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Topics in Early Childhood Special Education 2005; 25; 25

DOI: 10.1177/02711214050250010301

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Personnel Preparation in Recommended Early Intervention Practices: Degree of Emphasis Across Disciplines

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University faculty were surveyed to ascertain the degree to which students in early childhood special education, occupational therapy, physical therapy, speech–language pathology, and multidisciplinary personnel preparation programs received training in five early intervention practices (family-centered, individualized family service plans, natural environments, teaming, and service coordination). Findings indicated a primary emphasis on family-centered practices across disciplines, with minimal emphasis on service coordination and teaming practices. Findings also showed that physical therapy faculty provided the least amount of training in the majority of early intervention practices as compared to faculty in other disciplines. Implications for improving student training are described.

Personnel preparation for professionals serving infants and toddlers and their families demands a focus that is different than the preparation of individuals serving older children (Bailey, Simeonsson, Yoder, & Huntington, 1990; Hanson & Bruder, 2001; McCollum, 2000; Winton, McCollum, & Catlett, 1997). In particular, the content and practices of early intervention service delivery are vastly different than those of school-age, or even preschool-age, services. Many of these differences are the direct result of the developmental needs of infants and toddlers, as well as the policies that govern the provision of early intervention services. For example, Part C of the Individuals with Disabilities Education Act (IDEA) amendments of 1997 was designed to honor the unique needs of infants and toddlers and their families through programmatic requirements that represent best practice in the field of early intervention. As a result, personnel who serve infants and toddlers should be prepared to meet both the developmental specifications of this population and the legislative components of service delivery. The challenge to higher education personnel preparation programs is to include such content for those who will provide early intervention services (Kilgo & Bruder, 1997).

The first major examination of personnel preparation for those professionals providing services to infants

and toddlers and their families was conducted under the auspices of a federally funded research institute on this topic (Bailey et al., 1990). The study examined a number of variables related to preservice preparation program curriculum for entry-level students in eight disciplines: nursing, nutrition, occupational therapy, physical therapy, psychology, social work, special education, and speech–language pathology. A telephone survey was conducted with 449 programs: 237 undergraduate programs and 212 master's programs. One major finding was that none of the disciplines felt they did an adequate job preparing professionals to work in early intervention. Other findings included a great variability both across and within disciplines in the amount of exposure provided to students in content related to infants, toddlers, and families. Furthermore, the most frequently reported content area across discipline programs was atypical and typical development of infants' knowledge base, as opposed to clinical skills in assessment and intervention with both children and families. Bailey and his colleagues (1990) recommended a stronger emphasis and commitment be placed on both preservice and inservice models of personnel training for those serving infants and toddlers and their families.

In an effort to address such shortcomings in preservice personnel preparation in early intervention, Bruder,

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Lippman, and Bologna (1994) implemented a federal funded project with 36 faculty representing 12 disciplines from 15 universities in the New York City metropolitan area. After a leadership institute and intense onsite mentorship, all 36 faculty substantially changed their university personnel training programs in the areas of coursework and practica. For example, new courses were added to their programs (syllabi and students enrolled were provided as evidence), revisions were made to existing courses (syllabi were provided as evidence), new practicum sites were identified (descriptions were provided as evidence), and collaborative coursework across disciplines was added (syllabi and coursework were provided as evidence). These changes in the personnel preparation programs were documented by the products and by attendance of project staff at college or university meetings where the changes were proposed and approved. This state-specific project was expanded through additional federal funding to four regional institutes to improve higher education preparation programs for those disciplines providing Part C services (c.f., Hebbeler, 1997; Winton, 1996).

Unfortunately, change in higher education programs, including those for early interventionists, is slow and not easily sustained (Rooney, 1995). The barriers to progress include issues related to structure and organization, administration, faculty, curriculum, and students (Early & Winton, 2001; Kilgo & Bruder, 1997; Klein & Gilkerson, 2000). Therefore, it is not surprising that practitioners and families alike report discrepancies between recommended practices for early intervention, as identified through literature and legislation, and actual service delivery practices across a number of content areas (Bruder & Staff, 1999; Campbell & Halbert, 2002; Lava, Recchia, & Giovacco-Johnson, 2004; Odom, McLean, Johnson, & LaMontagne, 1995).

