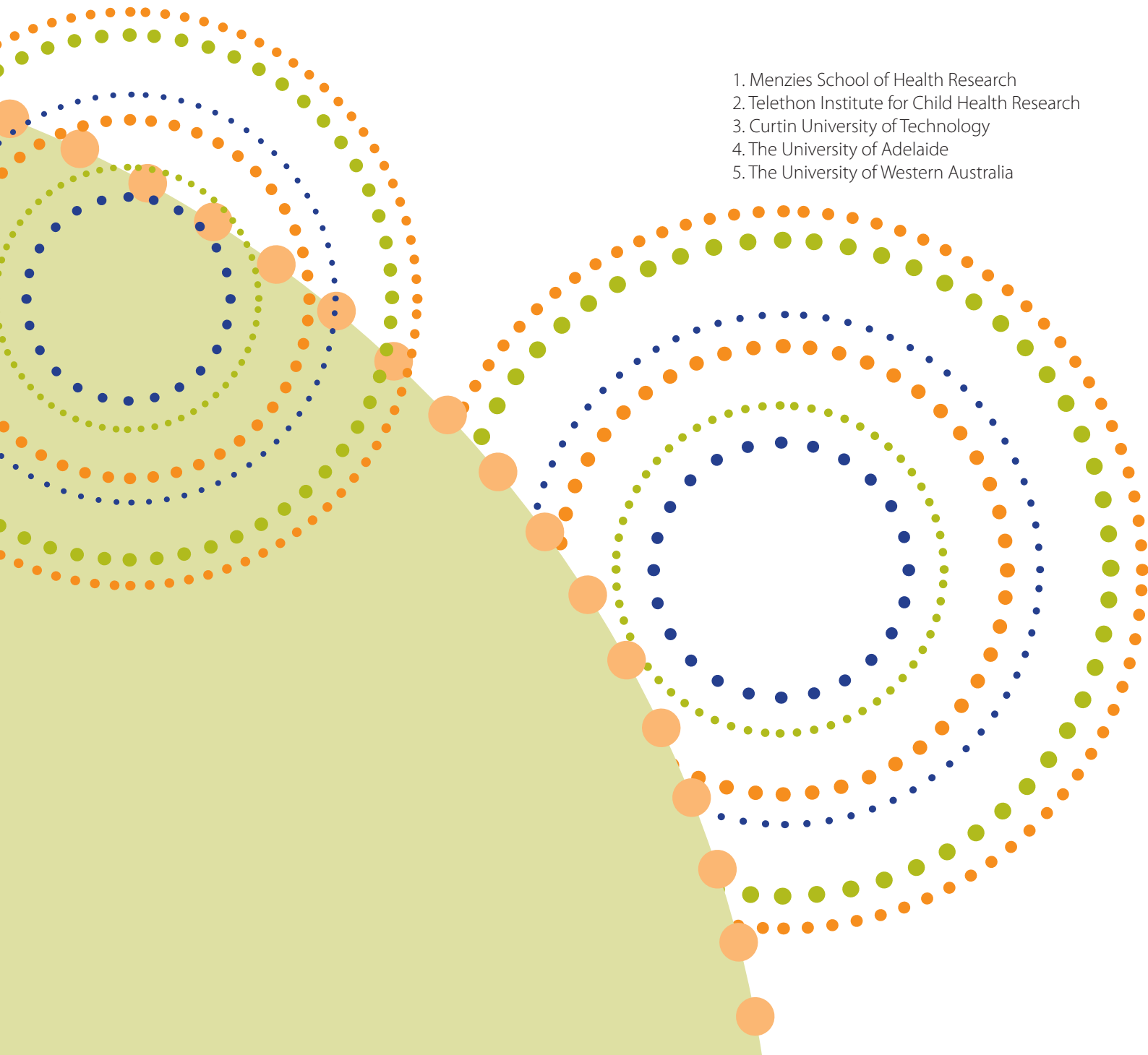# The Australian Early Development Index (AEDI) Indigenous Adaptation Study

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ACKNOWLEDGEMENTS

1. INTRODUCTION

1.1 Background

Children's successful engagement with formal learning has long been recognised as crucial to their subsequent outcomes in health and wellbeing across the life-span. However, recent advances in the scientific understanding of brain development during gestation, infancy and early childhood has highlighted the importance of the environments of child-bearing and early child rearing in shaping the physical, cognitive and social-emotional aspects of child development which provide the foundation for early learning and skill acquisition. Policy and service initiatives which promote healthy brain development before birth and during the first five years of life are now recognised to be highly cost-effective, as they can reduce expensive interventions in later years when issues such as learning deficits, behaviour problems, and chronic disease manifest (Shore, 1997; McCain, Mustard & Shanker 2007; Sorin & Markotsis, 2008).

The Canadian Early Development Index (EDI) was originally devised by Janus and Offord (2000) as a teacher-completed measure of five aspects of early child development relevant to children's successful transition into school learning. Teachers complete the checklist for all children in their class during the first year of full-time schooling, providing observational ratings on five developmental domains; physical health and wellbeing, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. This instrument has been shown to be reliable, valid and effective means of population-level monitoring of the outcomes of children's development in the first five years of life (Janus & Offord, 2000; Janus & Duku 2007; Forget-Dubois et al, 2007). The EDI community-level findings can assist in understanding what information and services are needed to better support children's health and early childhood development. They are also helpful in informing local planning, resourcing and activities of schools to improve their 'child-readiness' to enable children's successful transition into school learning (Guhn et al, 2007).

The first Australian trial of the EDI was undertaken with children in the northern metropolitan areas of Perth in 2002 (Brinkman, Hart & Blackmore, 2004). The findings from this trial with over 4,500 five year olds were used to inform the adaptations needed for the instrument's reliable and valid administration in the wider Australian context the through the 'Building Better Communities for Children: Australian Early Development Index (AEDI) Project' (Brinkman et al , 2004; Brinkman et al, 2007). With funding from the Australian government and Shell Australia, the partnership between the Centre for Community Child Health (CCCH) in Melbourne and the Telethon Institute for Child Health Research (TICHR) in Perth established a National AEDI Support Centre to assist communities in other Australian States and Territories who elected to participate in the first stage of the national roll-out of the AEDI from 2004 – 2008 (Sayers et al, 2007).

Although the AEDI teacher checklists are completed for individual children, the data are aggregated and only reported in group form e.g. for suburbs, neighbourhoods or postcodes of children's residence (i.e. not where children attend school). The local

community results are published on-line in the form of a comprehensive 32 page community report. This includes: a) a summary demographic profile of each community based on Australian Bureau of Statistics (ABS) census data; b) AEDI maps showing aggregate child development outcomes by small areas within the community; and c) tables showing the number and proportions of children 'doing well' or 'developmentally vulnerable' within these small areas. These community reports are available from the AEDI national support centre website: www.australianedi.org.au.

1.2 Rationale

The AEDI Indigenous adaptation study was initiated in late 2007 in response to questions about the cultural equivalence of the Australian Early Development Index (AEDI) for assessing the early child development outcomes of Australian Indigenous children.[1] These questions were raised by Indigenous and non-Indigenous health researchers, early childhood educators and other stakeholders (Li, D'Angiulli & Kendall, 2007, Janus et al 2009). A further impetus for the study was community and scientific concern about the cultural inclusiveness of the "standard" AEDI processes of initial community engagement, parental consent and dissemination of findings back to communities (Param & Brinkman, 2007). In seeking to address these issues, the Telethon Institute for Child Health Research's Kulunga Research Network and the Curtin University Centre for Developmental Health developed a research proposal and secured the research funding from the Australian Government Department of Employment, Education and Work Place Relations (DEEWR) and Shell Australia to undertake an Indigenous adaptation and validation study.

The literature on the adaptation of psychometric instruments for cross-cultural use with different language and cultural groups identifies several conceptual, pragmatic and ethical issues which must be addressed in order to ensure meaningful and culturally valid measurement and to enable appropriate interpretation and communication of findings (Herdman 1997; Li et al 2007). Herdman et al (1998) have distinguished four approaches which have characterised the extant cross-cultural psychometric adaptation studies.

- The **'naïve approach'.** These are studies based only on simple and locally informed direct translation of the original instrument.
- The **'relativist approach'.** Advocates of this approach maintain that it is impossible to use standardised instruments in different cultural contexts and that only those developed '*de-novo*' in the local language/culture should be used with that language/cultural group.
- The **'absolutist approach'.** This approach assumes that language and culture have only minimal impact on the underlying constructs to be measured and that these do not change markedly across different contexts.
- The **'universalist approach'** Studies following this approach make no '*a priori*' assumption that the constructs are the same in different cultural contexts. In this approach it is first necessary to investigate whether the concept exists, or whether it is interpreted similarly in the new language/culture, and then go on to investigate its cross-cultural equivalence through suitable methodology.

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[1] NOTE: The term "Indigenous" is used throughout this document to refer to Australian Indigenous people i.e. people of Aboriginal and/or Torres Strait Islander descent.

