



AOTA Evidence Briefs

Children With Behavioral and Psychosocial Needs

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

PSYCH #9

Educational play may improve the development of preschoolers with neurological impairments (see *Glossary*)

Sparling, J. W., Walker, D. F., & Singdahlsen, J. (1984). Play techniques with neurologically impaired preschoolers. *American Journal of Occupational Therapy*, 38, 603–612.

Level: IIIB2c

Nonrandomized controlled trial, less than 20 participants per condition, moderate internal validity, low external validity.

Why research this topic?

Research suggests that play may be an appropriate intervention with children who have neurological impairments.

What did the researchers do?

Sparling, Walker, and Singdahlsen (1984), variously affiliated with the United Cerebral Palsy Developmental Center (Raleigh, North Carolina) and Durham Academy (Durham, North Carolina), designed a pilot study to examine the effects of educational play on neurologically impaired children. The child participants were 14 preschoolers who were both neurologically impaired and physically handicapped. They constituted the total enrollment in the United Cerebral Palsy Developmental Center. Nine were boys, and 5, girls. Their average age was 4.6 years. Eight were severely impaired, and 6, moderately impaired. They ranged in mental age from trainable to average.

There were 18 adult participants: 3 nonworking parents, 8 staff members, and 7 teachers and therapists from community schools.

The intervention was developmentally based, following a sequence of **sensorimotor** (see *Glossary*), symbolic, and sociodramatic activity that consistently occurs in the typical development of play. Typical development of play includes:

- (1) Knowledge of objects through manipulation is preliminary to pretending with objects;
- (2) simple activities precede complex sequenced ones;
- (3) self-directed play precedes play with objects and people;
- (4) inappropriate object behavior precedes appropriate object behavior, which precedes pretend object behavior;
- (5) representational play progresses, with pretend objects becoming more distant and dissimilar than the objects they represent (p. 605).

The intervention consisted of two components, educational drama and educational art. “Educational drama” is “a process through which conflict is re-created, permitting imitation of one’s own and others’ experiences to resolve the contradiction and foster adaptation” (p. 605). “Educational art” is “the adaptive process used in creating a graphic product” (p. 605).

Nine sessions of each component were to occur once a week for 9 weeks, but only seven sessions actually took place.

For the educational drama component, a drama teacher led group activities for an hour in the morning.

For example, circle objects were shown to the group and manipulated by some children, round shapes on one's body were noted (e.g., one child suggested bent knees as being round), and circle objects were visually identified within the room....A story of a magic disc enabled children to climb aboard mentally and travel throughout their community, identifying objects that were circles (e.g., one child suggested pothole covers) (p. 608).

Children and adults participated. An hour of discussion and training for the adults followed.

For the educational art component, adults (except parents) prepared materials and held a discussion for a half hour in the afternoon. Then an art teacher led one-on-one activity for an hour. In one session, for example, the children engaged in printmaking, using "their feet or hands, wood or string, or brushes or brayers to make their mark on paper" (p. 608). Children and adults (except parents) participated. A half hour of discussion among the adults followed.

Activities were individualized according to each child's individualized education program.

Outcome areas for the children were *gross motor development*, *fine motor development*, *language*, ***cognition*** (see *Glossary*), *activities of daily living (ADL)*, and *social-emotional development* (all as measured by the Vulpe Assessment Battery). Outcome areas for the adults were *knowledge of child development* and *attitudes toward play* (both as measured by a 20-item questionnaire). Measures were taken before and after the intervention.

What did the researchers find?

Twelve of the 14 children **significantly** (see *Glossary*) improved their performance in all six areas measured. (The scores of one child were not included because he participated only in the drama component. The scores of another child did not show any measurable improvement. That child attended only 4 of the 14 sessions, however.) The children showed the greatest gains in language and social-emotional development. Drama had a greater effect than art on gross motor development, cognition, and social-emotional development. Drama and art had similar effects on fine motor development, language, and ADL.

The responses of the participating adults to the parts of the questionnaire related to educational art indicated less hesitancy "to vary equipment and environment to meet children's needs" and greater awareness of "the need to integrate learning domains, methods, and learning tools" (p. 610). The responses to the parts related to educational drama indicated greater awareness of children's need to play and to interact with adults. "The adults [also] noted their increased knowledge of ways to adapt learning situations and their increased ease of relating to children with different handicapping conditions" (p. 610).

What do the findings mean?

For therapists and other providers, the findings suggest that educational play can improve the gross motor development, fine motor development, language, cognition, ADL, and social-emotional development of children who are neurologically impaired and physically handicapped.

What are the study's limitations?

The study had several limitations. It lacked a **control group** (see *Glossary*), so one cannot have confidence that the improvements would not have occurred without intervention. Also, the lack of the control group limits one's ability to be sure that the outcome was due to the intervention and not some other factor. The sample was small ($N = 14$) and participants had different neurologic and physical impairments. Because of these two issues, the findings of this study may not be generalized outside the experimental situation.

GLOSSARY

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

cognition—The act or process of knowing, including both awareness and judgment.

impairments—Abnormalities of body structure and appearance and with organ or system function, resulting from any cause.

sensorimotor—Of, relating to, or functioning in both sensory and motor aspects of bodily activity.

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 (e.g., the treatment of interest). A significant result 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 those in the control group. However, after reading the study one 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.

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For more information about the Evidence-Based Literature Review Project, contact the Practice Department at the American Occupational Therapy Association, 301-652-6611, ext. 2040.



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