First, family-centered practice has been cited as crucial to the success of any endeavor in early intervention (Bruder, 2000; Dunst, 2000; McBride & Brotherson, 1997). This is not surprising as infants and toddlers are developing and learning in the context of their families, which requires that services and supports be targeted at families as well as at children. Families have the ultimate responsibility for giving care, supporting the child's development, and enhancing the quality of the child's life. Therefore, early interventionists must be prepared to recognize the interdependence of the child and family in all aspects of service delivery through the implementation of family-centered practices, such as treating families with dignity and respect; being culturally and socioeconomically sensitive to family diversity; providing choices to families in relation to their priorities and concerns; fully disclosing information to families so they can make decisions; focusing on a range of informal community resources as sources of parenting and family

supports; and employing empowering and competency-enhancing helpgiving practices (Dunst, 2000). Considerable literature has been amassed on the individual and collective use of these practices, and this area is the foundation of the Part C program (Bruder, 2000; c.f., Dunst, Brookfield, & Epstein, 1998; Dunst, Trivette, Boyd, & Hamby, 1996; Mahoney & Bella, 1998; McWilliam, Tocci, & Harbin, 1998; Thompson et al., 1997; Trivette & Dunst, 2000).

A second area of focus for those serving infants and toddlers is the conceptualization and implementation of cross-disciplinary models of service delivery (Hanson & Bruder, 2001). This occurs through a team approach with discipline-specific professionals who have the knowledge and expertise to cross traditional domains of behavior. Rather than have a different person from each discipline address a separate developmental domain with a child, a team-based model calls for a consolidation of interventions that cross developmental areas (Bruder, 2000). The primary purpose of the approach is to pool and integrate the expertise of team members to provide more efficient and comprehensive assessment and intervention services. Part C acknowledges the need for such teamwork in the requirements for a multidisciplinary assessment process and the development of an individualized family service plan that includes integrated goals and objectives to meet a child's and family's needs across disciplines and services.

A third area of focus for early interventionists is service coordination (Bruder, in press; Jung & Baird, 2003; Park & Turnbull, 2003). Just as the different disciplines involved in early intervention must be coordinated, so must supports and services. Part C of the IDEA amendments of 1997 requires a service coordinator to be assigned to each family eligible for early intervention. The role of a service coordinator is to assist the family in coordinating and integrating their needs across and within the various agencies that are involved with the provision of early intervention services. Although Part C does not designate any one professional to assume this role, legislation does define the duties of the service coordinator. These include assisting and enabling an eligible child and the child's family to receive the rights, procedural safeguards, and services that are authorized under the state's early intervention program. Service coordinators are responsible for coordinating all services across agency lines and serving as the single point of contact to help parents obtain the services and assistance they need. In many states, early intervention service providers serve this role (Harbin et al., 2004), thus necessitating training with personnel programs.

A fourth area of focus for early intervention training is the development of the Individualized Family Service Plan (IFSP). The IFSP is intended to be a planning document that shapes and guides the day-to-day

provision of early intervention services. The IFSP is required for the provision of early intervention services for eligible infants and toddlers (age birth to 3 years) and their families. The IFSP is developed in a meeting that culminates the assessment process. During the meeting, the intervention team and the family articulate the family's priorities for the child's growth and development and the family's needs and priorities related to the child. The team then devises interventions to support the child's growth and development in the context of the family's identified activities and routines. The actual IFSP document should be a record of these priorities in a format that allows for ongoing measurement of child and family outcomes. The IFSP must be an accurate portrayal of the child's and family's outcomes in the context in which they will happen (Bruder, 2001).

A last area of emphasis for early intervention personnel is natural environments. Interventions should be integrated into an infant or toddler's everyday routines and activities, as opposed to being delivered in structured, domain-specific, episodic, and time-limited sessions (Bruder, 2001). *Natural environments*, as defined by Part C, are those places where the child would be—such as the home, community, and other environments with his or her same-age peers—if he or she did not have a disability. Research has demonstrated that young children with disabilities benefit from participating in groups of young children without disabilities (Bruder & Staff, 1998; Odom, 2000), as well as in home and community activities orchestrated by their families (Dunst, Bruder, Trivette, Hamby, & Raab, 2001). Incorporating natural environments into early intervention allows for opportunities to expand the latter to all the activities and routines in which a child and family participate (Bruder, 2001).