With consideration of each of these approaches in mind we elected to follow the International Test Commission (ITC) guidelines on the adaptation of psychometric measures taking account of variances in cultural concepts between and within different cultural groups.

1.3 Aims and objectives

The study was designed to develop, trial and evaluate an adaption of the AEDI for use with Indigenous children aged 4-6 years which is able to:

a) be administered in conjunction with the existing AEDI process;

b) provide a culturally equivalent measure of Indigenous children's developmental capacity to take advantage of their school learning environment in terms of the five areas of child development measured by the AEDI;

c) identify culturally related ways of learning and behaving that will be helpful for teachers and schools in creating successful learning environments for Indigenous children; and,

d) modify the implementation and dissemination processes for utilisation of the AEDI findings through support to communities in mobilising community action and advocacy for regional and state decision making with regard to service needs and efficient targeting of resources to improve Indigenous early child development.

2. METHODOLOGY

The checklist adaptation and cultural validation process has been informed by the International Test Commission's (ITCs) guidelines for the adaptation of psychometric measures for use with different cultural and linguistic groups (Coyne & Bartram, 2006). These guidelines recommend that:

- The consent, test administration and reporting processes should ensure that the context and purpose of the assessment are made explicit to participants, data gatherers, data users and other stakeholders.

- Cultural consultants and specialist technical expertise be utilised in the process of test development and adaptation.

- Every effort is made to identify and address cultural factors which may influence test administration and participation.

- Documentation is made available to guide the scoring and interpretation of test items and scales.

- There should be a realistic balancing of the technical goals of measurement equivalence vs. the pragmatics of maximising participation and cultural and linguistic inclusivity

The study design has also aimed to conform to the National Health and Medical Research Committee's *Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research* (NHMRC 2003) and has been conducted with ethics approval from the Western Australia Aboriginal Health Information and Ethics Committee (WAAHIEC). The cultural integrity of the conduct and reporting of the

research has been overseen by an *Indigenous Community Reference Group* which includes representation from all sectors of education, State and Territory Indigenous education consultative or advisory bodies, and other key stakeholders. The research team has extensive experience of working in Indigenous contexts and is committed to working within the research principles of cultural security as advocated by the NHMRC guidelines. In addition to the formal advice from the AEDI Indigenous Adaptation Study's Reference Group, wide-ranging consultations were also undertaken with peak Aboriginal organisations, unions, and government and non-government stakeholders and community members, parents and carers of Indigenous children, in each of the study sites.

2. 1 Stage one - preliminary qualitative and quantitative analyses

a) Qualitative investigations

The first stage of the adaptation process involved the collection and analysis of both qualitative and quantitative data. The *qualitative investigation* involved conducting focus groups and interviews with over 50 Western Australian Indigenous teachers and other Indigenous school personnel such as Aboriginal and Islander Education Officers (AEIOs) and Aboriginal Teacher Assistants (ATAs).

A further series of consultation forums were conducted with Indigenous parents and community members in metropolitan, rural and remote areas of Western Australia (Armadale, Gascoyne/Midwest/Murchison and Pilbara regions). Between November 2007 and March 2009 some 200 Aboriginal and Torres Strait Islander people attended focus groups and forums and a further 140 Aboriginal and Torres Strait Islander people were directly involved in 85 interactive consultations. A total of 47 separate Aboriginal and Islander organisations have been represented in these consultations. In these forums the study team sought participant's views and beliefs regarding:

- what children need in order to be ready for learning at school;
- the cultural and educational relevance of each of the five domains of development measured by the AEDI;
- the appropriateness of each of the AEDI checklist items for Indigenous children;
- what other child competencies and behavioural attributes should be included; and,
- whether teachers would be able to make valid assessments on each of the checklist items; and, if not, how these ratings of competency and behaviour could be improved.

b) Quantitative analysis

The *quantitative analysis* of the psychometric characteristics of the AEDI was carried out using data from 1,474 Indigenous children and 30,087 non-Indigenous children already available from the initial stage of the national rollout of the AEDI (2006-2007) funded through the FACSIA *Better Communities for Children* initiative. This included Rasch modelling analysis (Styles & Param, 2008) and multilevel modelling examining the extent of teacher and community level variation (Brinkman & Param, 2007). The Rasch modelling analyses were used to ascertain item and scale

person/response characteristics of the AEDI when used with Indigenous and non-Indigenous children. This analysis also sought to identify any items having differential response characteristics (i.e. bias) which might require their elimination or adaptation to achieve a satisfactory level of measurement equivalence.

2.2 Stage two – developing and piloting of the adapted instrument

Following consultation with Indigenous researchers and educators, the research team then used the stage one qualitative and quantitative findings to formulate the indicated changes needed for trialling an adapted version of the AEDI for use with Indigenous children. This adapted version of the AEDI was then trialled in the three Western Australian pilot regions to ascertain its ability to meet the stated study objectives. The main modifications which were tested in this stage of the adaptation process were:

- Use of Indigenous school personnel (e.g. Aboriginal and Islander Education Officers / Aboriginal Teaching Assistants / Aboriginal Education Workers) as cultural consultants to assist teachers in the AEDI checklist rating process. Wherever possible teachers and Indigenous cultural consultants were required to make joint ratings of Indigenous students.

- Modifications to the on-line *Guide for Teachers* to provide additional information so that particular cultural considerations could be taken into account when rating specific checklist items. These items were flagged in the on-line data-entry system as requiring special care (and preferably cultural consultation).

- As informed by the consultations in Western Australia, a number of additional checklist items considered to be of particular relevance to Indigenous children, such as the identification of English as a Second Language (ESL) or special learning support needs, were included. These items included: reasons for days absent from school (e.g. for cultural reasons, for reasons of sickness, or for other reasons); proficiency in use of home (Indigenous) language; history of chronic illness (such as otitis media) or neurodevelopmental disorders (such as Fetal Alcohol Syndrome); difficulty participating in classroom learning because of tiredness or for reasons of sickness, and; daily personal hygiene where the child comes to school with clean clothes and bathes regularly through the week.

- An additional enhancement to the AEDI arising from initial Indigenous consultations was the inclusion of observations of the behaviour and interaction of children within the school grounds, as well as teacher judgements based on classroom observations.

The piloting of the Indigenous adaptation of the AEDI was carried out during the second school term of 2008 in 49 schools in the three Western Australia pilot regions. The pilot study regions were selected to be broadly representative of the living circumstances of Indigenous children. The selected study regions provided opportunities to ascertain the relevant contextual considerations within metropolitan (Armadale), rural, remote and very remote regions (Gascoyne Midwest Murchison, and Pilbara). Collectively the study regions covered an area of over 400,000 square kilometers, or approximately one-sixth of the area of Western Australia. These pilots were also designed to establish the logistical feasibility and costs of the

administration of the trial Indigenous adaptation of the AEDI in conjunction with the standard AEDI process. As the AEDI is a population measure and administered across communities, the trial sites resulted in a total of 568 Indigenous children assessed using the trial Indigenous version and 977 non-Indigenous children assessed using the standard AEDI instrument. Over 58% of the Indigenous children were assessed jointly by a teacher and Indigenous cultural consultant.

2.3 Stage three – process evaluation of the implementation methodology

The third stage of adaptation involved qualitative evaluation of the pilot administration. This was conducted by means of semi-structured follow-up interviews with participating teachers, Indigenous cultural consultants and school principals. This process aimed to establish their views on specific aspects of the administration process as well as their appraisal of its value in their assessment of children's learning needs; what the school could do to address these needs, as well as suggestions for improvements in the AEDI checklist and administration process (Ferguson-Hill, Silburn & Walker, 2008). The analysis of the findings from the pilot administration of the adapted AEDI were then reviewed by the National AEDI Technical Advisory Group in November 2008 with regard to the potential use of the adapted instrument for Indigenous children in the 2009 AEDI National Program.

3. PILOT FINDINGS

3.1 Pilot sites

The Western Australian pilot sites collectively covered an area of over 400,000 square kilometres, or approximately one-sixth of the area of Western Australia. The combined residential population of the pilot sites was 92,914 in 2006 (ABS 2006). Figure 1 below describes the variation in the demographic and socioeconomic characteristics of these sites.

Table 1. Selected Demographic Characteristics of Pilot Sites, 2006

Selected characteristics	Pilot Study Site			
	Armadale	Gascoyne Midwest Murchison	Pilbara	*Australia*
	(%)	(%)	(%)	*(%)*
Persons identifying as Indigenous	2.8	21.5	12.4	*2.3*
Persons aged 0-5 years	8.2	9.1	11.3	*7.7*
Couple families with children	29.9	32.0	46.3	*31.2*
One parent families	18.1	15.8	9.1	*15.8*
Completed Year 12 or equivalent(a)	36.0	30.1	35.7	*43.7*
Total population (no.)	50,536	10,792	31,586	

(a) Of those aged over 17 years.
Source: ABS Census of Population and Housing 2006.

