



## Report into a randomised controlled trial of two early intervention programs for young children with autism

**University of Sydney and Autism Spectrum Australia (Aspect)**

**Collaborative Research Project Funded by a Linkage Grant from the Australian Research Council (ARC)**

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### Project Summary

#### Research Aims

To compare the effectiveness of home-based and centre based early intervention programs for young children with autism and their families in Australia. This study compared the effectiveness of a home-based (HB) model, a centre based (CB) model and a wait-list control group in terms of outcomes for children, outcomes for families and cost effectiveness. Participants were randomly assigned to HB and CB groups.

#### Background

##### The BUILDING BLOCKS® Program

The BUILDING BLOCKS® theoretical model draws its methods from a comprehensive range of research in the field of early intervention for young children with autism. A variety of approaches are utilised by BUILDING BLOCKS®, including: naturalistic play based intervention, behavioural and developmental theory, structured teaching, the development of functional communication skills, positive behaviour support, assessment of sensory processing issues, and extensive use of visual supports. Parents are expected to make a commitment to work closely with BUILDING BLOCKS® staff on their child's individual program. The BUILDING BLOCKS® team includes Speech Pathologists, Special

Educators, Early Childhood Teachers, Occupational Therapists, and Psychologists. All program materials, manuals and assessments have been developed collaboratively by this multi-disciplinary team allowing for input from a range of disciplines.

##### Home Based Component

In 2005 BUILDING BLOCKS® provided a home based intervention service comprising a forty week program of fortnightly two hour sessions, (i.e. 20 sessions maximum in total) with visits from a therapist/teacher.

##### Centre Based Component

To cater to increased demand in the early 2000s ASPECT established a centre-based program (called The Starting Blocks™) as an alternative service to the home based early intervention. The centre-based program comprised playgroups of 4-6 children, with concurrent parent support and training groups.

#### Methods

##### Recruitment Process and Participants

Criteria for inclusion in the study included: the child was aged between 2.5-3.5 years at the start of the program, a diagnosis of Autistic Disorder, Asperger's Disorder or PDD-NOS according to DSM-IV (1994) made by a referring clinician (medical practitioner and/or psychologist), and consent to be involved.

## Baseline measures

### **Diagnostic validation and between group differences data collection**

The Autism Diagnostic Observation Schedule (ADOS) was used to verify the diagnosis of children with autism. The ADOS is a recognised gold standard diagnostic autism measure (Marcus et al., 2001). A Griffiths Mental Development Scales (GMDS) was attempted to provide a developmental quotient of each child.

### **Outcome assessments**

A range of standardised tests were chosen to allow measurement of changes in the child attributable to the treatment program including adaptive functioning, communication, social and play skills, and for the parents, changes attributable to the treatment program including their levels of stress and quality of life.

## Intervention

### **Centre-based program**

In 2005 the centre-based program was conducted in six locations around the Sydney metropolitan area by three staff from Aspect. Staff working with these groups included a teacher, a teacher's aide, and another member of the multi-disciplinary team (i.e. speech pathologist, occupational therapist, or psychologist).

Children in the centre-based program attended once a week (i.e. 2 hours) for forty weeks (i.e. four school terms). The home-based program used the same multi-disciplinary model to complete an Individual Education Plan (IEP) for each child and the amount of contact time was identical to that received in the centre-based program.

### **Home-based program.**

During the time the team member worked with both the child and the parent/s to develop skills in working with their child. These sessions were based around building capacity to meet the immediate needs of the child and the family, and in better understanding autism. Training techniques included direct modelling of skills, constructive feedback to the family on how they manage the child's education program, and discussion of issues that were immediate to the needs of the family.

### **Wait-listed group.**

Families from the BB waiting list who agreed to be part of the research study, formed the WL comparison group.

## Results

### **Group Homogeneity At Pre-Assessment**

- Home Based (HB) and Centre Based (CB) groups were not homogeneous despite random assignment. More children in the HB group had diagnosis of AD than CB group (i.e. HB had more severe autism and lower average intelligence).
- Data analysis controlled for these differences.

### **The Range of Educational and Therapeutic Interventions**

- There were no significant differences between the groups in terms of the number of other interventions. Thirteen different interventions were identified; the range for each child was 0-4.

### **Measurement tools**

- Few current standardised tools are useful for measuring change in the more significantly impaired autistic population (except for the VABS social and communication scales, and functional assessment).

### **Child measures**

- All three groups of children in the study made gains in some domains of behaviour, communication or social interaction as assessed by the outcome measures.
- Children in CB programs improved more for behaviour, language development, communication and social interaction than HB (only significant for communication, VABS and the expressive raw score, Reynell).
- This suggests that structured supported social interaction provided in the small group setting had a positive effect on communication and social skill development.
- It is possible that the parent program in the CB group contributed to this outcome.

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Given that Building Blocks® offers a range of options and that the two treatment conditions compared in this study are similarly cost effective then this research provides support for a flexible range of programs as provided by Building Blocks®.

### Parent measures

- Parent knowledge improved more in the CB program (possible group support effect).
- There was more specific focus in the CB parent program.
- CB outcomes suggest greater empowerment and satisfaction with disability support, possibly related to increased capacity to access support more effectively.
- Findings suggest that the centre based model is more effective in increasing parental resilience and capacity.
- Parental stress varied; HB scores increased on average from a low baseline score, CB decreased from a high baseline score, differences were not significant when analysis adjusting for baseline score was used.

### Intensity of intervention and range of measures

- Both the HB (x1 fortnightly session 2-3 hours) and the CB group (x1 weekly session 2-3 hours) are low intensity interventions.
- By comparison many programs based on behavioural theory and interventions based on transactional developmental theory recommend intensity of 20-40 hours per week for a period of 2 or more years (1000 hours).

### Conclusions

- When costs are calculated on a staff hours per child basis the cost per child is the same; \$6,383
- The cost analysis suggests that the CB group program is the more cost effective with regard to outcomes, however it is important to note that a CB group was not an option for all children referred to the program.
- Children may not be ready for a CB group; have significant behaviour problems, are very young chronologically or the parents are not ready to participate in a group.
- This is an important consideration given that parents and their professional advisors endeavour to choose interventions that match both child and family characteristics.
- Given that Building Blocks® offers a range of options and that the two treatment conditions compared in this study are similarly cost effective then this research provides support for a flexible range of programs as provided by Building Blocks®.



## The Aspect vision for research

Aspect is committed to improving the lives of individuals with ASDs through service provision and research. As the largest ASD-specific service provider in the country and one of the largest in the world, Aspect is well positioned to facilitate and conduct research. Aspect undertakes and supports research to evaluate Aspect's and other programs, practices and interventions in order to provide improved services and interventions for children and adults with ASDs. Aspect also promotes research at state and national levels and facilitates tertiary students' research. As our mission is to develop our knowledge of what can be done to support individuals with ASDs, research findings will also make a significant contribution to the field of international research into ASDs. Aspect requires ongoing funding to support these key initiatives and is always keen to talk to potential new partners and donors.



autism spectrum  
AUSTRALIA

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