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Enhancing the Quality of Individualized Education Plan (IEP) Goals and Objectives

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Individualized service is a cornerstone of early childhood special education. A primary mechanism used to individualize services is the Individualized Education Plan (IEP). Unfortunately, many studies report that IEP goals and objectives tend to be poorly written and question the individualized nature of the IEP. The purpose of this study was to validate a strategy for improving the quality of written IEP goals and objectives. A diverse group of early childhood special educators was trained on writing quality IEP goals/objectives and using a curriculum-based measure called the Assessment, Evaluation, and Programming System (AEPS) for Three to Six Years. Results indicate the quality of written IEP goals and objectives improved following the IEP goal writing training and use of the AEPS Test.

A guiding premise of Early Childhood Special Education (ECSE) is that young children will prosper when intervention efforts focus on their individual strengths, interests and emerging skills (Bricker, 1989, Bricker, Pretti-Frontczak, & McComas, 1998). Since the middle of the 1970s, the Individualized Education Plan (IEP) has been at the center of efforts to individualize services, particularly through the construction of child goals and objectives (Bagnato, Neisworth & Munson, 1997; Bailey & Wolery, 1992; Bricker et al.; Davis, Kilgo, & Gamel-McCormick, 1998; Espin, Deno, & Albayrak-Kaymak, 1998). Continued reliance on IEP goals and objectives as a means of individualizing services is supported by recommended practice for young children with disabilities (Odom & McLean, 1996). Recommended practice suggests that learning and development can be enhanced when IEP goals and objectives address children's individual needs and are operationally defined making them useful across team members (Bricker et al., 1998; Grisham-Brown & Hemmeter, 1998). We note here that our definition of a team includes family members and professionals working together to meet the needs of individual children, thus whenever the term team is used, family involvement and participation should be assumed. When goals and objectives are directly linked to other key program components such as assessment, intervention, and evaluation, recommended practice suggests that services can be improved (Bagnato et al., 1997; Bricker et al.; Davis et al., 1998). In other words, many ECSE personnel believe that children's individual needs are better met when comprehensive assessment information, goals and objectives, intervention, and evaluation efforts are directly linked (Bagnato et al.; Bricker, 1989; Bricker et al.). Thus, higher quality IEP goals and objectives that are developed from a comprehensive assessment process, and directly linked to intervention and evaluation, are likely to contribute to the individualization of services and improved outcomes for young children.

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Review of IEPs

Examining written IEP goals and objectives has been a focal research topic since the 1980s (e.g., Billingsley, 1984; Hunt, Goetz, & Anderson, 1986; Lynch & Beare, 1990; Morgan, 1981; Smith & Simpson, 1989; Weisenfeld, 1986). Findings from the past two decades of research indicate that IEPs often (a) contain missing mandated components (Carri, 1985; Schenck & Levy, 1979; Smith & Simpson; Michnowicz, McConnell, Peterson, & Odom, 1995); (b) target non-functional skills, such as stacking blocks (Downing, 1988; Weisenfeld); (c) contain little information regarding how goals will be generalized or what performance criteria will be used (Lynch & Beare); (d) emphasize pre-academic skills versus real-life skills (Goodman & Bond, 1993); and (e) include goals and objectives that do not address a child's area of identified delay or need (Smith & Simpson). Given repeated evidence that IEP goals and objectives are often poorly written it is not surprising to find that the IEP does not appear to strengthen the link between program components. In fact, many IEPs do not appear to serve as an intervention guide, assist in the decision making process, or to have a direct impact on outcomes for young children (Dudley-Marling, 1985; Fiedler & Knight, 1986; Margolis & Truesdell, 1987; Morgan & Rhode, 1983; Reiher, 1992; Schenck, 1980). Additionally, teachers and school personnel often report that the IEP has little utility, is unnecessary paperwork, and is filed away until end-of-the-year evaluations.

A gap between recommended and actual practice in writing IEP goals and objectives currently exists (Bricker et al., 1998; Grisham-Brown & Hemmeter, 1998). Without strategies for closing the gap between recommended and actual practice, continued use of the IEP as a primary mechanism for individualizing and improving outcomes for young children is questionable. In fact, some writers have suggested an adverse relationship between IEPs and child outcomes. For example, Goodman and Bond (1993) maintain that poor intervention outcomes for children are a result of poorly written IEP goals and objectives. While little empirical evidence is available to support an adverse relationship between IEPs and child outcomes, strategies for ensuring a positive relationship are needed. Specifically, strategies that assist in the development of quality IEP goals and objectives, and in turn enhance the link between program components and improve outcomes for children, are needed (Grisham-Brown & Hemmeter; Michnowicz et al., 1995).