3.2. Pilot sample

Data were available for analysis from 49 of the 51 schools recruited to participate in the pilot. Twenty two of the recruited schools were located in the Armadale region of metropolitan Perth, 17 in the Gascoyne Midwest Murchison region and 12 in the Pilbara region. AEDI data were available on a total of 1,545 children about half of

whom were residing in the urban location (Armadale), about a third residing in or around a rural town, and the remainder (about 12%) were resident in remote communities.

Of the total sample, 568 were reported to be of Aboriginal or Torres Strait Islander descent (36.7% of the sample). The proportion of Aboriginal or Torres Strait Islander children varied by community, with a higher proportion in the remote (86%) compared to rural (50%) and representing only one-sixth of the metropolitan sample. The average age of the children at the time of data collection was 5 years and 6 months.

There are marked differences in the experiences and characteristics of Pilot Study children in each of the study sites. There were decidedly larger proportions of children with English as a second language in the Gascoyne Midwest Murchison (40%) and Pilbara (35%) than in Armadale (3%), partly reflecting the larger concentration of Indigenous people with traditional Aboriginal language usage in these sites. About 60% of children in Armadale had some early education and care experiences before they started school, compared with half of the children in Gascoyne Midwest Murchison and 42% in the Pilbara.

3.3 Rasch modelling analysis

3.3.1 Methods

The use of Rasch analysis in the development and analysis of tests and questionnaires is increasing in all areas of psychology, human development and educational science (Waugh & Chapman, 2005). There is also growing scientific consensus that in assessing questionnaire scaling properties Rasch modelling methods are preferred to the use of classical test theory (CTT) and factor analysis. Factor analysis does not necessarily provide a conceptual linear assessment of the construct, even if there is a high loading onto one factor, and may provide misleading evidence that a scale is working well when it is not (Waugh & Chapman, 2005).

Rasch analysis places questionnaire response data for each individual and each question on the same spectrum of person ability and item difficulty (i.e. every person and item is given a location). The Rasch model assumes that the probability a particular individual will respond in a certain way to a particular item is a logistic function of the relative distance between the item location and the person location and is <u>only</u> a function of this. For example, in order for the AEDI *Communication* domain scale to conform to the Rasch model, the probability that a child would be rated by their teacher as having a particular score on any item of the scale must be a function of a) the level of the '*communication*' ability exhibited by the child, <u>and</u> b) the level/extent of the specific aspect of '*communication'* represented by the item being affirmed - and only a function of these factors.

For the scale and items to be working consistently, there should be evidence that those children who (according to their scores on the whole scale) have a high level of '*communication'* tend to have a high probability of affirming items representing low levels of '*communication'* ability. The Rasch model is also useful in informing whether items and scales can be considered *uni-dimensional*. Assuming that the data fit, the Rasch model transforms them from ordinal scores into interval level

measurement with the logit (log odds unit) as the unit of measurement. Once unidimensionality is confirmed it is then psychometrically justifiable to claim that the items measure one construct and that it is acceptable to add the scores of these items together to obtain a total score for that construct.

A series of Rasch analyses was undertaken using the Rasch Unidimensional Measurement Model (RUMM2020 version 2) software (Marais & Andrich et al, 2007). These analyses proceeded in three stages to establish: a) *uni-dimensionality* - how well each item measures or "fits" its particular underlying construct; b) *item hierarchy* – how well the items are ordered from least to most difficult to identify any gaps and redundancies that may lessen the instrument's accuracy and efficiency; c) s*cale reliability* - how well the items in each scale correspond to the overall scale score. Next, the data from the Indigenous sample were further analysed to establish whether there were any systematic differences in the performance of the scale items (i.e. *differential item functioning)* for children assessed by a teacher alone in comparison with those children assessed jointly by a teacher and an Indigenous cultural consultant. Finally, the data from the overall pilot sample (i.e. Indigenous and non-Indigenous) were examined with regard to *differential item functioning* indicating whether some items operate differently for Indigenous vs. non-Indigenous children, and/or whether particular items work differently when rated by teachers on their own vs. when rated jointly with an Indigenous cultural consultant.

3.3.2 Findings

The analyses of the AEDI pilot sample of Indigenous children firstly established good uni-dimensionality for four of the domain scales, i.e. most items in each of the scales had a good fit with the Rasch model. This means that these scales may be accepted as measuring a single construct at this level of scale. They also demonstrated that the adapted AEDI scale items were mostly performing well with relatively few showing misfit or differential item functioning (DIF). The relatively few items identified as having a degree of misfit with the Rasch model are listed in Table 2 below.

Table 2. AEDI scale items showing poor fit with the Rasch model

Adapted AEDI Scale	Items deleted due to misfit
Communication (Items Bi to B7 & B1a-B1d)	B1c, B1b * B1a,B1d
Language and Cognitive Development (Items B8 to B33)	B20 **, B24, B28
Social Competence (Items C1 to C25 and C12a)	C19, C12a *** C18, C17, C16
Emotional Maturity (Items C26 to C51)	C48****, C49, C50, C47, C51
Physical Health and Wellbeing -Gross and fine motor (ItemsA5 to A12)	A5 low discrimination due to being very 'easy' item
Physical Health & Wellbeing – Physical health (Items A2,A4,A13 and A3a ,A3b)	A3R

* See Figure 2 below, ** See Figure 3 below, *** See Figure 1 below, **** See Figure 4 below

Figures 1 – 4 provide examples of the item characteristic curves (ICC) for the misfitting items. These chart the person-location scores against their expected values in terms of the Rasch model. Perfectly fitting items would be expected to align precisely with the item-person curves for four examples of misfitting items. These charts graphically illustrate how well each of these items are performing along the scale score range from "low scoring" to "high scoring" varying "ability".

The Emotional Maturity scale showed the most misfit with all the items C47(*unhappyR*) to C51(*indecisiveR*) misfitting in turn as each was deleted from analysis. For this sample of children, this set of items appears to be measuring a different construct: examination of the item content supports this conclusion as was the case with the Rasch analysis with the larger national sample of Indigenous children collected in the 2004-2006 stage of the national roll-out of the original AEDI reported by Styles & Param (2008). Some of the additional new *Communication* items (such as B1a to B1d and C12a which relate to effective use of languages other than English) did not fit the model well when analysed together. This suggests that these extra items should not be used as part of the communication scale, but rather be retained as individual indicator items.

Figure 1. S*ocial Competence Scale:* Misfitting Item C12a (*completes work if given enough time*)
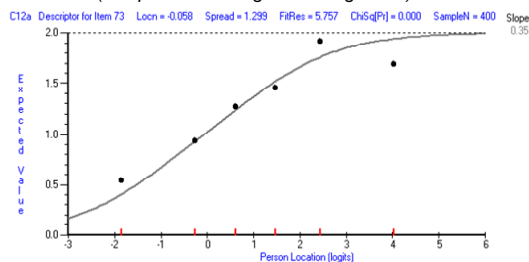
Comment: This item is not performing well for children at the high end of the scale: this is understandable in that teachers are likely to regard more able children as not requiring more time, that is, the item is not suitable for those children.

Figure 2. Communication Scale: Misfitting item B1a (*Effective use of Aboriginal language*)
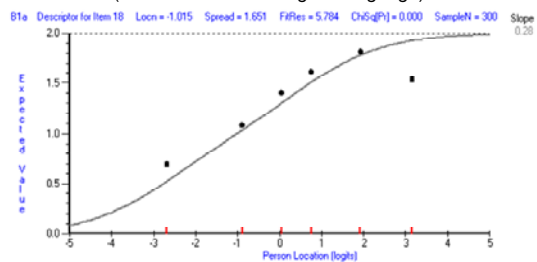
Comment: The performance of this item suggests that the item is not suitable for more able children

Figure 3. Language and Cognitive Development Scale: Misfitting item B20 (*Writes voluntarily*)
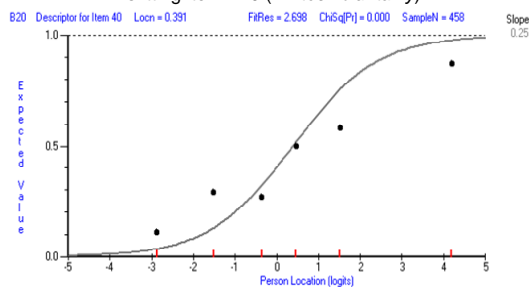
Comment: The discrimination of this item across increasing person locations is inconsistent, although in general the pattern is increasing

Figure 4. Emotional Maturity Scale: Misfitting item C48 (*Worried – reverse coded*)
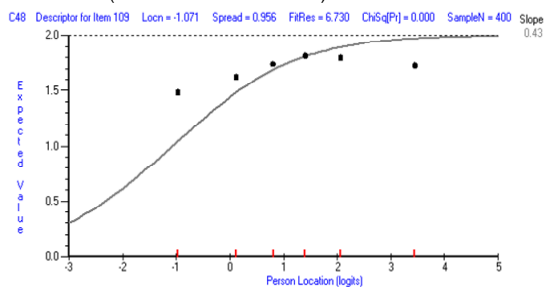
Comment: This item is not discriminating amongst children: it is likely that it is part of a different construct

With the exception of Physical Health and Wellbeing (PHWB), all of the adapted AEDI scales were found to have good reliability. Further investigation of the PHWB scale indicated that it could be meaningfully divided into two sub-scales – *Gross and Fine Motor Development* and *Physical Health* – as they appear not to form a single scale at this level of analysis for this sample of children. Item A3R (*too tired or too sick*) was deleted because it is assessing the same aspects as A3a and A3b and is,

therefore, redundant. The items remaining in the each of the two sub-scales were found to be performing well.