The purpose of our study was to ascertain the degree to which different early intervention practices in these content areas constituted the focus of undergraduate and graduate programs preparing students to work with infants and toddlers and their families (e.g., Hemmeter, Joseph, Smith, & Sandall, 2001; McLean, Snyder, Smith, & Sandall, 2002; Sandall, McLean, & Smith, 2000). The investigation focused on the areas that are considered best practices in early intervention (family-centered practices, teaming) or that are required by law to be a service or practice in early intervention (service coordination, IFSP, natural environments). These have been the focus of our research for more than 15 years (Bruder, 2000, 2001, in press; Dunst, 2000; Dunst & Bruder, 2002; Trivette & Dunst, 2000). We were interested in knowing the extent to which personnel preparation programs in special education, physical therapy, occupational therapy, speech–language pathology and multidisciplinary training emphasized practitioner learning and mastery of these practices. The importance of the

study derives from the influence of personnel preparation programs on students' practices once they become early childhood or therapy professionals.

METHOD

Participants

In an effort to be as inclusive as possible, colleges and universities with known early intervention personnel preparation programs at the bachelor and master's level were located to be part of the participant pool for the study. Additional programs were compiled by contacting accreditation organizations and state agencies for a list of universities that housed bachelor and graduate programs. A list of University Centers for Excellence in Developmental Disabilities was also compiled. The final list consisted of 1,074 personnel preparation programs from across the United States.

Potential participants in these programs were contacted by e-mail or telephone and asked to participate in a phone survey. The initial contacts were directed to the department chair or the director of the program. Attached to the e-mail was a copy of the survey that could be answered by e-mail. Persons completing the survey were told that their participation was confidential and that no identifiable information would be reported. Persons requesting a detailed report of the completed survey included their names and addresses at the bottom of the survey. All names and addresses were removed from the surveys during data entry to ensure complete program confidentiality.

Twenty-three percent of the surveys ($n = 247$) distributed to the various personnel preparation programs were returned. Fifty respondents indicated that their departments did not provide personnel preparation in early intervention, 42 respondents declined to participate in the study, and 155 respondents submitted completed surveys. The response rates for these 155 study participants by discipline were as follows: 69% of the 64 occupational therapy programs; 41% of the 93 physical therapy programs; 14% of the 227 early childhood special programs; and 19% of the 147 speech–language programs. The exact response rate for the 14 interdisciplinary programs could not be determined because these programs were identified after survey completion. The majority of these (93%) were housed in early childhood special education programs. We could not determine how many nonrespondents were from universities or colleges that did not offer training related to infants or toddlers and their families.

Survey participants were all higher education faculty who indicated that their departments offered personnel preparation in early intervention. The respondents completing the survey all indicated that they taught classes

covering early intervention or therapy with infants and toddlers with developmental disabilities or delays. Table 1 shows the number of participants for each type of personnel preparation program surveyed and whether their departments provided personnel preparation at the undergraduate or graduate levels. The majority (84%) of the programs represented in the survey sample provided personnel preparation training at the graduate level. Departments offering personnel preparation in early intervention at this level ranged from 65% (early childhood special education) to 100% (physical therapy).

Survey

Participants completed a 30-item survey asking respondents to indicate the extent to which different early intervention practices constituted the focus of their personnel preparation. The survey items covered five content areas with six items per area: family-centered practices, IFSPs, natural learning environments, teaming practices, and service coordination. The scale items were based on practice descriptions in the published literature

(Odom et al., 1995) and research we conducted on the identification of indicators that measure adherence to recommended practices (Dunst & Bruder, 2002). Item pools for each practice domain were first developed and then used to select indicators that represented different aspects of a particular practice.

Table 2 includes examples of the items for each type of intervention practice. The *family-centered* items consisted of practices involving interpersonal relationships with families (e.g., active listening) and sensitivity and responsiveness to the personal and cultural values of families (e.g., respect for family beliefs). The *natural environment* items involved assessment (e.g., identifying community activities as a context for child learning) and intervention (e.g., using daily routines as a context for learning) practice indicators. The *IFSP* items had practices involving both the family-friendliness of the assessment and intervention process (e.g., outcomes are written in family-friendly language) and the preparation of the IFSP in ways responsive to a family's lifestyle and preferences (e.g., outcomes are included on the basis of family priorities). The *teaming* items contained practices

TABLE 1. Personnel Preparation Programs Represented in the Study

Program type	<i>n</i>	Undergraduate programs		Graduate programs	
		<i>n</i>	%	<i>n</i>	%
Occupational therapy	44	9	20	35	80
Physical therapy	38	0	0	38	100
Early childhood special education	31	11	35	20	65
Speech–language pathology	28	4	14	24	86
Multidisciplinary	14	1	7	13	93

Note. Two occupational therapy personnel preparation programs offered training at both the undergraduate and graduate levels. These two programs are shown in the table as graduate training programs.

