

BRIEF REPORT

Effects of Integrated Therapy: A Pilot Study

Michael F. Giangreco

Cayuga-Onondaga Board of Cooperative Educational Services, Auburn, N Y

This study compared the effectiveness of direct/isolated versus indirect/integrated approaches to the provision of occupational and physical therapy services in a school-based program for a learner with profound and multiple handicapping conditions. Within the context of a return-to-baseline design, the learner displayed significantly improved performance on the functional activity of activating an adapted microswitch when therapeutic techniques were specifically referenced to and incorporated in the teaching plan and implementation. Implications for delivering team-oriented services are discussed as well as considerations related to programming for persons with profound handicaps.

Team approaches to the education and habilitation of persons with severe handicapping conditions have been advocated widely in the professional literature (Albano, Cox, York, & York, 1981; Bray, Coleman, & Gotts, 1981; Giangreco, 1986; Golin & Ducanis, 1981; Hart, 1977; McCormick & Goldman, 1979; Sears, 1981; Sternat, Messina, Nietupski, Lyon, & Brown, 1977). A team is a group of people who are striving for the attainment of the same priority goals, with each team member using his or her unique skills to assist in the realization of those common goals (Giangreco, 1985b). One variation of a team approach can be characterized by indirect/integrated services. *Indirect therapy* refers to therapists serving primarily, yet not exclusively, as consultants rather than direct service providers. In this type of team model, the indirect approach allows for consistency by limiting the number of people carrying out programs while simultaneously employing the expertise of a variety of disciplines. *Integrated ther-*

apy refers to the incorporation of educational and therapeutic techniques employed cooperatively to assess, plan, implement, evaluate, and report progress on common needs and goals.

At times therapeutic services in schools may assume a form which could be considered direct and isolated. *Direct therapy* services are provided by therapists rather than by a person who is trained and monitored by therapists. *Isolated therapy* refers to the traditional "pull out" approach to school-based therapy. This isolation may be physical and/or programmatic. Physical isolation only refers to location and is characterized by removal of the learner from the classroom or natural environment in order to deliver services in a therapy room. Programmatic isolation refers to assessment, planning, intervention, and evaluation infrequently or minimally referenced to the educational program as defined by the general curriculum, priority goals of the Individualized Education Plan, and identified learner management needs related to instruction. Such programmatically isolated approaches are incongruent with P.L. 94-142 which states that related services are provided "as may be required to assist a handicapped child to benefit from special education...". Physical and programmatic isolation are independent of each other. Due to the nature of certain therapeutic techniques, there may be occasions when therapists provide input which is programmatically integrated but is physically isolated due to concerns such as privacy, distractibility, peer reaction, and social validity. At the same time, merely carrying out therapy in a classroom setting should not be considered integrated therapy unless it is referenced to the educational program.

Campbell, McInerney, and Cooper (1984) described the effective use of therapeutic facilitation and inhibition techniques applied to functional activities in school settings. The pilot study described in this article attempts to provide additional evidence of efficacy for more indirect/integrated approaches to the provision of related services in schools. Within the context of acquiring a functional activity, both direct/isolated and indirect/integrated therapeutic input was provided to a learner in alternating phases in order to observe and document potential differences in the learner's ability

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Requests for reprints should be sent to Michael F. Giangreco, Ed.S., Department of Special Education, Cayuga-Onondaga Board of Cooperative Educational Services, 234 South Street, Auburn, NY 13021.

to activate a radio or tape player via an adapted microswitch.

Method

Subject

Erin, a 13-year-old female, served as the study's subject. Cerebral palsy characterized by quadriplegia, hypertonicity, and a variety of abnormal reflexes was manifested as lack of ambulation, limited head and trunk control, no functional lower limb usage, and extremely limited upper extremity control. Also present were a visual impairment (alternating exotropia) and a controlled seizure disorder. These significant physical and sensory disabilities were accompanied by delayed cognitive development. Based upon results of the AAMD Adaptive Behavior Scale (Lambert & Windmiller, 1981), psychological reports, medical reports, and ongoing observation, it was estimated that Erin was functioning in the profound range of mental retardation. The learner had received uninterrupted occupational and physical therapy services in a direct/isolated mode since she was a preschooler. She had received direct, systemic instruction in switch activation for approximately 8 months prior to the initiation of this study and had never displayed performance higher than a level of approximately 20% correct. Switch activation was deemed a priority for Erin due to its multiple use nature.