Differential item functioning (DIF) was evident on only a few scale items. This indicates that most items performed in the same way regardless of whether they were assessed by teachers alone or by joint assessment with a cultural consultant. In all but one of the items (B4: *imaginative play*) the responses were found to be higher where joint assessments were made with a cultural consultant even though children have the same total score. Examples of items showing DIF according to presence of cultural consultant are shown below in Figures 5 - 8.

Figure 5. Communication Scale: DIF by presence of a cultural consultant, Item B4 (*Imaginative play*)

Comment: Children more likely to be judged as able to do this when assessed by teachers alone vs. jointly with a cultural consultant (even though children have the same total scores)
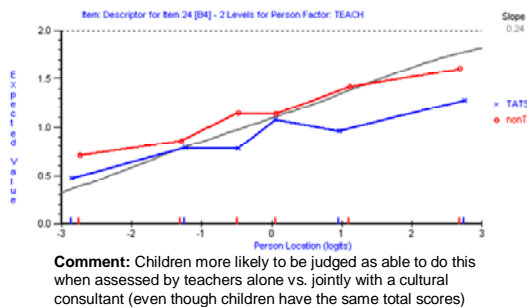
Figure 6. Language and Cognitive Development Scale: DIF by consultant, Item B18 (*Experiments with writing*)

Comment: Children more likely to be judged as doing this when a cultural consultant was involved than when one was not, even though children have the same total scores

Figure 7. Language and Cognitive Development Scale: DIF by consultant, item B12 (*Able to attach sounds to letters*)

Comment: If a cultural consultant was present, children across the lower to middle total score groups were judged to be more able to do this than when assessed by teachers alone
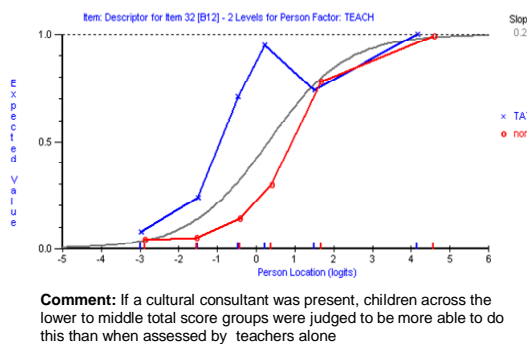
Figure 8. Social Competence Scale: DIF by consultant, item C10 (*Accepts responsibility*)

Comment: Across parts of the person location range, there was a tendency for children to be judged more able to do this if a cultural consultant was present than when assessed by teachers alone
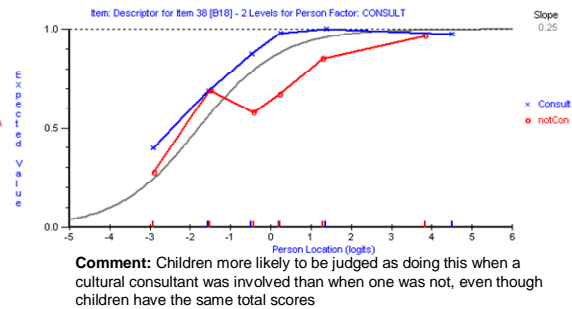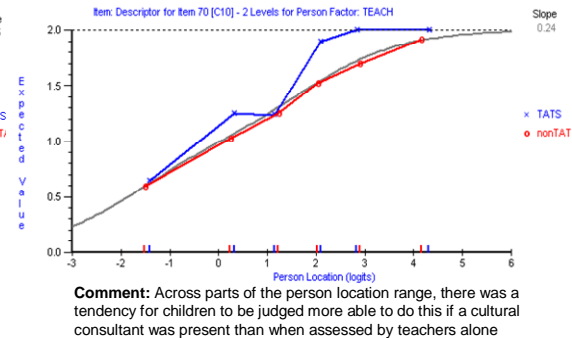
3.4 Adapted AEDI pilot results

This section provides an overview of findings from the trial administration of the Indigenous adaptation of the AEDI in three pilot sites in Western Australia in 2008. It describes the basic performance characteristics of the adapted Indigenous AEDI and standard AEDI used respectively with the Indigenous and non-Indigenous children in the pilot.

Each question on the AEDI requires a response option ranging from a dichotomous choice (i.e. Yes or No) to a five point Likert scale. These items are then scored, summed together and then averaged to provide the AEDI score for each of the five developmental domains measured. These scores range from 0 to 10 for each of the domains measured with most children performing at the upper end of the scale. With reference to the AEDI results from the weighted 2004-2006 national sample, children falling below the 10th percentile in one or more developmental domains were

categorised as 'developmentally vulnerable'.[2] In a similar manner those children scoring above the 60th percentile with reference to the national sample were categorised as 'doing well'.

3.4.1 Results for all children.

Figure 2 below shows the AEDI results for the overall pilot sample (i.e. Indigenous and non-Indigenous children) reported in three ways: a) the mean scores; b) the proportion of children vulnerable for the domain; and c) the proportion of children performing well.

Table 3. AEDI Results for all Pilot Study Children, by Domain (a)

Domain	AEDI Total Score		Vulnerable	Performing well
	Mean	95% Confidence Interval		
			(%)	(%)
Physical health and wellbeing	8.5	8.4–8.6	10.9	38.0
Social competence	7.8	7.7–7.9	15.1	23.3
Emotional maturity	7.6	7.5–7.7	16.2	18.7
Language and cognitive skills	6.8	6.6–6.9	29.2	6.5
Communication skills and general knowledge	7.2	7.1–7.3	13.8	29.5

(a) Children with 'special needs' and those for which there was insufficient information to create a score on at least one domain, have been excluded from this analysis.

3.4.2 Indigenous specific results [3]

Children having AEDI domain scores below those of the 10th percentile of the national reference sample were categorised as 'developmentally vulnerable'. The greatest disparities between Indigenous and non-Indigenous Pilot Study children in the proportions deemed to be 'developmentally vulnerable' was observed in the *Language and Cognitive Skills* domain, where there was a 35 percentage point difference. The level of these disparities is comparable to those reported in the Western Australian Aboriginal Child Health Survey which used other teacher rated assessments of children's educational performance at age 5 years (Zubrick et al, 2006). Figure 9 (below) show the range in AEDI results for each developmental domain by Indigenous status.

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[2] This 10th percentile cut-point was purposefully chosen to be higher than the cut-point of 3% or 5% typically used for the clinical diagnosis of behavioural or educational difficulties (Janus, 2009). Utilising the 10th percentile aims to encompass children that are vulnerable but may not yet be easily diagnosable, and thus represents children that are likely to benefit from population level interventions (Janus, 2009).

[3] The pilot findings for Indigenous and non-Indigenous children are reported here to provide contextual information to assist the deliberations of the AEDI Indigenous Reference Group and the AEDI National Steering Committee in establishing the permissions and conditions under which some communities may elect to report their Indigenous specific community-level results.

