

# **Australian Indigenous children with low cognitive ability: family and cultural participation**

## **Keywords**

Participation, indigenous, children, low cognitive ability

## Abstract

Family and cultural inclusion are essential for the healthy development of young Australian Indigenous peoples with low cognitive ability. To date, this issue has received limited research attention. A secondary analysis of data collected in Wave 4 of *Footprints in Time*, Australia's Longitudinal Study of Indigenous Children, was conducted to help address this research gap. The study results indicated that in some areas, Indigenous children with low cognitive ability are at a higher risk of social exclusion than their peers. We discuss the policy implications of these findings with regards to addressing Indigenous disadvantage.

## 1. Introduction

~~In Western society~~ There is considerable evidence to suggest that ~~children~~ with low cognitive ability, along with children and young people ~~with a disability~~ in general, ~~are~~ at increased risk of often ~~exclusion~~ ed from participating in family events, significant cultural practices, ~~political engagement~~ and ~~education~~ and community-based activities (UNICEF, 2007; World Health Organization and UNICEF, 2012; World Health Organization and World Bank, 2011). This is potentially a ~~of~~ major concern for Indigenous children, as research shows that engagement and participation in Indigenous culture and kinship systems play an integral role to the healthy development of children (Kelly, Dudgeon, Gee, & Glaskin, 2009; Lohoar, Butera, & Kennedy, 2014; Maher, 1999; Wise, 2013).

The World Health Organization (WHO) (Alderete, 1999) has identified how European colonisation and colonialism have had a drastic effect on the health and welfare of millions of Indigenous peoples around the world. European colonisation attempted to destroy Indigenous cultural identity through Euro-centric assimilationist policies and practices (Hollinsworth, 2013). These

assaults on Indigenous cultural heritage and family/community solidarity are considered root causes of Indigenous communities around the world reporting higher rates of ill-health, disease and disability than their non-Indigenous counterparts (Alderete, 1999; Australian Institute of Health and Welfare, 2011b; Biddle, Yap, & Gray, 2013a; Cohen et al., 2012; Durst, South, & Bluehardt, 2006; National Council on Disability, 2003; Schofield & Gilroy, 2015; Statistics New Zealand, 2014).

The concepts “disability” and “delay” are used to understand the development of children and young people. The World Health Organisation’s International Classification of Functioning and Health is a framework to classify and measure health and functioning. Disability is used as a collective noun for the interplay of biological and environmental factors that influences an individual’s ability to engage in activities of daily living. The Australian Bureau of Statistics (ABS) has adopted the ICF model for collecting data on disability, health and functioning. The concept ‘delay’ is understood as a measure of a person’s, or cohort of persons’, “domains of development” that are linked to predictors of adult health, education and social/intellectual development. Recording and monitoring a child’s development helps understand if a child or young person is vulnerable to delays in their development. Measuring similar factors used in the ICF, the AEDI data helps plan for services and supports for children at risk of disability later in life. This data can help plan for individual or community interventions, such as additional education support in school.

The interruption to Indigenous cultures and family connections has had a significant impact on Indigenous children’s social and emotional wellbeing in Australia. The prevalence of Indigenous children at risk of delay is significantly higher than their non-Indigenous counterparts. The Australian

Early Development Index<sup>1</sup> (AEDI) 2012 study concluded that “Indigenous children are more than twice as likely to be developmentally vulnerable than non-indigenous children” (Australian Government, 2013, p5). The high prevalence of substance misuse (such as petrol sniffing and alcohol), malnutrition and poverty has contributed to the rates of cognitive disability and delay in the Indigenous population (Australian Institute of Health and Welfare, 2011a; Biddle, Yap, & Gray, 2013b). Research found that the prevalence of alcohol misuse during pregnancy is significantly higher than the non-Indigenous population, impacting on foetal (such as Foetal Alcohol Spectrum Disorder) and childhood cognitive development (such as acquired brain injury) (Elliott, Latimer, Fitzpatrick, Oscar, & Carter, 2012; Fitzpatrick et al., 2012; Fitzpatrick et al., 2015).