Selection of a Curriculum-Based Measure

One potential strategy for linking key program components is the use of a curriculum-based assessment and evaluation measure that contains meaningful skills (Bagnato et al., 1997; Bricker et al., 1998; Notari & Bricker, 1990; Notari & Drinkwater, 1991). Curriculum-based assessment and evaluation measures, sometimes referred to as CBM, are "a form of criterion-referenced measurement wherein curricular objectives act as the criteria for the identification of instructional targets and for the assessment of status and progress" (Bagnato & Neisworth, 1991, p. 97). Such measures are designed to generate comprehensive and detailed information about children's performance (strengths and emerging skills) and when composed of functional skills, can be used to develop meaningful IEP goals and objectives and intervention content (Bagnato et al.; Notari, Slentz & Bricker, 1991).

The purpose of this study was to determine if a training package that included (a) information on writing IEP goals and objectives and (b) use of a curriculum-based assessment and evaluation measure called the Assessment, Evaluation, and Programming System for Three to Six Years (Bricker & Pretti-Frontczak, 1996) would improve the quality of written IEP goals and objectives. The AEPS was specifically developed to link the assessment process, goals and objectives, intervention, and evaluation activities. Further the AEPS is a comprehensive system with procedures to promote (a) full collaboration among team members, (b) a focus on children's strengths and emerging skills, and (c) intervention within natural environments.

Rationale for the AEPS Three to Six

The AEPS Three to Six is a curriculum-based assessment and evaluation measure designed to assist interventionists in (a) determining children's present level of functioning, (b) developing meaningful IFSP or IEP goals and objectives, (c) planning intervention, and (d) evaluating child performance. It was developed for use by teams composed of family members, direct service personnel (e.g., classroom interventionists, home visitors, child care providers, assistants) and specialists (e.g., speech language pathologists, occupational and physical therapists, psychologists). The AEPS Three to Six can be used to assess and evaluate the skills of young children who are at risk and who have disabilities. Further, the AEPS Three to Six was specifically developed to link assessment, goals and objective writing, intervention, and evaluation activities. Test data are collected through observations of children engaged in routine and play activities in familiar settings. The AEPS Three to Six covers six broad curricular domains: fine motor, gross motor, adaptive, cognitive, social communication, and social.

The AEPS Three to Six has four specific features that validate its use in writing children's goals and objectives and for use in the present study. First, most items are written to reflect conceptual or generative response classes (e.g., initiates and completes age-appropriate activities) rather than singular, specific responses (e.g., remains seated during circle time). The AEPS Three to Six, however, contains hundreds of skills that can be combined in an effort to both individualize and make skills more functional, generative, and meaningful. For example, if a team determines that a child needs to learn skills such as colors, shapes, sizes, and to use 3 word utterances, a goal of using words, phrases, and sentences to describe, inform, and direct may be targeted rather than targeting four separate goals. Second, the AEPS Three to Six targets functional skills and abilities essential for young children to function independently and to cope with environmental demands (e.g., walks to avoid obstacles). The focus on functional skills and abilities ensures that each test item is poten-

tially an appropriate intervention target (Bricker, 1993). Again, items can be modified, adapted, and individualized, making them appropriate for teams to use and to "teach from assessment results."

The third validating feature of using the AEPS Three to Six for our study is a section in the test manual containing model examples of high quality IEP goals and objectives. These models serve as templates that can be modified and individualized by parents and interventionists. For example, one item reads "responds to topic changes" but is rewritten in the manual as "The child will respond to conversational topic changes initiated by others with comments, answers, or questions related to the new topic (e.g., The child says, 'I want to play outside some more,' and the adult says, 'We need to go inside now to fix snack.' The child responds, 'What are we gonna eat?')." A team using the AEPS Three to Six would take the rewritten model and further individualize it for a particular child.