Figure 9. Distribution of AEDI Total Scores, by Domain

The Australian Early Development Index (AEDI) Indigenous Adaptation Study
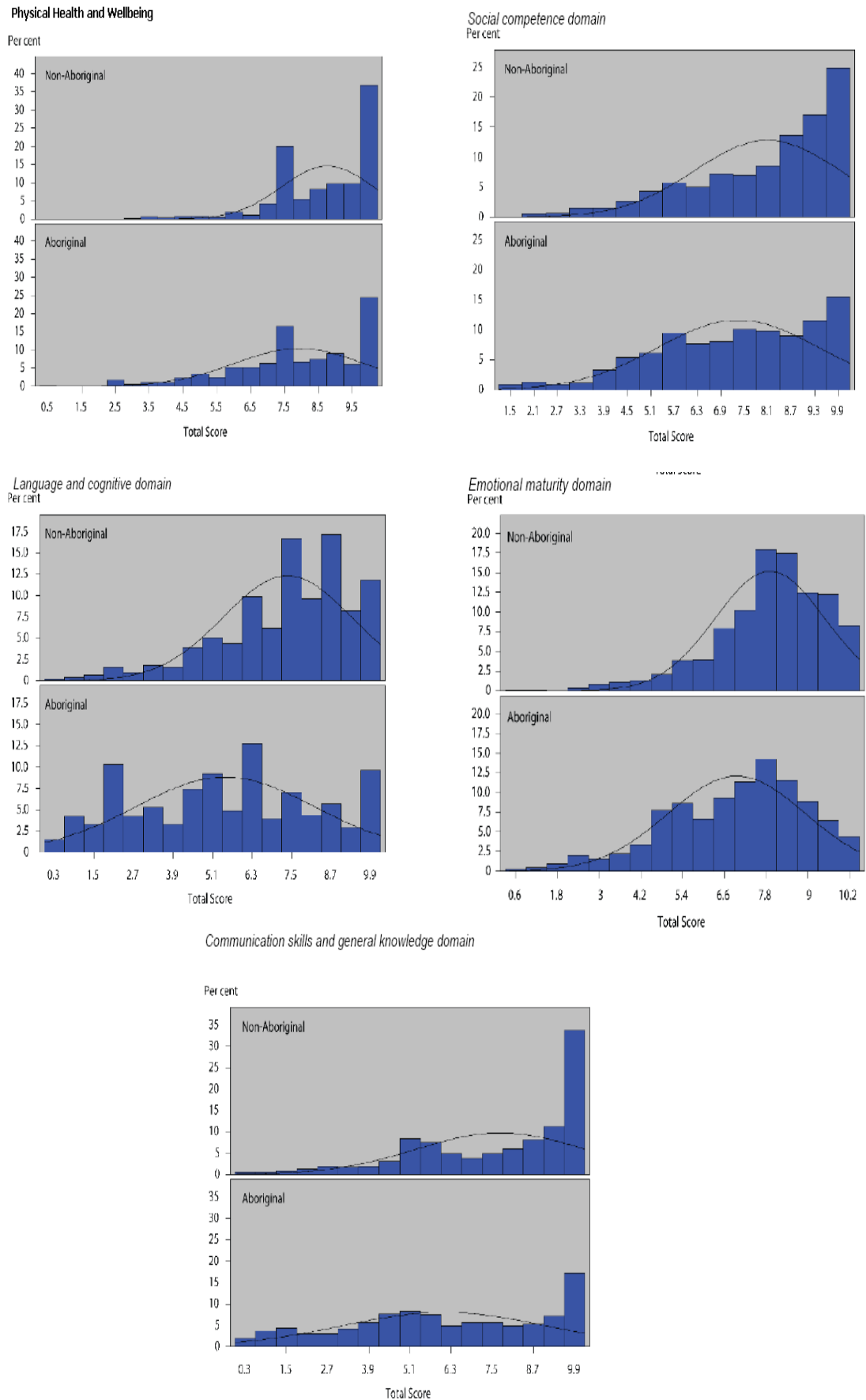
3.5 Use of Indigenous cultural consultants

One of the objectives of the Pilot Study was to test a modification to the process of completing the AEDI checklist. For Indigenous children, Indigenous cultural consultants were used wherever possible. This entailed teachers and Indigenous cultural consultants (usually Aboriginal and Islander Education Officers (AIEOs) or Aboriginal Teacher Assistants (ATAs) completing the checklist jointly.

Cultural consultants were used in the majority of cases – 58% of Indigenous children were assessed by both a teacher and cultural consultant; in addition, in 4% of cases it was unclear whether a cultural consultant was used in assessing the child. This proportion varied considerably depending on geographic remoteness – from 77% among Indigenous children living in rural locations, to 60% in the City (Armadale) and 27% in Remote communities. This primarily reflects availability, access and opportunity.

It is of interest to note that fewer 'invalid' AEDI Scores were produced when cultural consultants completed the checklist with the teacher. An AEDI Score cannot be derived (or is considered 'invalid') when too few checklist items have been completed. While this applied to only a small proportion of cases, overall, the proportion was lower when a cultural consultant was used (8%) than when the teacher completed it on their own (13%).

There were no significant differences in the overall AEDI results for Indigenous children who had been assessed jointly by teachers and cultural consultants when compared with those assessed solely by teachers. For example, 38% of jointly assessed children were vulnerable in two or more domains compared with 39% among those assessed by teachers only. The AEDI Score for the domains of *Physical health and wellbeing* and *Communication skills and general knowledge* was higher, on average, when cultural consultants were used. The difference, however, was not statistically significant in either domain.

3.6 Qualitative evaluation of the pilot administration

3.6.1 Methods

This section provides an overview of the qualitative aspects of the evaluation of the pilot administration of the trial adapted Indigenous version of the AEDI. An action research approach was used to record the experiences, observations and suggestions of the school personnel who assisted in the administration of the adapted AEDI in the participating pilot schools. The collection of information in a semi-structured and relatively informal manner had, as its potential goal, the discovery of new understandings of this form of school-based child assessment. Given that the AEDI process is recursive, with the school/community results being fed back for local utilisation to improve early child development and children's educational progress, this qualitative evaluation had the dual purpose of seeking to bring about practical transformation whilst at the same time advancing understanding of how this process could be improved. A 'grounded theory' framework was used to identify 'categories and themes' emerging from the participants' responses and for integrating these into 'the story' emerging from the investigation.

3.6.2 Participants

Interviews were conducted with staff from 26 of the schools participating in the AEDI Indigenous adaptation study (60%). Of the 26 schools, ten were in the Pilbara, eight were in Armadale, four were in the Murchison and four were in Carnarvon. A total of 64 participants were interviewed including 21 school principals, 30 teachers and 13 Indigenous cultural consultants

Table 4: School staff interviewed, by region

	n	Armadale	Carnarvon	Murchison	Pilbara
Principals	*21*	7	3	4	7
Teachers	*30*	13	6	6	5
Cultural Consultants	*13*	5	2	3	3
Total	***64***	**26**	**11**	**13**	**14**

3.6.3 Interview findings

Perceived benefit of school participation in the AEDI Indigenous adaptation study

The majority of principals, teachers and cultural consultants believed that there were a number of tangible benefits for the school, staff, and students from their school having participated in the AEDI Indigenous adaptation pilot study (Table 4 below).

Table 5: Benefits arising from participating in the AEDI Indigenous adaptation study

	n	Yes (%)	No (%)	Not Sure (%)
Principals	*23*	83	8.5	8.5
Teachers	*30*	97	3	0
Cultural Consultants	*12*	92	9	0
Total	***64***	**91**	**6**	**3**

Principals' perspectives on the use of Indigenous cultural consultants

Two-thirds of the principals said that there was a suitable person at their school to fulfil a cultural consultant role, and over half of the teachers completed some or all of the AEDI checklists with a cultural consultant. Teachers who lived in the community were more likely to have used a cultural consultant than teachers who did not reside in the community. Most principals (in schools where the checklists were completed collaboratively) reported receiving favourable feedback from teachers and/or cultural consultants about working together, and most believed that the teachers and cultural consultants had gained increased knowledge and understanding through collaborating in this process. Less than a quarter of the principals reported being aware of any issues or concerns that the teachers or cultural consultants had about completing the checklists together.

Teacher and Indigenous cultural consultant perspectives

All of the teachers who completed the AEDI checklists with a cultural consultant thought that there were benefits in undertaking them collaboratively, and all reported that it was easy to come to a consensus in their ratings of most items. Almost all of the teachers who completed the checklists with a cultural consultant thought that it had been a useful process and that they had personally gained something in the process. They also considered the information collected in this manner to be more worthwhile. All of the Indigenous cultural consultants reported they thought that the

information collected was more useful, and all expressed the view that they and the teachers, had both benefited from the process of discussing their ratings together. Three-quarters of the teachers who completed the Checklists alone thought that it would have been useful to have completed them with a cultural consultant. At schools where a cultural consultant was not available most principals believed that one would have been of value. Most of the Indigenous cultural consultants thought that their school had a greater appreciation of their role as a result of their participation in the AEDI Indigenous adaptation study and they all believed that the questions allowed them to bring their knowledge and experience to the process.

Table 6: Benefits of completing the AEDI checklist collaboratively

Was the information more worthwhile because it was collected together?			
	n	Yes (%)	No (%)
Teachers	*19*	95	5
Cultural Consultants	*11*	100	0
Total	***30***	**97**	**3**

Did you gain anything through the process of completing the Checklists together?			
	n	Yes (%)	No (%)
Teachers	*16*	88	12
Cultural Consultants	*10*	100	0
Total	***26***	**92**	**8**

Organisational and practical issues

Almost all of the principals thought that the information supplied to them about the AEDI Indigenous adaptation study process was beneficial. Around half of the principals reported that there were issues for them in organising and arranging for the school to undertake the checklists.

Use of the web-based data entry system

All of the teachers and Indigenous cultural consultants found the web-based data entry system easy to use, although around a third of the principals perceived teachers and/or cultural consultants at their school had some technical difficulties with the web-based data system. A small percentage of teachers and principals sought assistance from the AEDI National Support Centre and/or the Telethon Institute for Child Health Research (TICHR), and a third of teachers sought assistance of some kind from their Local AEDI Coordinator. Interestingly, no cultural consultants reported seeking assistance from any source.