## **1.1 Early childhood development linked to family and cultural participation**

Indigenous peoples conceptualise family and childhood development differently to Western cultures. Contrary to Western cultures where the caregiver role involves the nuclear family, this role is shared amongst the immediate and extended members of the family. Interestingly, research has shown that many Indigenous families relate and conceptualise child-rearing and development to a range of skill attainment rather than to the child’s age (Byers, Kulitja, Lowell, & Kruske, 2012).

Australian Indigenous children’s participation in family and culture is integral to their individual wellbeing and development. Culture is not a static entity; rather it is constantly adaptive and evolutionary. Activities often reported by Indigenous peoples relating to family and cultural participation include a mix of traditional (funeral business, family lore/law, care for Land, and passing of oral histories) and non-traditional practices (connecting on the internet, contemporary sports

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<sup>1</sup> “The AEDI is a population measure of children’s development as they enter school. It is an adapted version of the Canadian Early Development Instrument (EDI) developed in response to communities increasing interest in knowing how their children were developing” (Australian Government, 2013).

participation, family outings) (Burgess & Morrison, 2007; Dalton, Wilson, Evans, & Cochrane, 2015; Daly, 2005; Rennie, Crouch, Wright, & Thomas, 2011). Such practices foster the children's acculturation, which enables them to develop into healthy adults.

Recent studies (Lohoar et al., 2014; McDonald, Webster, Knight, & Comino, 2014) have identified linkages between specific risk-factors, such as family engagement or teenage pregnancy, and the development and health outcomes of Indigenous children. Recent analysis of the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) identified a strong statistical association between Indigenous cultural and social participation and positive individual health and wellbeing outcomes: self-assessed health, education attainment, employment and probabilities of criminal activities and substance misuse (Dockery, 2010, 2011). Research with other Indigenous peoples in Canada, USA, Australia and New Zealand also found that cultural and family participation has a positive effect on children and young peoples' health and wellbeing (Dockery, 2010, 2011; Fleming & Ledogar, 2008; Lavalle & Poole, 2009; Panelli & Tipa, 2007; Reading & Wien, 2009; Stevenson, 2001).

## **1.2 Disability policy and community inclusion**

There is no word equivalent to 'disability' or 'delay' in any traditional Indigenous communities' language. Gilroy and others (Gilroy, 2009, 2010; Gilroy, Colmar, Donnelly, & Parmenter, 2013; Meekosha, 2011) have argued that these Western concepts are imposed on Indigenous peoples in Australia. Indigenous disability rights advocates (e.g., Aboriginal Disability Network, 2012; Bostock, 2004; Gilroy, 2012) state that every Indigenous community has their own understanding and interpretation for handicaps, delay and disabilities. The Aboriginal Disability Network (2012) and

Gilroy (2010) stated that such concepts are often at odds with traditional community practices and beliefs.

In some cases, disability rights advocates claim that the belief that all people with a disability experience social exclusion is often unfounded in some Indigenous communities (Oliver, 1996; Shakespeare, 2006, 2013). Indigenous communities are reported to be inclusive of people of all abilities in community and social life. Gething (1994), [Gilroy \(2012\) and the NPYWC \(2014\)](#) found that many Indigenous communities supported people with a disability to participate in family and cultural activities, as such Indigenous peoples did not identify as a person with a disability. In many Indigenous communities, there exists cultural expectation for the ‘caring role’ of people with profound functional and activity limitations to be shared amongst members of the community. [For example, disability is new discussion amongst the traditional peoples of the Anangu Pitjantjatjara Yankunytjatjara lands. People with impairments or handicaps are recognised as ‘normal’. Indigenous communities recognise that people have different skills and talents, thus ensuring that all persons have a purpose in the communities](#) (Ariotti, 1997; Ngaanyatjarra Pitjantjatjara Yankunytjatjara Women’s Council, 2014).

