



# AOTA Evidence Briefs

## Cerebral Palsy

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

### CP #8

## **Verbal and nonverbal instruction together may produce better intervention to promote mother-infant interaction than treatment followed by a narrowly focused demonstration**

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Hanzlik, J. R. (1989). The effect of intervention on the free-play experience for mothers and their infants with developmental delay and cerebral palsy. *Physical & Occupational Therapy in Pediatrics*, 9(2), 33–51.

#### **Level: IB1b**

Randomized controlled trial, less than 20 participants per condition, high internal validity, moderate external validity

### **Why research this topic?**

Research has established that mothers of infants with developmental delay and cerebral palsy are more directive in their interactions with the infants, engage in more physical contact, have less face-to-face interaction, and hold their infants more often, than mothers whose infants do not have these conditions. Further, the infants are less responsive, more compliant, and engage in less independent play than their counterparts without delays. Such patterns of interaction do not seem to facilitate normal development. The situation calls for interventions that include a component to address the mothers' nonverbal behaviors. Also, given that therapists are often limited in the frequency and duration of treatment sessions that are feasible due to large caseloads, interventions (e.g., training sessions being studied) are needed that address program needs for service delivery patterns that are less than ideal.

### **What did the researcher do?**

Hanzlik (1989), of Colorado State University (Fort Collins), designed a study to investigate the extent to which mother-infant interaction differed between pairs in which the mother had received interaction intervention and pairs in which the mother had not. Through 9 early intervention programs, the researcher recruited 20 mother-infant pairs and randomly assigned them to an experimental group (10 pairs) or a **control group** (see *Glossary*) (10 pairs). The infants in the experimental group, 8 boys and 2 girls, averaged 16 months in age. The infants in the control group, 6 boys and 4 girls, averaged 19 months in age. In both groups, the severity of impairments ranged from mild to severe.

Both groups received an initial visit in the home, during which the mother-infant pairs were videotaped for 15 minutes of free play. All the mothers had access to a box of the same 20 toys. During the next hour of the visit, in the experimental group, the researcher gave the mother-infant pair 1 hour of verbal instruction focused on “decreasing...constant physical contact, maternal verbal and nonverbal directiveness and noncontingent communication, and...increasing maternal use of face-to-face contact and the use of a variety of communication strategies such as statements, questions, praises” (p. 42). A practice period (length not indicated) followed the verbal instruction. Mothers learned how to “take turns” in interaction with their infant, how to position their infant therapeutically during play, and how to hold their infant therapeutically (as opposed to just physically).

In the control group, the researcher gave each pair an hour of treatment based on an NDT approach that “focused on facilitating normal muscle tone and developmentally appropriate posture and movement patterns” (p. 42). She then taught the mother one of the treatment techniques she had used, first explaining it verbally, then demonstrating it, then having the mother practice the technique.

Two weeks later, a second home visit to both groups occurred, during which the mother-infant pairs again were videotaped for 15 minutes of free play.

The outcome areas of interest were *patterns of infant behavior* (physically directed compliance, voluntary responsiveness, and independent play) and *patterns of maternal behavior* (physical directiveness, positive initiation, positive response, face-to-face contact, physical contact, use of adaptive seating equipment, holding, verbal directiveness, praise, questioning, and verbal interaction). Both outcome areas were rated by two observers who viewed the videotapes.

### **What did the researcher find?**

On the measure of infant behavior, the infants in the experimental group demonstrated **significantly** (see *Glossary*) less physically directed compliance and significantly more voluntary responsiveness than the infants in the control group. The groups did not differ significantly in amount of independent play.

On the measure of maternal behavior, the mothers in the experimental group engaged in significantly less directive physical guidance, significantly more positive initiations, and significantly more positive responses than the mothers in the control group. The experimental group pairs also engaged in more face-to-face contact and less physical contact. Further, the mothers in the experimental group used adaptive seating equipment more frequently.

Overall, the mothers were more influenced by intervention information that related to “physically doing” (use of adaptive seating equipment, face-to-face contact, physical contact, physical directiveness, and holding) than by information that was related to “verbally telling” (verbal directiveness, praise, questioning, and verbal interaction).

### **What do the findings mean?**

- The findings suggest that for mothers of infants with developmental delay and cerebral palsy, intervention to promote better mother-infant interaction should combine verbal instruction with nonverbal demonstration and practice. They also suggest that mothers will be more responsive to instruction in what to do than to instruction in what to say.
- The findings should boost *policy makers'* confidence in programs for mothers of infants with developmental delay and cerebral palsy that combine verbal instruction with nonverbal demonstration and practice to promote better mother-infant interaction. Of particular interest is the cost-effectiveness of such programs, and the ease of delivering them in rural settings.
- The findings also suggest some directions for research: investigation of which methods (verbal or nonverbal) are more effective for specific concepts to be communicated and for children with diagnoses other than cerebral palsy.

### **What are the study's limitations?**

- Group differences reported (demographics and subject characteristics at baseline), but not subjected to statistical analysis to determine if groups were the same.
- No “true” control group that did not receive intervention. The one group difference at post-test might not have been due to the intervention but to some other factor such as attention from the therapist.
- Second evaluator (author of article) not **blind** (see *Glossary*) to group assignment, which may introduce **bias** (see *Glossary*).
- Generalization limited by child's age, diagnosis, and geographical area.

## GLOSSARY

**biased/biases**—Biases are systematic errors within a study. When a study is biased, the means of treatment and/or control groups are artificially inflated or reduced. This artificial inflation or reduction can cause the study's results to be incorrect; the treatment will appear to have an effect, when in reality it does not, or vice versa. Many of the limitations reported in these evidence briefs are related to biases.

**blinded/blinding**—Blinding refers to the practice of keeping members of the research study unaware of which group a participant is assigned to (treatment or control) in the study. Single blinding usually refers to keeping study participants unaware of whether they are receiving the experimental or the sham treatment. Double blinding usually refers to keeping the participants and those who are administering the treatment unaware of who is receiving the experimental and who is receiving the sham treatments. In some cases, where it is impossible to blind those administering treatment, the individuals who are administering the outcome measures can be blinded to group status.

Studies in which blinding does not occur can have significant biases. When the participants know that they are receiving the experimental treatment, they often get better because they think they ought to (this is often referred to as the placebo effect). When researchers know that a participant is receiving the experimental treatment, they often subconsciously favor those participants when evaluating them on outcome measures. For instance, when timing a participant in the treatment group, researchers may unknowingly stop the watch a little faster or slower so the treatment participant seems to do better.

**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 that 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, while the control group was able to walk, on average, 5 feet. While the outcome may be statistically significant, a clinician may not feel that a 1-foot increase will make his or her client functional.

■ 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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