Fourth, using the AEPS Three to Six for IEP goal and objective development is supported by documented utility and growing evidence of treatment validity (e.g., Bagnato et al., 1997; Bricker, 1993; Bricker & Pretti-Frontczak, 1996; Hsia, 1993; Slentz, 1986). In particular, support comes from research on the AEPS Birth to Three. For example, two studies have reported that the AEPS Birth to Three helped teachers develop goals and objectives in a timely manner, and provided accurate and comprehensive information regarding children's level of functioning (Bailey & Bricker, 1986; Bricker, Bailey, & Slentz, 1990). Furthermore, Notari and her colleagues (Notari & Bricker, 1990; Notari & Drinkwater, 1991) found that teachers who used the AEPS Birth to Three made noticeable improvements in the quality of their written goals and objectives. In particular, Notari and Drinkwater reported that teachers wrote goals and objectives that were "more functional, generic, easy to integrate within the instructional content, and measurable, as compared to those based on computerized lists" and "the AEPS enabled teachers to sequence goals and objectives according to a hierarchical teaching sequence"

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(p. 101). Additional evidence regarding the utility of the AEPS Birth to Three comes from Straka (1994) who reported that speech-language pathologists found the AEPS Birth to Three to be more useful than the Communication and Symbolic Behavior Scales (Wetherby & Prizant, 1993) in developing IEP goals and objectives. Finally, a study by Hamilton (1995) reported that goals and objectives written by teachers for children with visual impairments were of higher quality when they used the AEPS Birth to Three than the Oregon Project Curriculum for Visually Impaired and Blind Preschool Children (Anderson, Boigon, & Davis, 1991).

Although data from studies of the AEPS Birth to Three offer support for its usefulness in developing quality goals and objectives; no studies have examined the impact of using the AEPS Three to Six on the quality of written IEP goals and objectives. Previous experiences, however, suggests to us that training on how to write IEP goals and objectives should accompany training on how to use the AEPS Three to Six. Therefore, we developed a combined training approach for writing IEP goals and objectives and using the AEPS Three to Six. In addition, we evaluated the quality of IEP goals and objectives written by trained participants.

Quality Dimensions

To evaluate written IEP goals and objectives benchmarks or criteria are needed. From a thorough review of past research on IEP goals and objectives and recommended practice derived from values and beliefs shared by many ECSE personnel, five quality dimentions were identified: *functionality* (Davis, 1989; Lynch & Beare, 1990; McWilliam et al., 1998; Weisenfeld, 1986; Wolery, 1989), *generality* (Bricker, 1989; Lynch & Beare; Notari & Bricker, 1990; Notari & Drinkwater, 1991), *instructional context* (Grisham-Brown & Hemmeter, 1998; McWilliam, et al.; Notari & Bricker; Notari & Drinkwater), *measurability* (Downing, 1988; Michnowicz, et al., 1995), and *hierarchical relationship* (Michnowicz, et al.; Notari & Bricker; Notari & Drinkwater; Tymitz, 1980).

Functionality. A goal or objective is considered functional if it is useful to children in successfully negotiating their daily environments (Davis, 1989; Lynch & Beare, 1990: Weisenfeld, 1986; Wolery, 1989). Functional skills are those that allow the child greater independence and give the child the ability to adapt to changing environments. A functional skill is one that is "likely to be necessary for success in everyday functioning or for enhancing development. . .versus those that have no immediate function" (McWilliam et al., 1998, p. 78). For example, learning to walk or feed oneself is more functional than learning to put pegs in a pegboard or labeling pictures on flash cards.

Generality. A second quality dimension, generality, is when a goal or objective represents a general concept or class of behaviors that is not specific to a particular item or setting (i.e., the skill is generic) (Bricker, 1989). For example, stacking a variety of objects or placing and releasing many different objects is more useful than stacking three ½ inch blocks or releasing beanbags into a can. When goals and objectives are written in more generic terms, interventionists and caregivers have the flexibility to practice the skill across settings, materials, and events. Learning more generic skills (e.g., to stack a variety of objects versus to stack 3 blocks) also allows children multiple opportunities to use the target skills within their natural environment (e.g., to stack books, cups, clothes, chairs, carpet squares), thus enhancing generalization of the skill.