The Australian Government is attempting to accommodate cultural and language diversity in the funding and administration of services for people with disability and/or delay. The disability services sector is undergoing significant reform under the National Disability Strategy (NDS). The Australian Government is establishing better links between the Closing the Gap Strategy (CTG), a whole of government initiative to address Indigenous disadvantage, and the NDS. The National Disability Insurance Scheme (NDIS) for people with life-long permanent and significant disabilities is being rolled out under the NDS. The NDIS will provide individualised tailored grants to people with a

disability as a means to improve equitable access to disability services. It is believed that a more individualised service and support system can be flexible to the cultural diversity within Australia (National Disability Insurance Agency (NDIA), 2014).

The Australian Productivity Commission stated that there must be further investigation into the socio-cultural factors that influence the experience of disability in Indigenous communities (Productivity Commission, 2010, 2011). There is no research, of which we are aware, that documents the extent that Indigenous Australian children with low cognitive ability are currently participating in cultural and family activities.

To help address this omission, ~~we undertook a~~ secondary analysis of ~~data the results of the~~ ~~from the Australian~~ *Longitudinal Study of Indigenous Children* (LSIC) ~~Wave 4 data was conducted~~ to determine the level of participation in cultural and family events in Indigenous communities among children with and without low cognitive ability. ~~We hypothesised that, in keeping with the wider literature~~ (UNICEF, 2007; World Health Organization and UNICEF, 2012; World Health Organization and World Bank, 2011), ~~Indigenous children with low cognitive ability, when compared to their peers, would be at increased risk of exclusion from Indigenous cultural and family activities. The paper will then provide suggestions for future policy development and research.~~

## 2. Method

A secondary analysis of data collected in Wave 4 of *Footprints in Time*, Australia's Longitudinal Study of Indigenous Children, was undertaken. Full details of *Footprints in Time* are available in a series of key summary reports, data user's guides and technical reports addressing such issues as sample design (Department of Families Housing Community Services and Indigenous

Affairs, 2013, 2014; Hewitt, 2012) which are available at (<http://www.dss.gov.au/about-the-department/publications-articles/research-publications/longitudinal-data-initiatives/footprints-in-time-the-longitudinal-study-of-indigenous-children-lsic>). Relevant details are briefly summarised below.

## 2.1 Sampling

*Footprints in Time* used a non-random purposive sampling design based on eleven sites.

Agreement and approval to participate in the study was sought from communities and Elders in these sites before research within the communities began. The sites were chosen to:

- (1) Ensure approximately equal representation of urban, regional and remote areas
- (2) Represent the concentration of Indigenous people around Australia
- (3) Contain a substantial Indigenous population in the core and surrounding areas
- (4) Include locations engaged in the pilot of the study where existing relationships could be built upon
- (5) Be located near an Indigenous Coordination Centre.

The study is based on two cohorts of Indigenous children: a B-cohort aged from 6 months to 2 years at recruitment (born between December 2006 and November 2007) and a K-cohort aged from 3 years 6 months to 5 years at recruitment (born between December 2003 and November 2004). The majority of families in the study were recruited using residential addresses provided by Centrelink and Medicare Australia. Other informal means of contact such as word of mouth, local knowledge and study promotion were also used to supplement the number of children in the study. The families participated in the study voluntarily.

*Footprints in Time* was designed to select approximately 150 children in each of the eleven sites, giving a target sample of up to 1,650 children (equivalent to 5-10% of Indigenous children in



these age groups). At Wave 1 1,671 families participated. Retention between successive Waves of data collection has ranged from 82% (Wave 3-4) to 86% (Wave 1-2 and Wave 2-3). At Wave 4 data was collected on 1,283 children (749 in the B-cohort, 534 in the K-cohort). The Australian Government provided the authors of this paper permission to access this de-identified data for this study.

