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Authors: Ms Mary Sayers, Dr Sharon Goldfeld, Ms Melissa Coutts, Professor Sven Silburn and the Australian Early Development Index Partnership[1]

Abstract

The *Australian Early Development Index: Building Better Communities for Children* project will enable up to 60 communities throughout Australia to assess how their children are developing by the time they reach school age. The project is conducted by the Centre for Community Child Health in partnership with the Telethon Institute for Child Health Research. It is an initiative of the Australian Government's National Agenda for Early Childhood and supported by a grant from Shell Australia.

The Australian Early Development Index (AEDI) is a community-level measure of young children's development based on a teacher-completed checklist (the AEDI checklist). It consists of over 100 questions measuring five developmental domains: language and cognitive skills; emotional maturity; physical health and well-being; communication skills and general knowledge; and, social competence. It has been found that in Canada, where the EDI was developed, and in Perth in 2003, that using the tool has provided a strong catalyst for community mobilisation around early childhood.

This paper will outline the methodology of the *Australian Early Development Index: Building Better Communities for Children* project. It will highlight the steps taken to adapt and validate the Canadian Early Development Instrument for Australia. It will discuss the process for community selection and implementation of the AEDI. The evaluation of the community utilisation of the AEDI will be detailed. The evaluation will enable the investigation of the medium-term and sustainable community-level response to the AEDI.

Introduction

The *Australian Early Development Index: Building Better Communities for Children* provides communities from around Australia with the opportunity to better understand how they can allocate resources and concentrate their efforts to work towards improving the outcomes for children. A current challenge is to determine the best mix of targeted and universal programs within any particular community, and monitoring whether this

[1] The Australian Early Development Index Partnership members are (Professor Frank Oberklaid, Dr Sharon Goldfeld, Mary Sayers and Melissa Coutts from the Centre for Community Child Health, Professor Sven Silburn from the Telethon Institute for Child Health Research, and Dr Bret Hart and Sally Brinkman from the North Metropolitan Area Health Service)

mix is working. It has been suggested that one way to resolve this is by developing community-level social reporting and developing a range of relevant social indicators (Offord et al 1999). Sustained change can only be achieved when the service system as a whole coordinates its efforts to address the risks and enhance the protective factors in early childhood at different levels simultaneously (Moore 2004).

The Early Development Instrument was designed by Dr Magdalena Janus and Professor Dan Offord at the Offord Centre for Child Studies at McMaster University in Ontario, Canada. Whilst the Canadian Longitudinal Study of Children and Youth provided reliable information on the development of children at a National or Provincial level, it was seen that these data were insufficient for individual communities to focus their efforts to improve the outcomes for young children (Janus and Offord 2000). Hence the Early Development Instrument (EDI) was designed as a community-level measure of children's development in the year they enter school.

Development and use of the EDI in Canada

The Early Development Instrument was developed in consultation with educators, early years' professionals and academics with expertise in the field. Testing in Canada has found the EDI to have good internal and test-retest reliability and external validity (4 studies, n= 16,074 children) (Janus 2003). The EDI has also been shown to have excellent psychometric properties in analyses conducted in Australia (Andrich and Styles 2004).

To date the EDI has been completed on over 290,000 Canadian children[2]. There have been some significant findings from the use of the EDI in Canada. By mapping the EDI data and other key social and economic indicators in Vancouver, Hertzman 2004 found that vulnerability on the EDI spans all neighbourhoods. The patterns tend to follow socioeconomic differences. Affluent neighbourhoods tend to be those at the lowest developmental risk and poor neighbourhoods at the highest developmental risk. However, whilst approximately 20 per cent of vulnerable children lived in three high-risk neighbourhoods, the other 80 per cent of vulnerable children were spread across the other 20 neighbourhoods. Thus focusing on neighbourhoods at highest risk would miss most of the vulnerable children in Vancouver. Hertzman also found that segregated poor neighbourhoods are at the highest risk, barriers to access to programs and services that may assist child development are significant, programs are under funded and unstable, and kindergarten vulnerabilties are a powerful determinant of school success.

A study of community use of the EDI in British Columbia, where the EDI has been implemented and mapped across the entire Province, shows a number of key findings (Mort 2004). The majority of communities involved are keen to move forward with further planning, such as linking the EDI data with other community measurements. The EDI encouraged community mobilisation, with the districts involved unanimous in identifying the development of or cementing existing inter-sectoral coalitions as the most significant value of the EDI process and results. Many teachers felt valued by the process and felt it gave them credibility within the profession and the community. There were many initiatives or projects resulting from or connected to the EDI implementation. Some community initiatives targeted parents, such as parenting programs, parent resource centres or parent drop-in centres. Other community initiatives were health related, for example, a nutrition study, dental care, vision and hearing assessments. Additionally

[2] To view the implementation of the EDI across Canada from 1998-2004 visit http://www.offordcentre.com/readiness/progress.html

there were literacy projects for the pre-school years, family literacy projects and organisational change noted within communities. The EDI provided the districts with "irrefutable evidence and clear direction in the form of valuable data about the developmental needs of young children and their families in neighbourhoods throughout British Columbia" (Mort 2004 p. 21).