Table 7: Sought technical and/or other assistance

Sought Assistance from the AEDI National Support Centre			
	n	Yes (%)	No (%)
Principals	*19*	16	84
Teachers	*30*	20	80
Cultural Consultants	*11*	0	100
Total	***59***	**15**	**85**

Sought Assistance from the TICHR			
	n	Yes (%)	No (%)
Principals	*22*	14	86
Teachers	*30*	20	80

Cultural Consultants	*11*	0	100
Total	***62***	**15**	**85**

Sought Assistance from Local AEDI Coordinator

	n	Yes (%)	No (%)
Teachers	*29*	34	66

Sought Assistance from a Teacher or Principal

	n	Yes (%)	No (%)
Cultural Consultants	*11*	0	100

Preparation to complete the AEDI

While it was recommended to the teachers that they use the pre-assessment guide prior to completing the AEDI checklist, only half the teachers undertook this preparation. All of the teachers that used the pre-assessment guide thought that it had been useful. It is perhaps concerning that less than a third of the teachers who completed the checklists with a cultural consultant went through the pre-assessment guide with the cultural consultant beforehand. Further, none of the cultural consultants interviewed reported having used the pre-assessment guide prior to completing the AEDI checklist with the teacher.

Dates and times

A third of the interviewed teachers had completed the Checklists by Week 4 of the school term, more than 80% had finished by Week 6, and all but one had completed the Checklists by Week 8. The teachers reported that it took, on average, 22 minutes to complete each checklist. There was very little difference in the reported time taken between teachers who completed the Checklists with a cultural consultant and those who completed it alone (23 minutes compared with 21 minutes).

3.6.4 Thematic analysis

The qualitative data collected from the open-ended questions of the interview with schools personnel were analysed within an interpretive framework based on grounded theory principles to provide a systematic approach to identify categories of responses from the themes (or concepts) arising (Strauss & Corbin, 1998). Matrices to sort the questions and responses were developed using the following steps of analysis described by Liamputtong & Ezzy (2005): a) Multiple readings of the data – reading and re-reading the data, to become immersed in the data; b) Identifying and labelling themes found in the data and developing preliminary categories from these themes; and c) Refining coding of the data in each identified category.

Table 6 below provides summary overview of the main thematic categories and issues identified in the interviews for: a) principals and local AEDI co-ordinators; b) teachers, and c) Indigenous cultural consultants.

Table 8. Summary of main thematic categories and issues

Thematic Category	Principals & Local AEDI Coordinators	Teachers	Indigenous Cultural Consultants
VALUING and USING DATA	Anticipation of AEDI results. Foreseeing programs / predicting. Quantifiable data. Confirmation of information already known. Influencing school planning. Inform the targeting of funding. Constructive discussion within and between schools. Comparative data for schools / communities	Anticipation of AEDI results. Foreseeing programs / predicting. Quantifiable data. Confirmation of information already known. Influencing planning	Anticipation of AEDI results Foreseeing programs / predicting Influencing planning Constructive discussion Opening discussion
GAINS	*Information about the children:-* Improved teacher understanding / awareness of the children. Improved knowledge of existing skills of children More complete picture of the children. Appreciation of strengths of culture. Sharing information with parents / carers. Up-skilling of school and staff. Facilitating staff retention. Process improvement in information obtained about children:- Collaboration between teachers and cultural consultants	Personal growth Evoked emotions Raising profiles of children of concern Strengths-based information More complete information	Sharing information with parents Sharing knowledge with teachers Knowledge gain generally Two-way knowledge gain
POSITIVE FOCUS	Focussed time. Focussed discussion about the children. Raising profiles of children of concern	Value of having focussed time. Opportunity for focussed discussion about individual children.	Value of having focussed time. Opportunity for focussed discussion about individual children.
ROLE VALUING	Recognition of value of the role of the cultural consultant Opportunity for 2 way learning	Opportunity for 2 way learning	Recognition of teacher knowledge Recognition of AIEO/ATA role Breaking down barriers Recognition of two-way contribution
CHANGING PRACTICE	Changing school & teacher practice. Professional development opportunity	Changing school & teacher practice. Professional development opportunity	Changing school & teacher practice. Professional development opportunity
BIAS AND PERCEPTION		Balanced information More accurate information	Minimising bias in assessment More balanced information More accurate information

The Australian Early Development Index (AEDI) Indigenous Adaptation Study

a) Principals and local AEDI coordinators

Interview questions with principals and local area coordinators

- What did you see as the benefits/problems of participation in the I-AEDI Project?
- Were there issues in organising and arranging for the school to undertake the AEDI checklist?
- Was there a suitable person available to collaborate as a cultural consultant with teachers in completing the AEDI checklist?
- With regard to the process of a cultural consultant and teacher completing the AEDI checklist jointly – do you have views about a) the benefits, b) the content of checklist items, c) any problems which arose, d) the collaborative rating process?
- Were you aware of any issues or concerns arising with teachers and Indigenous cultural consultants completing the AEDI assessments jointly? Were you required to assist in any way?
- Did you believe the teachers/cultural consultants benefited from the joint assessment process (or not)?
- Were there any technical or logistical difficulties?
- Did you seek assistance from the I-AEDI or AEDI support centres during the period of the pilot project?

Five main categories of response were identified from the feedback of principals and local AEDI coordinators (LACs) reflecting known and unexpected benefits from their participation in the pilot. For instance, principals and LACs identified the categories – *'valuing and using data', 'gains', 'positive focus', 'role valuing'* and *'changing practice'* – which together suggest an appreciation of the potential value of the AEDI data for communities and schools, and of the benefits of teachers being supported to have quality and dedicated time available to spend on the children's assessments and the focussed discussions which occurred while completing the checklists.

Valuing and using data
Principals highlighted changes in discussion at school meetings with the level of conversations raised through the 'same language' being used by all present. Problem-solving approaches to address the issues (especially for Indigenous children) were felt to be likely to be more universal through collaborative approaches to planning. Many thought that the adapted AEDI process would help schools to be better prepared to develop cultural knowledge and to implement culturally supportive activities within communities and schools. Some saw it having value as a professional development experience for staff in cultural awareness and sensitivity. A point raised by some principals was that staff job satisfaction could be raised through the opportunities for action when communities determine ways of improving learning outcomes for Indigenous children through evidence-based data being available in relevant contexts, and through the interest aroused by both the content and the process of the adapted AEDI process.

Gains
Several gains were identified from the themes emerging from feedback for principals and LACs. These ranged from the benefit of having a more complete picture of Aboriginal students to two-way knowledge gains (teachers about cultural aspects of the lives of the children, and cultural consultants understanding further the teaching activities in the classroom) was seen as a particular benefit for schools. Reporting back

to community the findings from the AEDI Indigenous adaptation study was seen as potentially helpful in building school-community relationships and understanding.

Positive focus

Almost all principals commented on the positive effects and ongoing benefits of setting aside focused time for discussions to occur between teachers and cultural consultants during and after the undertaking of the adapted AEDI. Further, principals agreed that completing the AEDI in this way enabled discussion of the needs of children in the community, and opened opportunities to work with the information even before the AEDI community results were reported.

Role valuing

The cultural perspective brought to the AEDI rating process by the cultural consultants was highly valued by principals. The 'whole area of the AIEO having a significant role in the school is highlighted'. Further, it 'opens teachers eyes to the wealth of valuable knowledge that our AIEOs do have'.

Changing practice

Several principals perceived this as a professional development opportunity for all staff involved, and the fact that their responses to the AEDI questions had increased awareness of how cultural and social factors impact on Indigenous ways of being. This was considered by most respondents to have informed or led to changes of classroom and school-community practice. Reflection-on-action as a process of professional development of school personnel was noted by some principals resulting from their schools participation in the pilot.

Organisational and practical issues

The identified themes and issues arising included teacher relief arrangements, cultural consultant relief, coordination of times to complete the checklists by teachers and cultural consultants, availability or not of cultural consultants, and difficulties of engaging and convincing some teachers to complete the checklists. Availability and access to relief teachers / relief cultural consultants was commonly identified as an issue but one which was 'manageable' and able to be overcome. The provision of practical assistance in the way of teacher relief payments and relief personnel where required was deemed very helpful. However, this also limited the time frames in which the AEDI could be completed as the available relief staff times were pre-specified.

Timing

Co-ordinating times for checklist completion was presented as a real issue when principals were organising joint assessments by teachers and cultural consultants. Compromises in options with checklist completion were required when the timing was too difficult to achieve. When teachers chose to complete the checklists in their own time, plans for collaborative completion of the checklists were changed. Other issues affecting AEDI checklist completion included staff illness, local or other political issues, industrial issues (e.g. 'work to rule') , and cultural considerations such as funerals or ceremonies, leading to delays or interruptions of checklist completion. One principal stated that participating in the pilot interrupted school and teaching core business activities and may affect other sites similarly. Schools determining their own best timing to undertake the checklists was a suggested option.