## 2.2 Procedure

All the data presented in the present paper were collected either by face to face interview with a key parental informant (Parent 1) or by cognitive testing of the Study Child. Interviews were undertaken between March and December 2011. The Parent 1 interview contained five modules (household characteristics, child health, parent health, child and family functioning, socio-demographics). Average interview length was 56 minutes (range 20 minutes to 2 hours) for parents of B-cohort children and 52 minutes (range 20 minutes to 2 hours) for parents of K-cohort children (LSIC, 2013).

## 2.3 Identification of children with low cognitive ability

The following procedure was used to procure a sample of children with low cognitive ability.

1. At Wave 4, the cognitive abilities of B-cohort children were assessed by administration of the Renfrew and Who Am I tests and the cognitive abilities of K-cohort children were assessed by administration of the Matrix Reasoning Test (from the Wechsler Intelligence Scale for Children, 4th edition) and the Progressive Achievement Tests in Reading (PAT-R) (Buckley, Underwood, & Purdie, undated; LSIC, 2013). The *Who Am I?* is a developmental assessment suitable for preschool children that requires the child to undertake age-appropriate tasks such as copying shapes, writing letters, numbers and words (including their name) in a small booklet,

with simple instructions and encouragement from the interviewer. It is not language dependent, is suitable for children with limited English and was extensively piloted with indigenous pre-school children before its inclusion in *Footprints in Time* (Buckley, Underwood, & Purdie, 2013; de Lemos & Doig, 1999). [The overall reliability \(Cronbach's Alpha\) for the \*Who Am I?\* items in Wave 4 of LSIC was 0.86](#) (Buckley et al., undated). The *Renfrew Word Finding Vocabulary Test* assesses children's expressive vocabulary. The assessment contains 50 line-drawn pictures which the child has to name and is suitable for children aged 3-9 years (Renfrew, 1998). [Little information is available on the psychometric properties of the Renfrew](#) (Dockrell, 2001). [There was, however, a moderate positive correlation between \*Who Am I\* and \*Renfrew\* scores \( \$r = .41, p < .001\$ \) in Wave 4 of LSIC](#) (Buckley et al., undated). The PAT-R is a standardized measure of reading comprehension developed for use in Australian schools suitable for children from the time of school entry (Australian Council for Educational Research, 2008). [Limited information is available on the PAT-R, although it is claimed to have good reliability and predictive validity](#) (Fogarty, 2007). [Linear](#) regression was used to age-standardize all test results to take into account of within cohort variations in age (B-cohort range 33-69 months; K-cohort range 59-106 months).

2. For 87% of B-cohort children and 93% of K-cohort children valid data was available for both tests. For these children we extracted the first component (as a proxy for 'g') from a principle component analysis of both age-standardized test scores (cf., Emerson et al., 2014; Jones & Schoon, 2008). The first component accounted for 68% of score variance for the B-cohort and 74% of score variance for the K-cohort. We identified children as having low cognitive ability if they scored more than one standard deviation below the sample mean on the first extracted component, the cut-off point used to identify borderline intellectual functioning in older

children and adults (Peltopuro, Ahonen, Kaartinen, Seppala, & Narhi, 2014; Salvador-Carulla et al., 2013). This led to the identification of 95 of 651 (14.6%) children in the B-cohort and 89 of 499 (17.8%) children in the K-cohort for whom data were available with low cognitive ability.

3. For 67 children in the B-cohort and 18 children in the K cohort data was available for just one test. We identified these children as having low cognition if they scored more than one standard deviation below the sample mean on the available test. This, when combined with the previous stage, led to the identification of 107 of 720 (14.9%) children in the B-cohort and 93 of 517 (17.8%) children in the K-cohort for whom data were available as having low cognitive ability..
4. For 31 children in the B-cohort and 17 children in the K cohort no valid test data was available. These children were excluded from all analyses.