Instructional Context. A third quality dimension relates to whether or not the goal and objective can be frequently and easily targeted across daily routines (i.e., instructional context). Skills that can be addressed within the natural environment (i.e., places such as home, daycare, preschool, and the grocery store) or skills that can be easily elicited by parents and interventionists meet the quality dimension of instructional context. For example, balance in standing can be addressed or elicited while standing in line for lunch or while waiting for a turn on the swing, versus skills such as stands on one foot or walks on

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a balance beam. McWilliam and his colleagues (1998) further suggest that "When goals and strategies are written in such a way that intervention can occur in the normal home or classroom routines, in normal places, with normal objects and with regular caregivers, they are helpful to families" (p. 79).

Measurability. A fourth quality dimension is whether goals and objectives are observable (i.e., they can be seen, heard, counted) and therefore measurable (Downing, 1988; McWilliam, et al., 1998; Michnowicz, et al., 1995). When goals and objectives include vague terms such as demonstrates, knows, realizes, and increases or undefined terms such as appropriate social skills or 4-year-old motor skills, it becomes difficult for team members to (a) know when the behavior(s) have occurred and (b) exactly which behavior(s) are being targeted for intervention (Bricker et al., 1998; McWilliam, et al.). Goals and objectives that meet the measurability quality dimension are ones that can be agreed upon as to whether or not the skill was demonstrated and ones that allow teams to determine if the child has met the targeted skill (e.g., independently walks for 15 feet for 8 consecutive days).

Hierarchical Relationship. The fifth quality dimension addresses the hierarchical relationship between a goal and its associated objective(s). Objectives should be directly related to their goal by serving as either a precursor step or building block skill. For example, precursor skills to the goal of walking independently might include pulls to a stand, cruises, and walks with one hand support. All too often objectives are written as restatements of the goal or are unrelated to the goal.

For the purposes of this study, IEP goals and objectives were considered to have high quality when they contained all or most of the five quality dimensions defined above. That is, high quality goals and objectives that were functional, generative, addressed in a child's natural environment, measurable, and hierarchically related.

METHODS

Participants
ECSE state coordinators and program directors from California, Kansas, Louisiana, Oregon, and Washington were contacted and asked to identify personnel who met the following criteria for participation in the present study: (a) currently working with children age 3–6 years; (b) no prior training or experience with the AEPS; (c) willing to participate in a 2-day training on how to write quality goals and objectives and how to use the AEPS Three to Six; and (d) willing to provide written goals and associated objectives for a target child before and after the training.

Eighty-six participants from five states met these criteria and were included in the study. Participants for the study were somewhat geographically diverse representing the middle, southern and western regions of the country. The sample was composed of 54 interventionists (teachers), 9 therapists, and 2 persons in an administrative or coordinator role (21 participants did not indicate their professional role). Although the literature clearly indicates that quality goals and objectives should incorporate family priorities, values, and culture (e.g., Bricker et al., 1998; McWilliam et al., 1998), we did not directly address family issues in this study. We acknowledge the importance of determining the skill level of all team members when constructing and IEP, and we likewise acknowledge the importance of ensuring the tone and language of the written document is respectful of all team members. We were unable, however, to directly address family priorities and involvement in construction of the IEP document. This decision was made for three reasons. First, limited resources precluded participants from being able to assure timely family input in writing both pre-training and post-training goals and objectives. Second, since the children already were receiving services (i.e., pre-training goals and objectives were written prior to the study), family input in the development of the written IEP could not be measured. Finally, we only examined the child goals and objectives section of the IEP or IFSP. Nevertheless, the extent to which a goal or objective could be integrated by professionals or family members within the context of daily routines, (e.g., while cooking dinner, during bath time) was examined. Furthermore, because of limited re-

sources and diversity across states on how goals and objectives are written, we invited only individuals (primarily teachers) to participate in the study rather than entire teams. The extent to which training is needed for other team members (i.e., caregivers, therapists, and administrators), however, remains an area of future research.

Forty percent of the participants held a bachelor's degree, 40% held a master's degree, and 20% of the participants did not report their level of education. Participants' experience in working with young children with disabilities ranged from 1 year to 21 years with a mean of 8 years and a standard deviation of 6. Together, participants provided services to nearly 1,000 children in a variety of settings (Head Start classrooms, integrated preschools, non-categorical preschools). These children ranged in age from 3 to 6 years, resided in rural, suburban, and urban communities, and were ethnically diverse (e.g., Caucasian, African American, Hispanic, Asian/Pacific Islander, and Native American). Disability categories of children being served by the 86 participants included children at risk for delays, as well as those identified with mild, moderate, and severe disabilities.