TABLE 2. Examples of Items on the Early Intervention Personnel Preparation Program Survey

Early intervention practice	Sample item
Family-centered practices	Students acknowledge family and child strengths and individual needs when designing interventions.
Natural environments	Students locate resources for child learning in the community (e.g., playgrounds, libraries, playgroups).
Individualized Family Service Plans	Students write IFSPs in family-friendly language.
Teaming practices	Students conduct assessments collaboratively with professionals from other disciplines.
Service coordination	Students coordinate services between early intervention and other child programs and organizations (e.g., childcare).

involving collaboration among professionals in terms of assessment (e.g., team-identified outcomes) and intervention (e.g., multidisciplinary implementation of intervention plans). The *service coordination* items consisted of practices involving identification of resources and supports for meeting the child's and family's needs (e.g., resource mapping) and procedures for building support systems for children and families (e.g., coordinating provisions of services for different programs).

Each survey item was rated on a 5-point continuum, from *no content or emphasis* to *a great deal of content or emphasis*. The extent to which the six items in each content area measured a unidimensional practice construct was determined by separate principal components factor analyses with varimax rotation. Each of the five factor analyses provided a single factor solution. The sum of the ratings for each content area was used as the dependent measure in the analyses.

Research Design

A 5 Between Type of Personnel Training Program (early childhood special education vs. multidisciplinary vs. occupational therapy vs. speech–language pathology vs. physical therapy) \times 5 Within Type Early Intervention Practices (family-centered vs. natural environments vs. IFSPs vs. service coordination vs. teaming) ANOVA was used to analyze the data. Both protected Bonferroni *t* tests and effect size comparisons were used to ascertain the locus of differences between practices and between types of training program. The protected *t* tests used adjusted *p* values, taking into consideration the number of pairwise comparisons made as part of the follow-up tests. Cohen's *d* effect sizes were ascertained by the difference between mean practice scores for pairwise comparisons divided by the pooled standard deviation for the practices constituting the focus of analysis (Rosenthal, 1994).

RESULTS

The ANOVA produced a main effect for type of training program, $F(4, 150) = 7.19, p < .0001$, and a main effect for type of early intervention practice, $F(4, 600) = 103.11, p < .0001$. Both main effects were qualified by a Type of Training Program \times Type of Practice Interaction, $F(16, 600) = 3.20, p < .0001$. Follow-up tests of both the between type of practice scores and the practice scores for between type of training program were conducted to ascertain the nature of the differences between practices and programs.

Between Practice Differences

Follow-up tests of the mean practice scores for the different types of early intervention program practices produced significant differences for family-centered, $F(4, 150) = 5.15, p < .001$; IFSP, $F(4, 150) = 6.29, p < .0001$; service coordination, $F(4, 150) = 5.63, p < .0001$; teaming, $F(4, 150) = 7.87, p < .0001$; and natural environment, $F(4, 150) = 3.71, p < .01$, practices. Table 3 shows the pairwise *t* tests and the Cohen's *d* effect sizes for the between practices comparisons. Findings indicated considerable variability in the degree of emphasis of personnel training in the different practices. Both the *t*-test results and effect size differences indicated a clear hierarchy in the extent to which the different early intervention practices were a focus of training, with family-centered practices constituting the primary focus and service coordination receiving the least emphasis.

Between Type of Program Differences

Follow-up tests for the between type of personnel training program comparisons yielded significant differences for family-centered, $F(4, 150) = 5.15, p < .001$; IFSP, $F(4, 150) = 6.29, p < .0001$; service coordination, $F(4, 150) =$

TABLE 3. Mean Practice Scores, Standard Deviations, *t*-Test Results, and Effect Sizes for the Pairwise Early Intervention Practices Comparisons

Early intervention practice	<i>M</i>	<i>SD</i>	Family-centered	Natural environments	IFSPs	Teaming	Service coordination
Family-centered	25.70	3.60	—	11.93***	11.34***	12.35***	20.94***
Natural environments	22.19	4.68	.96	—	.63	3.39**	12.06***
IFSPs	22.01	5.06	.91	.05	—	2.95*	11.82***
Teaming	20.91	5.97	.99	.27	.24	—	8.82***
Service coordination	17.82	5.90	1.68	.97	.95	.71	—

Note. IFSP = Individualized Family Service Plans. *t*-test results are above the diagonal; effects sizes are below the diagonal. **p* < .05. ***p* < .01. ****p* < .001.

