.3]	[0.7,1.0]	[0.6,0.9]	[0.1,0.3]	[0.1,0.3]
<i>Family characteristics</i>										
Mother aged <30 years		1.6***		0.1		0.6***		0.6***		0.3***
		[1.1,2.0]		[-0.0,0.3]		[0.4,0.8]		[0.4,0.8]		[0.1,0.4]
Low parental income		0.7**		0.2		0.2		0.2*		0.1
		[0.2,1.2]		[-0.0,0.3]		[-0.0,0.3]		[0.0,0.5]		[-0.0,0.3]
Missing income data		-0.1		0.0		0.2		-0.3*		0.0
		[-0.8,0.5]		[-0.2,0.2]		[-0.1,0.4]		[-0.6,-0.0]		[-0.2,0.2]
Mother incomplete secondary education only		1.1***		0.2**		0.2**		0.4***		0.3***
		[0.7,1.5]		[0.0,0.3]		[0.1,0.4]		[0.3,0.6]		[0.2,0.4]
<i>Maternal parental style</i>										
Low warm parenting		0.8***		0.1		0.2***		0.2**		0.2***
		[0.4,1.1]		[-0.1,0.2]		[0.1,0.4]		[0.1,0.4]		[0.1,0.4]
High hostile parenting		4.1***		0.6***		1.7***		1.3***		0.5***
		[3.6,4.6]		[0.4,0.8]		[1.5,1.9]		[1.1,1.5]		[0.3,0.6]
Low consistent parenting		2.0***		0.3***		0.7***		0.6***		0.4***
		[1.6,2.4]		[0.2,0.5]		[0.6,0.9]		[0.4,0.8]		[0.3,0.5]
Low maternal mental health		3.2***		1.2***		0.6**		0.7**		0.7***
		[2.3,4.1]		[0.9,1.6]		[0.2,0.9]		[0.3,1.1]		[0.3,1.1]
<i>Neighbourhood characteristics</i>										
Safe		-0.9**		-0.1		-0.3*		-0.3**		-0.2*
		[-1.5,-0.3]		[-0.3,0.1]		[-0.6,-0.1]		[-0.6,-0.1]		[-0.4,-0.0]
Good for raising children		-0.4*		-0.1*		-0.2*		0.0		-0.1*
		[-0.7,-0.1]		[-0.2,-0.0]		[-0.3,-0.0]		[-0.2,0.2]		[-0.2,-0.0]
Low SEIFA		0.9***		0.2*		0.3***		0.2*		0.3***
		[0.5,1.3]		[0.0,0.3]		[0.1,0.4]		[0.0,0.3]		[0.1,0.4]
Constant	8.7***	7.9***	1.6***	1.5***	2.4***	2.2***	3.1***	2.8***	1.5***	1.4***
	[8.4,9.0]	[7.3,8.5]	[1.6,1.7]	[1.3,1.7]	[2.3,2.5]	[1.9,2.4]	[3.0,3.2]	[2.6,3.1]	[1.4,1.6]	[1.2,1.6]
N	4,725	4,664	4,725	4,664	4,726	4,665	4,726	4,665	4,726	4,665
R-sqr	0.03	0.24	0.02	0.09	0.01	0.19	0.04	0.14	0.03	0.11

\*p<0.05; \*\* p<0.01; \*\*\* p<0.001

# reference group: Australian born English speaking mothers

with poorer child mental-health outcomes.<sup>9,41-44</sup> In addition, children from these families were more likely to be exposed to less than optimal parenting, also well recognised as a strong predictor of child mental-health outcomes.<sup>45-47</sup> It is important to acknowledge the strong influence of culture on parenting beliefs and behaviours, and the lack of evidence of the validity and reliability of parenting measures used in this study for Indigenous and CALD populations.

In this study, Indigenous mothers and overseas-born mothers with poor English proficiency were less likely to be consistent in their parenting, and overseas-born mothers were also more likely to display low parental warmth and high parental hostility. One possible explanation is the association between socioeconomic disadvantage, including both income and maternal education, and parenting quality.<sup>48</sup> These findings may also reflect wider challenges faced by many of these families. Both Indigenous and overseas-born families are more likely to experience social exclusion, race-based discrimination and other stressors such as those related to resettlement experiences for migrants and the ongoing legacy of colonisation such as the Stolen Generations for Indigenous Australians.<sup>49</sup> Maternal experiences of race-based discrimination has been shown to influence parenting style, including reduced maternal warmth and sensitivity.<sup>50</sup> The impact of the Stolen Generations on parenting capacity for Indigenous Australians is widely acknowledged.<sup>10</sup> Trauma and migration experiences are also known to affect parenting capacity.<sup>51</sup>

Analyses of outcome for children from Indigenous and specific CALD backgrounds are based on relatively small sample sizes. Even though the complete sample size is large, at more than 4,000 children, the proportion of Indigenous and CALD families in the study is reflective of the wider Australian population, resulting in small sample sizes of these groups. This limits the potential for detailed subgroup analysis beyond the broad groups used in this paper. The multivariable models in this paper may have had limited power to detect associations due to relatively small sample size and a relatively large number of included variables. Co-linearity issues were not detected in this analysis indicating the multivariable model reported in this paper was not over-parametised. The provision of data required for power calculations (mean and SD) for each subgroup provides valuable information to guide future study design with these populations using the SDQ as an outcome measure. While the LSAC sample is broadly representative of the Australian population, some cultural groups such as refugees and humanitarian entrants are likely to be under-represented. Also, we acknowledge the large heterogeneity of families with overseas-born mothers who are likely to come from a highly diverse range of cultural backgrounds and experiences. For example, time since arrival in Australia is an important factor, with recent arrival and settlement likely to affect child social and emotional outcomes. Further consideration of the influence of maternal age for children from Indigenous and CALD backgrounds is also recommended, given that women from these backgrounds have children at a younger age than other Australian women. We also recognise that while maternal Indigenous status and CALD background is strongly

influential on children's experiences, the backgrounds of fathers and grandparents and characteristics of children themselves are also important considerations. Further research is needed across a wider sample to allow for more detailed sub-group analysis and classification of cultural and linguistic background. Longitudinal analysis will also be important to examine risk and protective factors for child mental-health outcomes over time. The SDQ has not been used extensively in young children, and much of the psychometric properties have been established with children aged five years and older. Its validity for young children from Indigenous and CALD backgrounds in Australia has yet to be fully determined. Similarly, parenting measures have not been validated for these population groups.

This study highlights that at a young age, children from Indigenous and non-English-speaking migrant families experience disparities in mental health outcomes compared to their Australian-born English-speaking peers. Addressing these inequities is an important priority, and more research is needed to understand risk and protective factors influencing these outcomes as well as to identify effective interventions to promote positive mental health for these children.

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