## **2.4 Measures**

### **2.4.1 Indigenous Practices & Identity and Family Activities**

The socio-demographics module of the Wave 4 Parent 1 interview contained two sections (participant language, culture and religion, child and family activities) that included items relating to specific Indigenous practices and identity (e.g., how often does the study child go to Indigenous cultural events?) or the frequency of family activities undertaken with the Study Child that could form the foundations for cultural participation (e.g., being told an oral story) (Department of Families Housing Community Services and Indigenous Affairs, 2014). Specific items were identified by the literature on indigenous childhood health and cultural activities and belief systems. Original wordings of the items are presented in Tables 1 and 2.

Items relating to specific Indigenous practices and identity had no specified time frame (e.g., How often do you teach (him/her) traditional practices like collecting food or hunting?), but had a consistent set of response option (never, occasionally, often, very often). The family activity items were preceded by the general question ‘*Did you or (STUDY CHILD) ’s other family members do any of these things with (STUDY CHILD) [in defined time period]?’* All items were recoded into binary measures of participation/non-participation within the specified time period (last week, last month, ever). [No information is available on the psychometric properties of these items.](#)

#### 2.4.2 Remoteness and Material hardship

*Footprints in Time* includes information on two potentially important sources of data essential for examining the association between child cognitive ability and participation in cultural and family activities. First, evidence indicates that developmental delay and low cognitive ability may be more prevalent in remote communities (Buckley et al., undated) which are themselves likely to be characterized by different patterns of and opportunities for cultural participation and family activities. A measure of the *Level of Relative Isolation* (LORI) is available within these datasets, which provides a binary measure of relative isolation (none/low v medium/high). LORI was developed for Western Australian Aboriginal Child Health Survey (<http://www.creahw.org.au/kulunga-research-network/waachs/>) to measure geographic remoteness from services. It is based on [ARIA++](#), an index of remoteness and accessibility [based of road distances between population clusters](#) developed by the National Key Centre for Social Application of Geographic Information Systems at Adelaide University, ~~called ARIA++~~. ~~It is~~ ~~This is~~ an extension of ARIA (the Accessibility/Remoteness Index of Australia), which has been ~~widely~~ adopted [by the Australian Bureau of Statistics](#) as the standard classification of remoteness in Australia. While ARIA describes the entire population of Australia it

was not specifically designed to describe the circumstances of Indigenous people living in remote areas. ARIA++ gives a more detailed description of the most remote areas of Australia by including more service centres, of smaller sizes, in calculating the remoteness scores

[https://www.adelaide.edu.au/apmrc/research/projects/category/about\\_aria.html](https://www.adelaide.edu.au/apmrc/research/projects/category/about_aria.html).-

Second, extensive evidence indicates that developmental delay and low cognitive ability is more prevalent among children living in families characterized by poverty or material deprivation (Emerson, 2007, 2013), families which are themselves likely to be characterized by different patterns of and opportunities for cultural participation and activities. The datasets enabled us to derive a measure of material hardship from responses to a series of seven questions with the preamble '*In the last 12 months, have any of these happened to you because you were short of money?*'. The following seven options were available:

- (1) 'Could not pay gas, electricity or telephone bills on time'
- (2) 'Could not pay the mortgage or rent payments in time'
- (3) 'Went without meals'
- (4) 'Were unable to (could not) heat or cool your home'
- (5) 'Pawned or sold something because you needed cash'
- (6) 'Sought assistance from a welfare or community organisation'
- (7) 'Were unable to (could not) send your child to kindergarten/preschool, childcare for as much time as you would like)'

[Items 1-6 are commonly used to measure financial stress in Australian longitudinal population-based surveys such as the Longitudinal Study of Australian Children](#) (Australian Institute of Family Studies, 2015) [and Household Income and Labour Dynamics in Australia](#) (Marks, 2007). [While we are](#)

[unaware of any published information in the psychometric properties of this scale, these items showed acceptable internal consistency \( \$\alpha = 0.67\$ \) in the present analyses.](#) We defined material hardship as experiencing two or more of these events in the previous 12 months.