Setting and Materials

The study was conducted in a public school classroom for students with severe, multiple handicapping conditions in a one-to-one teacher to pupil format. A custom-designed wheelchair with a transparent lap tray therapeutically positioned the learner for activating a momentary switch system positioned at midline and secured using a C-clamp. The switch system consisted of two subminiature roller-lever switches wired normally open in parallel (Giangreco, 1985a, p. 17) and mounted on two separate vertically angled surfaces (Giangreco, 1985b, p. 33). The switch system interfaced with a radio or tape player to access preferred music. By pressing either of the switch's two surfaces the music would be activated for as long as Erin maintained light pressure on the surface. A program plan, data sheet, pencil, and timer were available to record plus/minus performance data.

Baseline Procedures

Erin was seated in her wheelchair. Her adapted switch which was connected to a radio or tape player was mounted at midline. A large timer with a sweep second hand was positioned behind the learner in view of the teacher. The teacher sat directly in front of Erin at her face level. Each session began by the teacher demonstrating how to turn on the switch to activate the music. Following the demonstration, 10 consecutive teaching

trials ensued. Each trial began as the teacher positioned Erin's hands on either side of the switch within 2 inches but never in contact with the switch. This variability was present due to Erin's physical characteristics which did not allow the teacher to position her hands in exactly the same proximity to the switch before every trial. Once positioned and the teacher contact released, Erin was required to wait approximately 3 seconds before she was given a verbal cue. "Turn on the music" or "Turn on the switch." Occasionally when the teacher released contact with Erin's hands after positioning them, they would spring together, thus activating the switch. The waiting period was intended to control for these apparently uncontrolled arm movements.

A correct response was defined as Erin activating the switch by pressing on it using either one or both hands within 20 s of the verbal cue and maintaining the switch in an "ON" position for a minimum of 3 consecutive seconds. The 20-s response latency was determined based upon observations of the learner conducted over several months. Consequences for correct responding during this acquisition phase paired the naturally occurring music for as long as the switch was activated and verbal praise. Incorrect responses were defined as (a) not initiating switch activation within 20 s of the verbal cue, or (b) initiating switch activation within 20 s of the verbal cue but failing to maintain activation for a minimum of 3 consecutive seconds. The first incorrect response definition was consequated using a least-to-most intrusive prompting hierarchy including verbal instruction, gesture, model, and physical guidance. All levels of the hierarchy included a verbal instruction. Hierarchy steps each began with the presentation of the relevant discriminative stimuli and proceeded at 5-s intervals until the learner made a correct response. If Erin initiated correctly, but did not maintain the desired behavior, full physical guidance and verbal confirmation for 5 s were provided.

During baseline, no occupational or physical therapy techniques were incorporated within the context of the switch activation program. In a designated area of the classroom, a combined total of five 30-minute sessions of therapy per week were provided in a direct and programmatically isolated mode. These sessions took place daily prior to training. They consisted primarily of passive range of motion, tone reduction, and movement facilitation techniques. While these procedures matched the learner's general physical needs, they were not specifically referenced to any identified aspect of Erin's educational program.

Intervention Procedures

Intervention procedures mirrored baseline procedures with one exception. The therapeutic input directed toward enhanced upper extremity functioning which previously had been delivered in a direct/isolated mode was delivered in an indirect/integrated fashion

within the context of the switch activation program. This was accomplished by meeting with team members and posing the basic question, "What therapeutic procedures can be carried out safely by the classroom staff in the context of a lesson that will assist the learner in attaining the objectives of that lesson?" In this particular case the therapists explained that Erin's hypertonicity resulting in limited upper extremity control was a major factor which inhibited her from activating the switch. Serving in a training, consulting, and monitoring role therapists taught the classroom teacher how to provide appropriate therapeutic input within the context of the teaching program. In a calm atmosphere, passive range of motion, tone reduction, and facilitation through manual vibration were provided proximally to Erin's upper extremities before each of the 10 teaching trials included in a session. During regularly scheduled therapy time slots, the time saved by including this aspect of therapy within the teaching act was used for engaging in other activities which required the expertise of a therapist such as fabrication and alteration of hand splints, design and construction of equipment adaptations, feeding programming, reciprocal training with other staff, liaison work with physicians, and evaluation of motor status.

Experimental Design

A return-to-baseline design (A-B-A-B) was used to demonstrate experimental control.

Reliability

Classroom staff recorded interobserver agreement during a minimum of three sessions in each experimental phase. Given an unobstructed view of the learner's activity and the timer, the teacher and a classroom assistant, who served as an independent observer, simultaneously watched and recorded the learner's behavior on separate data sheets. Using a matched trial comparison, agreement was calculated for each session by dividing the number of agreements by 10 (the number of trials per session) and multiplying by 100.