TABLE 4. Mean Practice Scores, Standard Deviations, *t*-Test Results, and Effect Sizes for the Pairwise Personnel Preparation Program Practice Scores Comparisons

Discipline	<i>M</i>	<i>SD</i>	Personnel training program				
			ECSE	MULT	OT	SLP	PT
Family-centered practices							
ECSE	27.06	3.32	—	1.08	.90	1.39	4.01**
MULT	25.89	3.51	.34	—	.49	.05	1.98
OT	26.37	3.19	.21	.15	—	.68	3.61**
SLP	25.83	3.45	.36	.02	.16	—	2.46
PT	23.63	3.69	.98	.63	.80	.62	—
Individualized Family Service Plans							
ECSE	24.21	5.28	—	.77	1.90	.75	4.55***
MULT	22.93	5.01	.25	—	.60	.16	2.81
OT	22.09	4.36	.44	.18	—	.99	3.28*
SLP	23.20	5.04	.20	.05	.23	—	3.68**
PT	18.91	4.40	1.09	.85	.73	.91	—
Service coordination							
ECSE	20.13	5.46	—	.70	1.86	1.55	4.19***
MULT	21.39	5.88	.22	—	2.07	1.89	3.96**
OT	17.63	5.92	.44	.64	—	.20	2.31
SLP	17.90	5.53	.41	.61	.05	—	2.37
PT	14.77	5.15	1.01	1.20	.52	.59	—
Teaming practices							
ECSE	24.63	5.55	—	.72	2.98*	2.92*	5.38***
MULT	23.36	5.34	.23	—	1.54	1.65	3.48**
OT	20.84	5.34	.70	.47	—	.44	2.78
SLP	20.24	6.00	.76	.55	.11	—	1.92
PT	17.55	5.34	1.30	1.09	.62	.47	—
Natural environments							
ECSE	23.06	5.32	—	.65	.43	.57	2.91*
MULT	21.94	5.32	.21	—	.13	.24	1.57
OT	23.54	4.37	.10	.33	—	1.14	4.04**
SLP	22.32	4.44	.15	.08	.28	—	2.42
PT	19.90	3.67	.69	.45	.90	.59	—

Note. ECSE = early childhood special education; MULT = multidisciplinary; OT = occupational therapy; SLP = speech-language pathology; PT = physical therapy. *t*-test results are above the diagonal; effect sizes are below the diagonal. * $p < .05$. ** $p < .01$. *** $p < .001$.

5.63, $p < .001$; teaming, $F(4, 150) = 7.87$, $p < .0001$; and natural environment, $F(4, 150) = 3.71$, $p < .01$, practices. Table 4 shows the *t*-test results and effect size differences for each early intervention practice for the different types of training programs. Physical therapy faculty provided considerably less training in each of the five early intervention program practices than did faculty in the other personnel preparation programs. In contrast, faculty in the other disciplines provided generally the same amount of training in family-centered, IFSP, service coordination, and natural environment practices. The one exception was training in teaming practices. Therapy faculty, regardless of their disciplines, provided less training in

teaming practices than did faculty in early childhood special education and multidisciplinary personnel preparation programs.

The differences in the degree of emphasis of training in the different early intervention program practices is shown in Figure 1 in terms of the percentage of practice items rated a 4 (*a lot*) or 5 (*a great deal*). The data displayed in this manner show which practices constituted a primary focus (defined as *a lot* or *a great deal* of emphasis) of student training. Several things can be gleaned from these data. First, training in family-centered intervention is the only practice that constituted a primary emphasis of training in all the different types of per-