## 2.5 Approach to Analysis

In the first stage of analysis we calculated raw percentages and unadjusted estimates of risk (Odds Ratios) for participation of Indigenous children with low cognitive ability participating in a range of Indigenous practices and family activities. We used the recommendations of Olivier and Bell (2013) to categorize the effect size of odds ratios (small  $>1:21$  or  $<0.83$ , medium  $>1:85$  or  $<0.54$ , and large  $>3:00$  or  $<0.33$ ).

In the second stage of the analysis we used multivariate logistic regression to estimate adjusted risk when controlling for potentially important between group-differences in personal characteristics and contextual factors that may potentially be associated with both risk of low cognitive ability and cultural participation. In the B-cohort risk low cognitive ability was significantly greater among boys (19% v 11%; OR=1.83(1.20-2.80),  $p<0.01$ ) and among children living in areas of medium to high remoteness (31% v 9%; OR=4.29(2.80-6.57),  $p<0.001$ ), two factors that were controlled for in the adjusted estimates. There was no significant or marginally significant association between material hardship or within-cohort age and low cognitive ability. In the K-cohort risk of low cognitive ability was significantly greater among children living in areas of medium to high remoteness (30% v 14%; OR=2.61(1.63-4.18),  $p<0.001$ ) and a trend for it to be higher among children in families experiencing material hardship (23% v 16%; OR=1.54(0.96-2.46),  $p=0.055$ ), two factors that were controlled for in the adjusted estimates. There was no significant or marginally significant association between child gender or within-cohort age and low cognitive ability. Results are analyzed separately by cohort as the

wording of questionnaire items varied between the K and B cohorts for the majority of indicators of cultural and family participation.

### 3. Results

#### 3.1 Indigenous Practices & Identity

Participation rates, unadjusted risk and adjusted risk of participation in Indigenous practices and identity are presented in Table 1.

[insert Table 1]

In the B-cohort, ~~for both the unadjusted and adjusted comparisons~~, children with low cognitive ability had higher levels of participation on all five indicators in both the unadjusted and adjusted comparisons. ~~In the unadjusted comparisons, two were statistically significant and all were indicative of small or moderate effects sizes.~~ In the adjusted comparisons, while none of these differences were statistically significant, one (identification with tribe, language group or clan) was indicative of a small effect size (Olivier & Bell, 2013).

In the K-cohort, there were no statistically significant differences between children with and without low cognitive ability. In the unadjusted comparisons no differences were indicative of small or greater effect sizes. In the adjusted comparisons two of the differences (taught traditional practices; taught traditional arts) were indicative of small effect sizes with lower levels of participation among children with low cognitive ability ~~had lower levels of participation on all of the three indicators in the adjusted comparisons.~~ ~~While none of these differences were statistically significant, two (taught traditional practices; taught traditional arts) were indicative of small effect sizes~~ (Olivier & Bell, 2013).

### 3.2 Family Activities

Participation rates, unadjusted risk and adjusted risk of participation in family activities are presented in Table 2.

[insert Table 2]

In the B-cohort, children with low cognitive ability had lower levels of participation in family activities on 8 of the 14 individual indicators (57%) and had lower levels of participation on the range of activities in both the unadjusted and 8 of the 14 individual indicators (57%) adjusted comparisons of participation in family activities in the adjusted comparisons. None were statistically significant. Children with low cognitive ability also had lower levels of participation on the range of activities they had participated in. In the unadjusted comparisons: five of the differences on individual indicators were statistically significant (four of which indicated lower levels of participation among children with low cognitive ability); ten were indicative of small or medium effect sizes (five of which indicated lower levels of participation among children with low cognitive ability); and the difference in the range of activities children had participated in was indicative of a small effect size (lower levels of participation among children with low cognitive ability), though not statistically significant. In the adjusted comparisons: no differences were statistically significant; nine were indicative of small or medium effect sizes (five of which indicated lower levels of participation among children with low cognitive ability); and the difference in the range of activities children had participated in was neither statistically significant nor indicative of a small or greater effect size. Of the nine comparisons indicative of small or greater effect sizes ( $0.82 \leq$  or  $\geq 1.22$ ), children with low cognitive ability had lower levels of participation on five (56%) and higher levels of participation on four (44%).