Measures

IEP/IFSP Goals and Objective Rating Instrument (GORI). To evaluate the quality of goals and their associated objectives written during the pre-training and post-training phases, the GORI was used. This instrument was designed to evaluate IFSP/IEP goals and objectives on five quality dimensions: (a) functionality, (b) generality, (c) instructional context, (d) measurability, and (e) hierarchical relationship. Each *goal* and each *objective* is rated independently to determine the presence or absence of 10 different quality indicators. If an indicator is present, a score of 1 is assigned; if an indicator is absent, a score of 0 is assigned. An additional indicator is used to examine the hierarchical relationship between an objective and its corresponding goal. An objective written as a necessary step toward attainment of the goal is considered a high quality objective and scored 2. An objective

that simply restates the goal, it is scored 1, and objectives completely unrelated to the goal are scored 0. Scores across the quality indicators are summed to determine the overall quality of a specific goal or objective. Higher GORI scores indicate higher quality written goals or objectives. Shown in Table 1 are GORI quality dimensions, associated indicators, and definitions of quality dimensions. The GORI has been used in previous studies (Hamilton, 1995; Notari & Bricker, 1990; Notari & Drinkwater, 1991; Straka, 1994) and has been reported to be a valid, reliable and useful measure (Notari, 1988; Notari & Bricker).

An example of high quality and low quality goals (and their corresponding objectives) is presented in Table 2. How objectives can be hierarchically related (i.e., as precursor skills) or unrelated to their associated goal also is shown in Table 2. Upon examination of these examples, one can readily see that high and low quality goals and objectives often contain similar features (e.g., antecedents, behaviors, and criteria). Differences in quality often arise in how the goals and objectives are selected and written. For example, the conditions under which a child is expected to demonstrate a skill (antecedents) should not be limited to specific times of the day or locations (e.g., the gym, during group time). Rather, antecedents should promote the use of skills under conditions that simulate how and where the child will need the skills within their daily routine (i.e., across environments such as the home, school, child care). Further, instead of selecting behaviors that are broad and difficult to measure (e.g., improve gross motor skills), high quality goals and objectives contain individualized behaviors that can be seen, heard, counted, and understood (e.g., moves around the house and the classroom by holding onto furniture). Finally, criteria that are selected should convince the team the child has met the skill. Criteria such as "at a 4-year-old level" or "80% of the time" are hard to interpret, making decisions more difficult regarding when a child has mastered a skill.

For this study, two coders were trained to rate goals and objectives using the GORI.

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Table 1.

IEP/IFSP Goals and Objectives Rating Instrument (GORI) Quality Dimensions, Associated Indicators, and Definitions

Quality Dimensions	Indicators	Definitions
Functionality	1	The skill increases the child's successful interaction with the daily environment.
	2	The skill has to be performed by an adult if the child cannot do it.
Generality	3	The skill represents a general concept or class of responses.
	4	The skill is adaptable to a variety of disabilities.
	5	The skill generalizes across a variety of settings, materials, and/or people.
Instructional Context	6	The skill can be taught in a manner that reflects the way in which the skill will be used in the child's daily environment.
	7	The skill can be integrated by the teacher or parent within daily classroom or home activities.
Measurability	8	The skill can be seen or heard.
	9	The skill can be directly counted (e.g., by frequency, duration, distance measure).
	10	The skill contains, or lends itself to, determination of performance criteria (e.g., independently, with assistance).
Hierarchical Relationship	11	(2) The objective is a subskill, or step, thought to be critical to the achievement of the goal.
		(1) The objective is a restatement or contains the same content as the goal (e.g., the only difference between the goal and the objective is the specification of a particular activity or the addition of an instructional prompt).
		(0) The objective is a skill that is not related to the goal.