Results

As depicted in Figure 1, the learner displayed significantly improved performance during the second and fourth phases when indirect/integrated therapeutic techniques were specifically referenced to a functional activity and incorporated into the teaching procedures for that activity. Agreement results by phase ranged from 93 to 100%.

Initial baseline (direct/isolated services) scores ranged from 10 to 40% correct responding with an average of 17% over seven sessions (70 trials). The data showed no significant positive or negative trend. The subsequent phase (indirect/integrated services) depicted scores ranging from 10 to 90% correct responding with an average of 49% over 17 sessions (170 trials). This

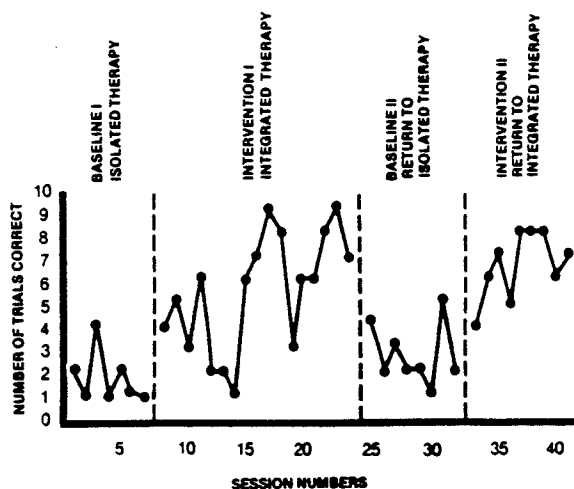


Figure 1. Return-to-baseline data depicting improved performance during phases which included indirect/integrated occupational and physical therapy.

phase was marked by significant improvement in performance as well as variability with a clear ascending trend.

During the return-to-baseline phase (direct/isolated services), scores ranged from 10 to 50% correct responding with an average of 26% over eight sessions (80 trials). Compared with the initial baseline this replication phase showed a slightly larger range of scores and a 9% performance increase. Similar to the initial baseline, no trend was evident. Scores ranging from 40 to 80% correct responding were observed during the final return-to-intervention (indirect/integrated services) phase. This resulted in an average score of 66% over nine sessions (90 trials). Decreased range and variability of scores were evident in this phase compared with the first intervention phase. Similar to the initial intervention phase, significantly improved performance and an ascending data trend were present.

Discussion

This pilot study clearly demonstrated a significant behavioral change in the learner's ability to activate an adapted microswitch and provided increasing evidence to support the efficacy of indirect/integrated approaches to the provision of therapeutic services in educational settings. The design and results of the study raise relevant issues related to the education and habilitation of persons with severe disabilities.

First, when planning and modifying programs at times it may be most appropriate to manipulate non-instructional variables such as the therapeutic techniques described in this study. Typically, if a teaching strategy is unsuccessful, educators have a tendency to modify the objective, change the type or schedule of reinforcement, alter the correction procedures, reexamine the antecedents, or rearrange the environment

(Gaylord-Ross & Holvoet, 1985; Snell, 1983). While such modifications may be appropriate, they may not be effective in all cases. For individuals with significant motor impairments, it may be equally critical to consider factors such as proper positioning, muscle tone status, equipment adaptations, facilitation techniques, or any variety of other noninstructional variables.

Second, these data suggest the value of a carefully considered consultant model as opposed to the traditional emphasis upon increasing the quantity of direct therapeutic services. More is not necessarily better. For example, a student receiving speech, occupational, and physical therapy each five times per week in a direct/isolated mode may actually be benefitting less than a student receiving half that number of sessions in an efficiently operated team which is indirect and integrated. The type, amount, and mode of related therapy services provided in educational settings should be based upon an individualized process which is referenced to both the general educational curriculum as well as specific learner priorities and management needs as delineated in the Individualized Education Plan.

Incorporating therapeutic procedures in the context of functional activities in indirect and integrated ways referenced to an individual's educational plan is an approach that seems logical, yet it remains as the exception rather than the rule. While many questions remain unanswered as we attempt to actualize truly team-oriented services in our schools, combining therapeutic techniques, individualized adaptations, partial participation, and direct instruction applied to functional activities will increase the likelihood of meaningful outcomes for persons with the most profound and multiple handicapping conditions. Clarification of team approaches as well as further research are needed in order to ensure necessary related services that really do assist a child to benefit from his or her educational program.

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