In the K-cohort (unadjusted comparisons): children with low cognitive ability had lower levels of participation in family activities on 7 of the 10 individual indicators (70%) and the range of activities participated in; four of the differences on individual indicators were statistically significant (three of which indicated lower levels of participation among children with low cognitive ability); seven were indicative of small or medium effect sizes (six of which indicated lower levels of participation among children with low cognitive ability); and the difference in the range of activities children had participated in was indicative of a small effect size (lower levels of participation among children with low cognitive ability), though not statistically significant. In the adjusted comparisons: children with low cognitive ability had lower levels of participation in family activities on 8 of the 10 individual indicators (80%) and the range of activities participated in; four differences were statistically significant (three of which indicated lower levels of participation among children with low cognitive ability); seven were indicative of small or medium effect sizes (six of which indicated lower levels of participation among children with low cognitive ability); and while the difference in the range of activities children had participated in was not statistically significant, it was indicative of a small effect size (lower levels of participation among children with low cognitive ability).

~~In the K-cohort, children with low cognitive ability had lower levels of participation on 8 of the 10 individual indicators (80%) of participation in family activities. Of these three were statistically significant and seven indicative of small or greater effect sizes. Children with low cognitive ability also had lower levels of participation on the range of activities they had participated in (statistically insignificant with small effect size).~~

## 4. Discussion

The results of our study ~~suggest indicate~~ that, in the adjusted comparisons, -older, but not younger, Indigenous children identified as having low cognitive ability were reported to be less likely than their peers to participate in family activities and cultural practices in Indigenous communities. However, in the majority of comparisons these differences were not statistically significant, and the effect sizes of differences that were apparent were generally small. ~~However, given that lower rates of participation were more apparent amongst K-Cohort children, it is possible that as children with low cognitive ability age~~ As a result, the data lend only marginal support to our hypotheses that Indigenous children with low cognitive ability, when compared to their peers, would be at increased risk of exclusion from Indigenous cultural and family activities. ~~their engagement in family activities may decline.~~ However, given that lower rates of participation were more apparent amongst K-Cohort children (and the time span between cohorts is relatively small), there is some suggestion that engagement in family and cultural activities may decline as children age.

As noted above, there is considerable evidence to suggest that children with low cognitive ability, along with children with a disability in general, are at increased risk of exclusion from participating in family events, significant cultural practices, education and community-based activities (UNICEF, 2007; World Health Organization and UNICEF, 2012; World Health Organization and World Bank, 2011). The limited evidence we found for a similar association among Indigenous Australian children may reflect a number of factors. First, as suggested by some disability rights advocates, the claim that all people with a disability experience social exclusion may be unfounded in some Indigenous communities (Oliver, 1996; Shakespeare, 2006, 2013). Second, the social exclusion of children with low cognitive ability may vary with age and only become more pronounced among

older children as the differences in developmental progression between them and their peers become more pronounced. Such a pattern is certainly evident with regard to the exclusion of children with low cognitive ability from mainstream educational settings in some high income countries. (e.g., Hatton et al., 2014). Our findings provide some tentative support for this hypothesis. Third, methodological flaws in the present study related to sampling and the identification of children with low cognitive ability (see below), may have resulted in us failing to detect a real effect.

Our research findings suggest that we may need to further investigate the claims being made by Indigenous spokespeople (Aboriginal Disability Network, 2012; Bostock, 2004; Gilroy, 2010, 2012) and disability advocates that Indigenous families are inclusive of people of all abilities. Current research shows that people with a disability often report challenges in engaging and contributing to their communities due to ablest ideologies and practices in the community environment. Whilst our findings found limited differences in the level of cultural inclusion between Indigenous children with and without low cognitive ability, our findings suggest that older Indigenous children with low cognitive ability may be at a higher risk of exclusion from participating in some family activities as they age.