During coding training, both coders reached 88% inter-rater percentage agreement. One coder then rated all goals and objectives submitted by the 86 participants. To ensure inter-rater agreement remained at or above 80%, the second coder randomly selected 33% of the rated goals and objectives and recoded them. The order in which the goals and objectives were rated was sequenced randomly so coders were unaware whether they were rating goals and objectives from the pre-training or post-training phase. Total percentage agreement was calculated by reviewing GORI forms for both coders and counting each indicator in which there was agreement. The sum of agreements was divided by the total number of agreements plus disagreements and multiplied by 100 (Tawney & Gast, 1984). Inter-rater agreement consistently exceeded 80%. A Kappa coefficient (Cohen, 1960) also was calculated across each of the 11 quality indicators to establish a more conservative estimate of inter-rater agreement. The average Kappa was .72 with a standard deviation of .06.

Procedures

Pre-Training Phase. During the pre-training phase, participants were instructed to select and submit to us, three IEP goals and corresponding objectives they had written. (Although the focus of the study was on IEP development, some participants lived in states where IFSPs were developed for 3 to 6 year old children, thus we refer to both the IFSP and the IEP.) Despite potential beliefs that certain disability categories and certain developmental domains present greater or lesser degrees of difficulty when constructing IFSP and IEP goals and objectives, there is a lack of empirical evidence to support such a notion. Thus, we did not restrict the scope or type of skills participants could targeted, nor did we

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Table 2.

Comparison between High and Low Quality Goals and Objectives

Target Skill	High Quality	Low Quality
Walking	Goal 1.0- Kennedy will independently walk for up to 15 feet <u>at home, at daycare and in the community</u>. For example, Kennedy will walk from circle to the snack table, from the car to the living room, and from grandma's kitchen to the playroom. At least 3 times a day for a week.	Goal 1.0- Child **will improve** Gross Motor skills to a four-year-old level by the end of the year.
	Objective 1.1- Kennedy will walk for up to 15 feet holding onto parent's or teacher's hands <u>at least once a day</u> for 2 weeks.	Objective 1.1- **During physical therapy** the child will walk heel to toe across the gym for 2/3 trials.
	Objective 1.2- Kennedy will <u>move around the house and the classroom by holding onto furniture</u> at least three times a day for a week.	Objective 1.2- The child will **sit appropriately** on carpet square during group time (will not "W" sit) 80% of the time.
	Objective 1.3- Kennedy will pull herself up at home and at daycare at least twice a day for 2 weeks.	Objective 1.3- The child will kick a ball with **90% accuracy**.

Note. Underlined portions signify examples of antecedents, behaviors, and criteria that contribute to the high quality nature of the goal and objectives. Bolded portions signify examples of antecedents, behaviors, and criteria that contribute to the low quality nature of the goal and objectives.

specify the developmental domains from which goals and objectives could be selected. Furthermore, participants could submit goals and objectives for any child with any level of ability. We also did not specify a number of objectives, although we used no more than three from each participant.

Also during the pre-training phase participants indicated the resources they used to develop the goals and objectives they were submitting. A variety of resources were listed including (a) program-specific checklists, (b) computerized IEP programs, (c) the Battelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi & Svinicki, 1988), (d) the Early Intervention Developmental Profile (Rogers & D'Eugenio, 1981), (e) the Hawaii Early Learning Profile (Vort Corporation, 1995), and (f) Preparing Children to Learn: A Family-Centered Approach to Functional Skills Assessment (McLean, McNay, & Kottwitz, 1995). None of the participants indicated using either the AEPS Birth to Three or Three to Six to write their pre-training goals or objectives.

Training Phase. After participants submitted their pre-training goals and objectives, they participated in a 2-day training session. The training session was conducted by experienced trainers and divided into six major content areas. *Content Area 1* included a description of AEPS components: (a) the measurement, (b) curriculum, (c) child progress form, (d) family report, and (e) family interest survey. *Content Area 2* provided rationale for using the AEPS Three to Six and a description of its utility. *Content Area 3* included activities for administering and scoring the AEPS Three to Six first with one child and one domain, then with one child across domains, and finally with multiple children across domains. *Content Area 4* provided practice opportunities for participants to summarize AEPS Three to Six results (i.e., obtaining percentage correct scores and present level of functioning narratives) and to interpret findings (i.e., determine a child's strengths, interests and emerging skills). *Content Area 5* emphasized how to use the AEPS Three to Six to select and write IFSP/IEP goals and objectives. *Con-*

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tent Area 6 consisted of training participants to use a five-step process in developing high quality goals and objectives: (Step 1) administration of a curriculum-based assessment and evaluation measure and gathering information from multiple sources, (Step 2) summarizing results, (Step 3) selecting skills that meet the five quality benchmarks, (Step 4) prioritizing skills, and (Step 5) writing goals and objectives.

