



AOTA Evidence Briefs

Developmental Delay in Young Children

**A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project*

DD #12

Comprehensive early intervention involving parents benefits blind children carried for full term

Beelmann, A., & Brambring, M. (1998). Implementation and effectiveness of a home-based early intervention program for blind infants and preschoolers. *Research in Developmental Disabilities, 19*, 225–244.

Level: IIB2a

Nonrandomized controlled trial, two groups, fewer than 20 participants per condition, moderate internal validity, high external validity

Why research this topic?

Congenital blindness or severe visual impairment may affect children's normal development. Thus there is a need for early measures to prevent or compensate for developmental problems. However, systematic evaluation research on early intervention measures is meager.

What did the researchers do?

To remedy this situation, Beelmann and Brambring (1998), of the University of Erlangen-Nuremberg (Erlangen, Germany) and the University of Bielefeld (Germany), respectively, set up a study to determine the effectiveness of a home-based early intervention program for blind infants and preschoolers. They recruited participants (families) through early intervention centers in Germany for children generally, and for blind children. They restricted participation to families with a completely blind child who had no other impairments. The resulting sample consisted of 50 families. Ten constituted the treatment group, 40 the **control group** (see *Glossary*). Among the children in the treatment group, there were 5 boys and 5 girls, with an average age of 12 months. Among the children in the control group, there were 24 boys and 16 girls, ranging in age from 12 months to 36 months (no average reported).

The intervention with the treatment group involved home visits every 14 days for an average of 2 years. Visits lasted about 3 hours. A team of three psychologists and one special education teacher supervised the treatment, planning a program for each child based on assessment data. One person then visited the families, the same person each time. The visitor paid particular attention to the children's perception of objects through touch and hearing, to their **spatial orientation** (see *Glossary*) and mobility, and to their daily-living skills. Parents received guidance and training in parent-child interaction and in intervention with their children. Also, they were offered problem-oriented counseling from a family-oriented perspective.

The control group families participated in various forms of home-based early intervention offered by regional centers for blind children.

The outcome areas of interest were *general development* (neuromotor skills, "cognition" [knowing], language, and socioemotional development) and development specific to blindness (orientation and mobility, fine motor skills, and daily-living skills). Both areas were measured by the Bielefeld Developmental Test for Blind Infants and Preschoolers at ages 12, 15, 18, 24, 30, and 36 months.

What did the researchers find?

The researchers found **significant** (see *Glossary*) differences between children carried for 9 months (full-term) and children born prematurely (preterm), so they analyzed the data for these groups separately.

The full-term children in the treatment group scored significantly higher than their control-group counterparts at age 30 months. The most significant differences occurred on the orientation and mobility and the daily-living scales. At age 36 months, however, the differences had decreased.

There were no significant differences between the preterm children in the treatment and control groups.

What do the findings mean?

- The findings support the effectiveness of comprehensive intervention with full-term blind children, accompanied by a high level of parent involvement, as early as possible. Evidence also highlights differences in outcome between full-term and pre-term children.
- The findings should boost confidence in funding early intervention programs that emphasize comprehensive intervention and parent involvement.

What are the study's limitations?

- Recruitment of subjects is not clear.
- Cohort specified as 1989–1992.
- Required to read other published articles for treatment protocols.
- Only 10 subjects were in the treatment group; 40 controls who were also blind.
- The study took place in Germany.

Glossary

control group—a group that received special attention similar to that which the treatment group received, but did not receive the treatment.

significance (or significant)—a statistical term; this refers to the probability that the results obtained in the study are not due to chance, but to some other factor (such as the treatment of interest). A significant result is one that is likely to be generalizable to populations outside the study.

Significance should not be confused with clinical effect. A study can be statistically significant without having a very large clinical effect on the sample. For example, a study that examines the effect of a treatment on a client's ability to walk may report that the participants in the treatment group were able to walk significantly longer distances than the control. However, if you read the study you may find that the treatment group was able to walk, on average, 6 feet, whereas the control group was able to walk, on average, 5 feet. Although the outcome may be statistically significant, a clinician may not feel that a 1-foot increase will make his or her client functional.

spatial orientation—ability to perceive or orient oneself or external stimuli in space.

- Terminology used in this document is based on two systems of classification current at the time the evidence-based literature reviews were completed: *Uniform Terminology for Occupational Therapy Practice—Third Edition* (AOTA, 1994) and *International Classification of Functioning, Disability and Health (ICIDH-2)* (World Health Organization [WHO], 1999). More recently, the *Uniform Terminology* document was replaced by *Occupational Therapy Practice Framework: Domain and Process* (AOTA, 2002), and modifications to *ICIDH-2* were finalized in the *International Classification of Functioning, Disability and Health* (WHO, 2001).

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