Rationale for introducing a population-based measure of children's development in Australia

The experience of the EDI both in Canada and in the Northern Metropolitan area of Perth in 2003 (Hart, Brinkman and Blackmore 2003, Brinkman, Hart and Blackmore 2004), have demonstrated the implementation process and results of the EDI can provide a strong catalyst for community mobilisation around early childhood.

In Australia we have no population-based developmental measures of how well children are doing as they come to the end of their preschool years and enter the next important developmental transition of starting school. Thus school entry presents an important opportunity to review a child's health, development and wellbeing. Such an assessment would thus provide an outcome measure of the development that has taken place up until the point of school entry, as well as a developmental baseline against which to gauge future functioning through the school years.

The Centre for Community Child Health in Melbourne was funded by the Australian Government Department of Family and Community Services in August 2003 to convene a national meeting of experts in the academic, health, education and family and children's services sectors to explore and report on the most effective system to understand the health, development and wellbeing of children in Australia as they enter school. Of interest was the development of a tool that could be implemented across Australia. Agreement was reached to proceed with an Australian adaptation of the Canadian Early Development Instrument.

The *Australian Early Development Index: Building Better Communities for Children* project

The *Australian Early Development Index: Building Better Communities for Children* project will run over three years from 2004 to 2007. The objectives of the project are: to build on the work recently completed in Western Australia where the EDI was first piloted and develop an Australian version (AEDI); utilise the Longitudinal Study of Australian Children to undertake further validation studies on the AEDI; develop mechanisms to facilitate the use of the AEDI as a tool to reorient community level services and systems for young children and their families; and, to consider how to encourage, evaluate and support the take-up of the AEDI in up to 60 communities across Australia.

Validation and development of the AEDI

One of the first steps of the National AEDI project was to establish a Technical Advisory Group chaired by Professor John Ainley, head of the research division of the Australian Council for Educational Research (ACER). This expert group of educators and child development specialists has been responsible for overseeing the process to establish a scientifically sound and nationally accepted instrument. Professor David Andrich, Dean of Education at Murdoch University and an acknowledged expert in the Rasch model of scaling analysis, was contracted to assess the psychometric performance of the EDI with the data available from the Perth North Metropolitan study. This analysis showed the EDI to have excellent psychometric properties but that there were a number of specific items which were not working as intended. It was therefore recommended that

the scale could be further improved by the removal of 9 items and collapsing some response categories (Andrich and Styles 2004).

On the basis of this report the Technical Advisory Group recommended that for all five EDI scales, the items with five ordered response categories should be modified as proposed. It also recommended that nine specific items that did not fit the Rasch model, in terms of the consistency of their underlying construct, should be omitted.

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The effect of these changes was then examined by re-analysing the existing EDI data using only the retained items and re-coding the response categories. All five scales show satisfactory cohesiveness in terms of their underlying construct. This showed that the reliabilities for each scale held up well with only minor differences from the original EDI (see table 3).

Table 1. Reliabilities of the Original (EDI) and Revised (AEDI) scales

Scale	Original Items	Original after recommended items were eliminated and categories reduced for specified items	Revised items
Physical health and well being	0.870	0.881	0.790
Social knowledge and competence	0.937	0.933	0.934
Emotional health/maturity	0.925	0.928	0.925
Language & cognitive development	0.903	None eliminated	0.832
Communication skills & general knowledge	0.920	0.922	0.914

While statistically significant differential item functioning was found on items with all five scales, their magnitude and direction were consistent with what one would expect of the different developmental growth trajectories of boys and girls. These findings thus support the general conclusions about the validity of the scales.

On the basis of the findings from this re-analysis of the data, the Technical Advisory Group agreed that no further modifications were needed and the AEDI could be used for this project in its revised form. The new AEDI was then piloted with a small sample of 160 children in Perth in June 2004 (Currambine & Quinns Beach Primary Schools) to identify any unintended administration and process issues.