Post-Training Phase. After completing the 2-day training session, participants were to administer the AEPS Three to Six to a child they were currently serving. We provided each participant with an AEPS Three to Six manual and data recording form and asked them to administer the test, complete the data recording form, and independently write post-training goals and associated objectives using the AEPS Three to Six results. Participants could select a new child for this activity or they could use the same child whose goals and objectives were submitted at the pre-training phase. Again, because empirical evidence does not suggest that one child poses a lesser or greater degree of difficulty in writing IFSPs or IEPs, we were not concerned that writing goals and objectives for different children would pose a threat to the validity of the study. Participants were given 8 to 12 weeks to complete this assignment.

Analyses were conducted by comparing the pre-training goals and objectives (written before training and use of the AEPS Three to Six) with the goals and objectives written following training and use of the AEPS Three to Six. For this comparison, we used the IEP/IFSP Goals and Objectives Rating Instrument (GORI; Notari, 1988) that addresses the quality dimensions described earlier. Only three pre-training and three post-training pairs of goals and objectives were compared for each participant. If a participant submitted more than three goals and three corresponding objectives at either phase, we randomly selected three pairs for analyses. Eight participants submitted goals without objectives during the pre-training or post-training phases, thus final analyses were conducted on 86 participants'

pre- and post-training *goals* and 78 participants' pre- and post-training *objectives*.

RESULTS

This study was designed to determine if a 2-day training session on how to write IEP goals and objectives and the use of a curriculum-based assessment and evaluation measure, the AEPS Three to Six, improved the quality of IEP goals and objectives written by ECSE providers. Findings are based on a comparison of pre-training goal and objective ratings with post-training goal and objective ratings for 86 participants from 5 states.

Participants' pre-training and post-training goals and objectives were rated using the GORI. For each participant at least one goal and objective, and no more than three goals and objectives were rated during both study phases. A mean percent score on pre- and post-training *goals* and pre- and post-training *objectives* was calculated for each participant and these mean percent scores then were aggregated across participants. For *goals,* there were 86 aggregated mean percent scores at both pre- and post-training. For *objectives,* there were 78 aggregated mean percent scores at both pre- and post-training.

Using paired t-tests, aggregated mean percent scores for the two phases were compared. As shown in Table 3, there was a statistically significant difference between pre-training and post-training aggregated mean percent scores for each of the 10 *goal* indicator comparisons. Also shown on Table 3 are the differences between pre-training and post-training aggregated mean percent scores for each of the 11 *objective* indicators. Nine of the 11 pre-training to post-training objective comparisons were statistically significant.

DISCUSSION

Goals and objectives that are functional, generative, understandable, measurable, and related, as well as based upon family priorities and values are likely to strengthen the link between key program components and consist of individualized content that will result in positive child outcomes (Bricker et al., 1998).

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Unfortunately, as noted in the introductory section, investigations of IEP goals and objectives written by educational personnel often do not meet recommended practice guidelines (e.g., are not functional and meaningful).

The purpose of this study was to examine whether an independent variable composed of training on writing IEP goals and objectives and training and use of the AEPS Three to Six would improve the quality of written IEP goals and objectives. Study results are clear. The quality of written goals were rated as statistically significantly higher on all 10 quality indicators following the combined goal writing training and use of the AEPS for Three to Six. The quality of written objectives were rated as statistically significantly higher on 9 of 11 quality indicators following training and use of the AEPS Three to Six.

A review of Table 3 reveals an interesting finding regarding the quality of goals versus the quality of objectives. First, the aggregated mean percent scores for objectives were consistently higher at post-training, than were aggregated mean percent scores for goals. In fact, aggregated mean percent scores for objectives at pre-training were consistently higher than the aggregated mean percent scores for goals at post-training with standard deviations being similar for objectives and goals. These findings are consistent with data reported by Notari and Drinkwater (1991) and suggest that interventionists are able to write higher quality objectives than goals. Interestingly, other investigators (e.g., Billingsley, 1984; Tymitz, 1980) have reported that objectives are more difficult for interventionists to write than goals. It is not clear, however, why the written objectives were of higher quality. A replication is necessary to determine if such differences would maintain across other participants and what the implications of such findings would be.