Teacher's cooperation

Gaining teacher's cooperation with undertaking the Checklists was a concern reported by some principals. Convincing teachers that it was a worthwhile exercise and beneficial for children, communities and schools meant time away from other work according to some principals. These sites agreed that the national rollout for the AEDI with all schools participating would help in alleviating these concerns.

Information Technology

IT issues such as computer availability and the technical expertise of teachers had been problematic for some schools. Some teachers were not confident with computer usage and may require training time. Internet bandwidth was an issue in some remote areas especially when weather or extraneous conditions influence access.

b) Teachers

Five main categories were identified from teacher's responses reflecting an increased awareness and understanding of Aboriginal children in their communities – both in Aboriginal child ways of behaving, and learning. Responses indicating reinforcement of pre-existing knowledge were far outweighed by responses indicating gains of new knowledge and understanding of Aboriginal children, and ways of working with cultural consultants.

Questions asked of teachers

Do you think there were any benefits arising for you, your school, the children, or for the community, from your participation in the I-AEDI project? If 'Yes', can you describe the benefits?

       a. Immediate?

       b. Long term?

- How did you find the AEDI adapted trial Indigenous checklist itself, both the content (questions themselves) and the process of undertaking it?

- Did you complete the checklist by yourself or with a cultural consultant?

- If completed with a cultural consultant, did you identify any benefits to undertaking the checklists jointly?

- If completed with a cultural consultant – was it easy to come to a consensus?

- Do you think it was a useful process to have both teacher and cultural consultant complete it?

- In your opinion, is the information that has been collected, better, or more worthwhile because the two of you completed it together?

- Did you gain anything through this process (i.e. doing the checklists together)?

- Any additional comments or anything you would like to add?

Teachers typically commented that the process of joint checklist completion forced them to take a closer look at each student which assisted their understanding of the children. They reported that this gave a better understanding of what Indigenous children might need in order to achieve a higher standard at school – both before school entry (family and community preparation) and in the very early school contact years. All of the response categories demonstrate contemplation by the teachers leading to a more holistic view of Aboriginal children and their cultural ways of being, reflection on

early life impacts on an Aboriginal child's preparation for school and learning, and reflection on their actions in the classroom to best accommodate the learning needs of Aboriginal children.

> *"It forces you to take a closer look at each student - not just education needs, but home life as well. This helps to understand the children better and what they might need to achieve a higher standard at school."*

Valuing and using data

Teachers were mostly optimistic that more programs and resources for Indigenous children would result from the data and that the data would assist in guiding how these should be selected or developed.

Gains

Relationship building and knowledge enhancement was highlighted in responses by teachers and cultural consultants as well as improvements in understanding and awareness of the children.

For example:

"We talked all the time. It was better than doing it on my own – I understand more now.

"It was good for the cultural consultants as well – status – being recognised as someone with the information".

Knowledge gains, increased understanding of the children and their background, and the fact that more complete information resulted through collaborative undertaking of the Checklists were strongly identified, for example:

"*It gave me more information and knowledge – therefore my understanding is better".*

"Really good in terms of our differences in perception and this helped to plot the kids…this helped me because I was looking from a teacher point of view and she's coming from a background of own culture – who looks after them? Why are they not being fed? This means more complete information … family structure knowledge and background helped me know the kids better. It gave me more understanding of the kids."

"[It] alerted me to the fact that I hadn't taken quite enough interest/information in or about the language before. They don't stick out as being that different in class so I don't think about it. I should question the parents more."

Focus

The opportunity for focused discussion leading to more complete information about the children was seen as a significant factor benefiting the collaborative process.

"Gave some extra background to the children. We did bounce off each other – 'What do you think?' Made us talk about it and focus on the whole child."

Changing practice

Many of the interviewed teachers stated they had reviewed their own classroom planning, activity and interaction as a result of their increased understanding of child development through exploring the AEDI domains, and because of their raised

awareness of the needs of Indigenous children in their classroom. Tracking of children's progress was also seen as a beneficial consequence of the information obtained. Some thought that a greater focus on Indigenous children's early development and learning needs would assist their planning well beyond the next term of school.

Bias and Perception

Bias was suggested as a possible risk but with differing perceptions as to whether the joint assessments with a cultural consultant would be more or less biased. Several teachers commented that the cultural consultant was often 'harder on the kids in their grading' than the teachers themselves. Some teachers found it quicker to do the checklists with the cultural consultant, while two teachers noted that time constraints meant it was easier for them to do them alone or arrange a mutually convenient time.

Content of checklists

The greater majority of comments were positive regarding the content of the checklists. Responses to the process of completing the adapted Indigenous version included reflections on the need for revision of existing school connections with the community and different planning for classroom activities.

"Planning – awareness of the issues for children – being tired, being hungry makes a huge impact on learning abilities. These were good questions"

"It made me think of ways of getting the families involved for the future. Thinking and planning now – it helps. ...[Leads to being] *Better prepared in schools –* [and] *earlier information to parents about an expected level to have children more prepared for school."*

Many teachers spontaneously noted that the extra questions in the adapted Indigenous version could be beneficial in developing a better understanding of all children. For example:

"They [Indigenous items] *were more in-depth and more based on their homes. It gives a better understanding of the children. Could be beneficial for ALL children I think."*

"I found it interesting when I got to the Indigenous section for those kids. I think it could be used for everyone."

Not all teachers in pilot schools felt that the extra information in the adapted version of the Indigenous AEDI checklist was applicable to their Indigenous students. However, teachers stated they still found it thought-provoking. For example:

"Maybe – not really, but only because of the 'kind' of [Aboriginal] *children who come to this school. - one child may have fetal alcohol syndrome but that's not definite – it did have us thinking. Some questions weren't really applicable to this group BUT – questions relating to family grouping were interesting so I [contacted] a few families to find out."*

c) Indigenous Cultural consultants

Five main categories were identified from the cultural consultant's responses. These included a) the valuing and use of data on how children were doing; b) gains in awareness and understanding of children's needs; c) greater valuing of the role and knowledge of Indigenous staff; d) challenges from school's multiple expectations of

Indigenous staff; and e) missed opportunities - teachers could have gained more from the joint AEDI completion discussions.

Questions asked of cultural consultants:

- Do you think there were any benefits arising for you, your school, the children, or for the community, from your participation in the I-AEDI project? If 'Yes', can you describe the benefits? A. Immediate? B. Long term?
- Were there any difficulties for you in undertaking the Checklist?
- If (or even though) there were difficulties completing the Checklists jointly, do you think it was a useful process to have both teacher and cultural consultant complete it?
- In your opinion, is the information collected better, or more worthwhile because the two of you completed it together?
- Did you gain through this process (eg. such as better ways of working together with Indigenous children? If 'Yes', could you expand on that?
- Do you think the other person gained from doing it together?
- What were your initial thoughts about the Checklist itself?
- As a result of your participation in the process for the I-AEDI project, do you think the school has a greater appreciation of the role of cultural consultants?
- Overall, do you think the questions enabled you to bring your knowledge and experience to the process? If 'Yes', could you explain?
- Any additional comments or anything you would like to add?

Valuing and using data

"It made me realise <u>what </u>we need to look at in their development for school readiness. I will be keeping an eye on them more [the children] *– for me it is more information and more knowledge to give to parents."*

"From the educational side, I really liked finding out how they were going. The focus on the one child for twenty minutes was really valuable. We talked a lot about each child."

Gains

"It makes you be aware of what's happening with the children, more understanding of what the teacher is doing, and increased rapport."

"It brings the teacher and AIEO closer together – it breaks down the barriers between Aboriginal and non-Aboriginal AND appreciating both roles helps the children".

"Any interaction with the teachers is of benefit to us [AIEOs]. If there is any problems such as domestic violence, the teachers should know. The teachers were shocked – they have NO idea of some of the problems and how they live day to day".

"After doing this with the teachers I could give some information to parents about their kids. …It's different when it's coming from me because I can give it like a yarn and they respect me and believe me."

Role valuing
On collaboration and joint completion of the adapted AEDI Checklist:

" Yes, it makes you be aware of what's happening with the children, more understanding of what the teacher is doing, and increased rapport [with teachers]."

Role expectation – Indigenous cultural consultants
Time was an issue for several cultural consultants:

"To tell the truth, I'm a really busy person so I didn't have time to sit there…"

Multi-tasking was a common topic of discussion and is supported by the diversity of roles within the Job Description for an AIEO. For example one cultural consultant was busy with organising NAIDOC week celebrations and noted when contacted to participate in the AEDI assessment:

"I'm up to my neck [at work at the moment] *in partly cooked kangaroo tails…".*

Missed opportunities
Missed opportunities were identified by several cultural consultants, for example some reported not being given the opportunity to participate with teachers. Some were only asked for assistance with obviously culturally relevant questions

"…I would have liked to be involved with all of the Checklist for these kids"

Many cultural consultants felt they could have provided teachers other relevant information about children's home and cultural backgrounds which would have been relevant to meeting their learning needs in the classroom. For example in response to the question [Any benefits from your participation in the checklist completion?]