Our research findings have identified a potentially significant social policy issue for governments responsible for the NDS and the CTG. Existing research (Dockery, 2010, 2011; Kelly et al., 2009) suggests that Indigenous cultural and family immersion imparts Indigenous children a sense of community *belonging* (Dockery, 2010, 2011). A sense of Family and community supports and services, such as children play-groups, targeted at children who are delayed in their development ensure that these children belonging provides Indigenous peoples gain the *protective features* essential for a healthy adult life, such as resilience and good social skills. These research-study findings indicate a

possible need to investigate the development of services that foster social participation for Indigenous children with low cognitive ability during the roll-out of the NDIS. ~~Such services fall within the scope of the NDS and the CTG.~~

Reflecting the research in Indigenous health, our study suggests that Indigenous children with low cognitive ability need to be involved in family and cultural activities at the same rate of all children. The kinship system, which embodies the essence of culture and Country, provides Indigenous children the requisite knowledge on their place and social roles in their community.

#### 4.1 Strengths & Limitations

The main strengths of the study are: (1) the use of a relatively large contemporary sample of Indigenous Australian children; (2) the collection of information on a range of indicators of cultural participation; and (3) the involvement throughout of Indigenous communities in the design of the study (Department of Families Housing Community Services and Indigenous Affairs, 2013). As such, the data underlying the present analyses represent the most robust data available to understand the situation of Indigenous children currently growing up in Australia. The main limitations of the study are: (1) the use of a non-random sampling design; and (2) the use of abbreviated tests of cognitive ability to identify with low cognitive ability. The use of a non-random purposive sampling design based on eleven sites was a pragmatic choice dictated by the extremely high costs that would have been associated by random sampling minority population groups (2.5% of the Australian population) (Australian Bureau of Statistics, 2011), especially given their concentration in rural and remote areas. The sampling method clearly limits the generalisation of overall descriptive data to the wider population of Indigenous children (e.g., the percentage of Indigenous children taken to an Indigenous cultural event, ceremony or sorry business). It is unclear, however, whether it also limits the

generalisation of within sample associations to the wider population of Indigenous children (e.g., differences between Indigenous children with/without low cognitive ability). The use of abbreviated tests to assess child cognitive ability is common practice in most major national child development surveys (Australian Institute of Family Studies, 2015; Hansen, Jones, Joshi, & Budge, 2010). In the present analyses this limitation is likely to introduce error and possible bias in the identification of children with low cognitive ability.

## **4.2 Implications for Further Research**

The findings from this study suggest that older (but not younger) Indigenous children with low cognitive ability may show lower levels of cultural participation than their peers. It is not possible within the present analyses to determine whether these differences relate to child age per se or reflect cohort differences. Analysis of future Waves of LSIC will allow this distinction to be examined and to determine the trajectory of cultural participation among children at older ages. It may also be important to identify specific risk factors associated with very low levels cultural participation among children Indigenous children with low cognitive ability. In addition, future qualitative research could usefully focus on identifying possible causal relationships between with low cognitive ability and low rates of cultural participation. Such research could feed into early intervention cultural support and participation programs for Indigenous children, their parents and communities.

## **6. Conclusion**

This paper presents the findings of a secondary analysis of the results of the Longitudinal Study of Indigenous Children (LSIC) Wave 4 data to determine the level of participation in cultural and family activities for Indigenous children with and without low cognitive ability. This is, to our

knowledge, the first study that has examined the relationship between child cognitive ability and cultural participation among Indigenous Australian children. This study has identified that older children with low cognitive ability may have lower participation rates in cultural and family activities than their peers. The findings from this research identify some considerations for policy and practice under the NDS and the CTG.

## 7. Acknowledgement

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