Although our study lacked a control group, the number of interventionists involved, their educational, geographic, and experiential diversity, the variety of intervention programs and range of enrolled children (disability, ethnicity), all contribute to the robustness of the outcomes. The use of the AEPS Three to Six

in combination with training on writing goals and objectives did improve the quality of the goals and objectives written by the participating ECSE interventionists. Because the training and use of the AEPS Three to Six was inextricably linked within the study, we cannot draw conclusions about the individual contributions of the AEPS Three to Six, or the training on goal and objective writing. Our experiences, however, suggest that both use of a curriculum-based assessment and evaluation measure that contains meaningful skills and training on writing goals and objectives are necessary for learning to write quality IFSP and IEP goals and objectives.

Curriculum-based assessment and evaluation measures generally offer the user an array of developmental domains, content areas, operational criteria, and scoring procedures that require time and effort to learn, understand, and interpret if the measure and its outcomes are to be used correctly. Although some curriculum-based assessment and evaluation measures do much to connect assessment to intervention, it may also be necessary to provide interventionists with specific training in understanding and using the assessment results to develop quality IFSP and IEP goals and objectives. Further, teams may require training on how to select curriculum-based assessment and evaluation measures that will help them develop quality IFSP and IEP goals and objectives. Finally, it is important to remind teams that multiple methods and sources should be used when developing IFSPs and IEPs.

If the field's assumption is correct, that is, quality goals and objectives result in more effective intervention, which in turn, produce better child outcomes, then future work designed to assist ECSE personnel in developing quality IFSP and IEP goals and objectives is critical. Replication of the study's findings would support the importance of training and the use of effective curriculum-based assessment and evaluation measures to assure the quality of IFSP and IEP goals and objectives. Future studies should validate the strategy of training ECSE personnel on writing quality goals and objectives and use of the AEPS Test

Table 3.

Pre-Training and Post-Training Aggregated Mean Percent Score Comparisons for IEP and IFSP Goals (N = 86) and Objectives (N = 78) on GORI Quality Indicators

Quality Dimensions and Indicators	Goals			Objectives		
	M	*SD*	*t*	*M*	*SD*	*t*
Functionality						
Indicator 1						
Pre-training	13	26		72	28	
Post-training	54	38	8.75***	83	23	3.11**
Indicator 2						
Pre-training	10	22		50	34	
Post-training	40	36	6.65***	64	30	2.69**
Generality						
Indicator 3						
Pre-training	12	25		60	33	
Post-training	52	40	8.66***	78	26	3.83***
Indicator 4						
Pre-training	14	26		71	28	
Post-training	53	28	8.38***	82	23	2.95**
Indicator 5						
Pre-training	14	26		67	30	
Post-training	49	38	7.34***	74	30	1.46
Instructional Context						
Indicator 6						
Pre-training	13	25		69	29	
Post-training	52	38	8.24***	79	27	2.42**
Indicator 7						
Pre-training	14	26		70	29	
Post-training	52	38	8.12***	82	25	2.74**
Measurability						
Indicator 8						
Pre-training	14	26		76	28	
Post-training	53	38	8.56***	85	23	2.30*
Indicator 9						
Pre-training	13	26		73	31	
Post-training	51	38	8.19***	81	26	1.68
Indicator 10						
Pre-training	13	26		77	27	
Post-training	53	38	8.56***	85	23	2.02*
Hierarchical Relationship						
Indicator 11						
Pre-training				13	37	
Post-training				62	58	6.65***

* $p < .05$. ** $p < .01$. *** $p < .001$.

Three to Six or other appropriate curriculum-based assessment and evaluation measures as a potential first step in linking program components and improving outcomes for young children. In addition, a related line of work needs to be undertaken that addresses the treatment validity of curriculum-based assessment and evaluation measures such as the

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AEPS Three to Six. In this sense treatment validity refers to whether child outcomes are improved through the use of a measure's results (Bagnato et al., 1997; Messick, 1989). Finding such as these will do much to lead the field forward in its quest for improved services to young children with disabilities.

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