"Yes …BUT …if it was a bit more in-depth it would be better because the teachers wouldn't really know the cultural aspect … let's say with the living arrangements – this wasn't specified in the Checklist – and shared accommodation – I didn't really see that ……if teachers understand they move from place to place. This helps with who to talk to and who to contact."

4. RECOMMENDATIONS

These pilot findings provided empirical support for the following recommendations being endorsed in October 2008 by the technical advisory group which has scientific oversight of the national implementation of the AEDI across all Australian communities in 2009

> a) It is administratively and psychometrically feasible for the adapted version of the AEDI for Indigenous children to be implemented in conjunction with the standard AEDI process in the 2009 AEDI National Program roll-out.

> b) There is sufficient measurement equivalence in the psychometric performance of the adapted AEDI scales for data on Indigenous and non-Indigenous children to be combined for aggregated reporting at the community, school and jurisdictional levels without introduction of unacceptable levels of cultural bias.

c) Where communities have AEDI data on at least 15 Indigenous children, the aggregate findings for Indigenous specific items and scales can be reliably reported as an appendix to the standard AEDI community report.

d) The process for checklist completion should be adapted so that all schools having access to Aboriginal and Islander Education Officers (AIEOs) or Aboriginal Teacher Assistants (ATAs) should aim to have teachers complete their AEDI ratings on Indigenous children with the assistance of these Indigenous staff as Indigenous cultural consultants

5. NEXT STAGE OF THE AEDI INDIGENOUS ADAPTATION STUDY

The next and final stages of the AEDI Indigenous Adaptation Study involve further improvements to the AEDI community engagement and information dissemination processes. This is critical to ensuring that the collection and reporting of AEDI data enables the inclusion and involvement of Indigenous people and community organisations. The existing AEDI community preparation materials and AEDI community reporting processes are being reviewed at community forums and consultations. This has led to suggestions for new strategies of dissemination of the findings and their translation into action by communities, government and non-government service providers. These include the development and trialling of templates for the presentation of AEDI findings using a variety of visual representations of data which can be customised to local requirements (e.g. translated into traditional language or communicated by local identities). The presentation of findings in visual formats such as icons and bar graphs appears useful in enabling lay understanding of scientific concepts such as 'developmental domains'. Story-boards (i.e. laminated A3 flip-charts) and posters describing the AEDI domains in a 'mindmap' schematic diagram with digital photos showing practical examples of children's behaviours and competencies have been found to be particularly useful in prompting parent and community discussion of the meaning and implication of AEDI findings at the 'grass-roots' level. Other planned community dissemination resources include video, DVDs and powerpoint presentations, and a range of web-based community support materials. These and other community dissemination resources are currently being developed and evaluated in selected Northern Territory communities to establish their transferability and utility to support their wider application in the community dissemination and use of the 2009 AEDI National Program findings.

6. SUMMARY

In the first stage of the study, Rasch modelling analysis revealed that with the exception of *Physical Health and Wellbeing (PHWB)*, all of the adapted AEDI domain scales showed high levels of reliability and internal validity in terms of their uni-dimensionality. Almost all of the adapted AEDI scale items performed well with only few showing misfit with the predicted domain scores from the Rasch model. Comparison of the AEDI assessments made by teachers alone and those completed jointly with Indigenous cultural consultants revealed differential item functioning (DIF) on a limited number of scale items. This indicates that most items performed in the same way regardless of whether they were assessed by teachers alone or by joint assessment with a cultural consultant. Of note was the fact that, in all but one of the

items, the responses were found to be higher where joint assessments were made with a cultural consultant even though children have the same total score.

The second stage of the study reported the results of the pilot administration of the AEDI within 49 Western Australian schools with 568 Indigenous and 980 non Indigenous children in their first year of formal schooling. These findings provide a pre-view of the nature of AEDI results likely to be obtained for Indigenous and non-Indigenous children with the adapted AEDI checklist and administration process in the 2009 AEDI National Program. The pilot findings highlight the disparities between Indigenous and non-Indigenous children's performance on this measure of early childhood development. These levels of disparity are broadly similar to those observed from the administration of the standard AEDI in the first phase of the AEDI national roll-out (2004-2007). They are also comparable to the levels of disparity reported in the NAPLAN year 3 and 5 literacy and numeracy outcomes recently reported in *Overcoming Indigenous Disadvantage: Key Indicators 2009* for the Review of Government Service Provision (Productivity Commission 2009).

The second stage of the study also examined whether there were any systematic differences in AEDI results for Indigenous children jointly assessed by teachers and cultural consultants and those made by teachers completing the checklist on their own with the availability of supplementary information in the teachers manual regarding items and scales where particular considerations needed to be made in taking cultural factors into account. Importantly, this analysis found that the AEDI domain and total scores obtained through these alternate modes of administration can be reliably combined for aggregated reporting on Indigenous children without introduction of unacceptable levels of measurement bias.

The third study stage involved qualitative evaluation of the administration of the adapted AEDI carried out across the three Western Australian pilot sites. This established that there was a high level of support for the adapted AEDI administration process, checklist and teacher guide from principals, teachers and cultural consultants. While some logistical difficulties were reported in arranging times for joint completion of the AEDI checklists by teachers and Indigenous cultural consultants, these were generally found to be manageable and were overcome. Almost all of the teachers who completed AEDI checklists collaboratively with a cultural consultant reported benefits in undertaking these assessments collaboratively. Similarly, all of the Indigenous cultural consultants considered the information collected in this way to have greater face validity and to be a valuable use of their time. Both teachers and cultural consultants reported improved awareness and understanding of cultural issues affecting children's learning from their experience of discussing the AEDI ratings together.

The thematic analysis of the follow-up interviews with participating school staff revealed six main themes: 1) The perceived value and potential use of the AEDI findings; 2) The gains/benefits for schools and schools personnel from their participation in the AEDI assessment process; 3) The value of teachers and Indigenous staff spending focused time thinking and discussing the development and needs of individual children; 4) Recognition of the value of the knowledge and role of Indigenous staff; 5) The perceived likelihood that the AEDI findings would be likely to change school and teacher practice; and 6) The use of the adapted AEDI instrument and

its administration process would lessen the likelihood of bias in teacher's assessments of Indigenous children's developmental status and specific learning support needs.

The qualitative evaluation findings regarding the perceived benefits of the two-way exchange of knowledge and understanding from the joint assessment of children by teachers and Indigenous cultural consultants highlighted the need for cultural awareness training for all school staff working with Indigenous children and more regular opportunities for quality time spent by Indigenous and non–Indigenous school staff in discussing the learning and other specific needs of their Indigenous students.

Further consultations regarding the implementation of the adapted AEDI checklist, teacher guide and administration process were undertaken with all Australian State and Territory Governments and key Indigenous and education stakeholder organisations in late 2008 and early 2009. One of the issues identified through this consultative process was that some of the supplementary AEDI items suggested for use with Indigenous children could be perceived as discriminatory or offensive if they were to only apply for the assessment of Indigenous children. As these items reflect generic disadvantage rather than any culturally specific factor (e.g. child often comes to school hungry), it was agreed that these items should apply for all children in the 2009 AEDI national roll-out.

7. CONCLUSION

This report documents initial findings of the AEDI Indigenous adaptation study carried out in three Western Australian sites selected to be broadly representative of the range of living circumstances of Australian Indigenous children. The recommendations arising from these findings have been used to inform the adaptation to the standard AEDI instrument and administration process in the 2009 nation-wide implementation of the AEDI program. The next stage of this adaptation study will involve further evaluation of the data on Australian Indigenous children gathered in different contexts across Australia by the national program. It will also involve the development and publication of suitable community engagement and information dissemination processes for reporting AEDI findings back to communities in ways which are empowering and enabling effective local use of the data in advocating, planning and delivering services for Indigenous children and their families.

The recommendations presented throughout this report, including those put forward by the participating Indigenous cultural consultants, seek to strengthen the appreciation of school and other early childhood personnel of Indigenous cultural ways of understanding and promoting children's learning and adaptive behaviour. The study findings highlight the benefits of collaborative checklist completion by teachers and Indigenous cultural consultants being undertaken wherever possible. This process appears to provide more complete information, and provides a valuable professional and personal development opportunity for Indigenous and non-Indigenous school personnel. Finally, the findings are consistent in demonstrating that the adapted AEDI can be reliably and effectively administered in conjunction with the existing AEDI process and that to provides a culturally equivalent community-level measure of overall early child development. With the exception of the *Physical Health and Well-being* domain scale, each of the other four AEDI domain scales have excellent internal reliability and clear uni-dimensionality in the measurement of their underlying constructs for both

Indigenous and non-Indigenous children. While further work is clearly needed to improve the scaling properties of the *Physical Health and Well-being* domain scale, this aspect of children's outcomes of early child development is best understood with reference to its three sub-domains a) *Physical readiness for the school day; b) Physical independence, and c) Gross and fine motor skills.*

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