With the support of the Australian Government Department of Family and Community Services, Shell Australia and the Australian Institute of Family Studies, the AEDI has been administered by the pre-school or kindergarten teachers of a sub-sample of around 750 children participating in the age 4 cohort of the Longitudinal Study of Australian children (LSAC). This has provided an ideal opportunity to capitalize on the wealth of other developmentally relevant information available from this representative national longitudinal study. These data have only just become available and are now being used to establish the concurrent and predictive validity of the AEDI against other established measures of child development and subsequent educational and other outcomes. These findings will be published as they become available as part of the national project's communication strategy and contributions to peer reviewed journals.

Community implementation of the AEDI

Over the three years of the project there will be three Expression of Interest rounds. Communities self-nominate to join the project. For communities interested in joining the project there are a number of things that need to be considered. First, that there is a person within the local community who can devote time to being the local project coordinator and there is a capacity and mechanism to engage with schools in the area. Additionally, funding for the teacher relief to enable teachers to complete the AEDI checklists is not provided as part of the project and the community needs to source the funding for this.

As one of the key benefits noted in Canada from the EDI implementation is the forging of new and cementing existing community coalitions, it is hoped there is a capacity and mechanism within the community to engage key stakeholders in the AEDI project and the results. It is anticipated that the level of community partnerships and collaboration will vary from community to community and it is hoped that the AEDI will help facilitate the development or strengthening of these relationships. Initially a community should have some understanding of how the needs identified in the AEDI may be addressed.

In 2004 a limited Expression of Interest process occurred because of the short time frame for completion of the AEDI. Ten communities were selected to implement the AEDI and seven communities completed the data collection. These communities are Kalgoorlie and Carnarvon in Western Australia, the East Metropolitan, Mirrabooka, and Gosnells areas of Perth, East Gippsland in Victoria and the Gold Coast area in Queensland. Communities selected were supported with a detailed Community Preparation Guide and by the AEDI National Support Centre.

One of the innovative features of the project is that teachers complete the AEDI checklists on the secure web-based data entry system developed by ACER. The advantages of using a web-based data entry system are, data can be checked to ensure minimal missing data, the data can be downloaded at any time, and, over time, it significantly reduces costs associated with paper and data entry.

In 2004, AEDI checklist data was entered on over 5,900 children. Teachers' feedback about the system was very positive and is illustrated in the table below. It took teachers an average of 20 minutes to complete the checklists on-line, which compares favourably with the manual completion times in Western Australia in 2003.

Table 2. Teachers feedback on AEDI web-based data entry system 2004

	(N= 182 teachers) %
AEDI Checklists easy to complete for most or all children	93%
My involvement will assist our community to better understand the health, development and wellbeing of children in our area	88%
The experience of completing the AEDI will be beneficial to my work	63%
Completing the AEDI checklists was a good use of my time	58%
I found the web-based data entry system easy to use	96%

The community profiles and geographic maps from the 2004 AEDI will be available in early 2005. Expressions of Interest are now open for the selection of communities to implement the AEDI in 2005.

Evaluation

The Centre for Community Child Health is facilitating the evaluation of the *Australian Early Development Index: Building Better Communities for Children* project. The evaluation has two components, the formal outcome evaluation, and the process evaluation, monitoring the day-to-day progress and learnings of the project.

Each community that becomes part of the project will be asked to participate in the national evaluation. The communities will be followed over the period of the project, thus enabling the investigation of a medium-term and sustainable community-level response to the AEDI.

The purposes of the evaluation are to monitor the implementation of the project and investigate the effectiveness and utility of the AEDI as a community-planning tool to support children's health, development and wellbeing. The evaluation will also ascertain any barriers the project encounters and suggest possible solutions and document exemplary or innovative practice related to the AEDI that could be transferred to other sites. A key outcome from the evaluation will be the formation of recommendations about the further support and implementation of the AEDI in Australia.

The objectives of the outcome evaluation are to establish whether the AEDI can be successfully implemented in communities, whether it meets their needs and expectations, if they understood and disseminated the results, and, whether it mobilised the community in terms of awareness and actions that promote early childhood development.

The process evaluation will concentrate on how the project was implemented and how it operates. This will ensure that the project is continually reviewed to monitor and capture the appropriateness of material and approaches being applied. It will examine the process and learnings for the recruitment and selection of communities, how community involvement and participation in the project was maintained and sustained, and, whether the project was implemented as intended. The resources developed and provided to communities during the project will also be documented.

Conclusion

This paper provides a summary of the progress to date of the *Australian Early Development Index: Building Better Communities for Children* project. In early 2005 the first seven communities to implement the AEDI will receive their Community Reports including geographic maps of the AEDI results and other socio-economic and family data. They will also receive a detailed Community Dissemination and Action Guide. The Community Profiles and Maps will be publicly available on the website at www.australianedi.org.au. Expressions of Interest are now open to select up to 30 communities to implement the AEDI in 2005.

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