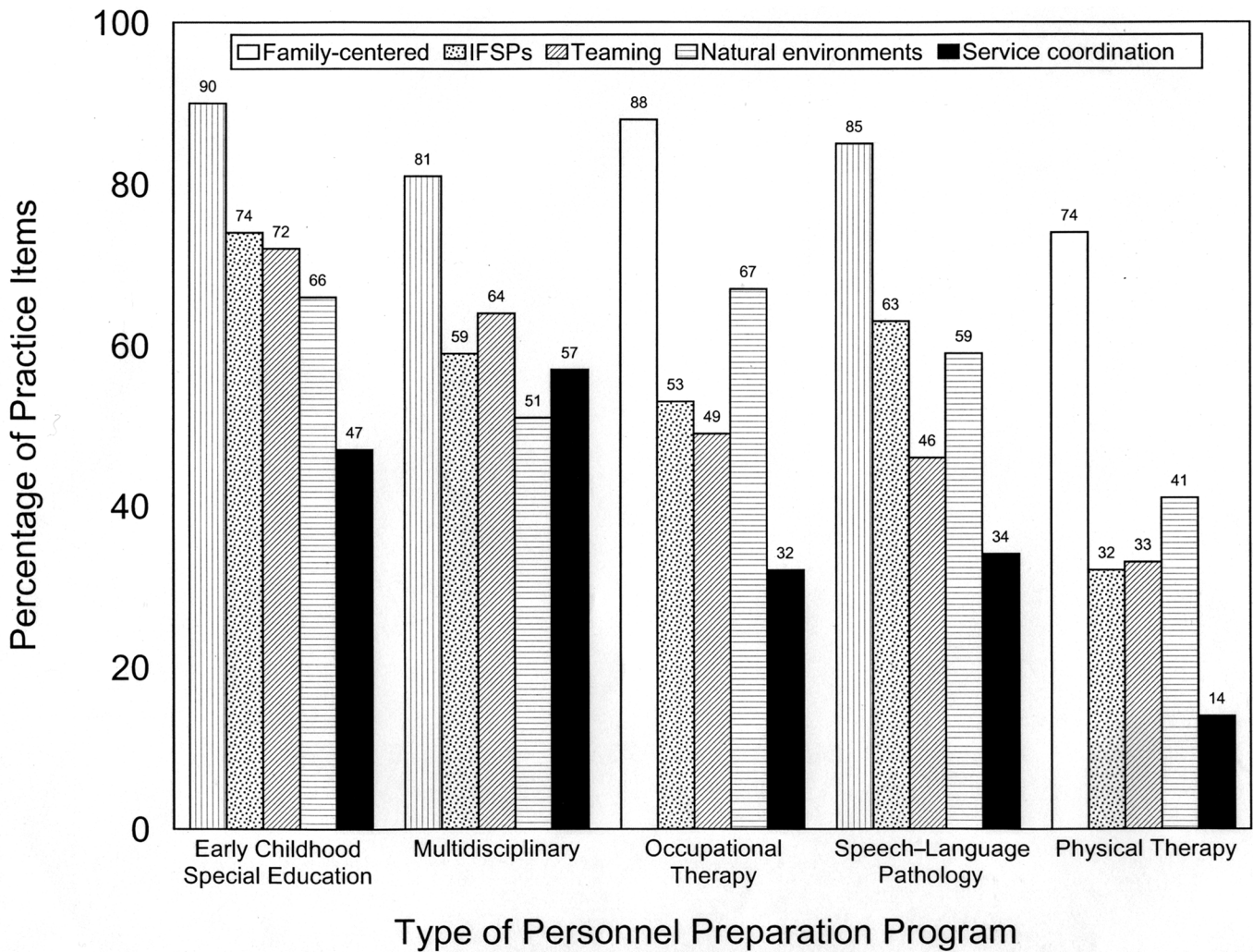


FIGURE 1. Percentage of early intervention practices constituting a primary focus of student training.

Note. IFSPs = Individualized Family Service Plans.

sonnel preparation programs. Second, physical therapy faculty provided very little training in IFSPs, teaming practices, natural environments, and service coordination. Third, therapy faculty, regardless of their discipline, provided very little training in service coordination compared to faculty in early childhood education or multidisciplinary training programs.

DISCUSSION

The data collected in this survey demonstrate that areas of content specific to early intervention service delivery are not fully embedded across personnel preparation programs for occupational therapy, physical therapy, early childhood special education, speech-language pathology, and multidisciplinary programs. Physical therapy programs demonstrated having the lowest level of training

in recommended practice areas, and no discipline had adequate preparation in service coordination. These findings create challenges to the field of early intervention by suggesting that practitioners may not be prepared to meet the service delivery requirements of Part C or implement recommended practices in the field. As we move into the new millennium, it is discouraging to note discrepancies in personnel preparation for early intervention similar to those found almost 15 years ago by Bailey and colleagues (1990). This finding is despite efforts to identify and adopt recommended early intervention practices during the same time frame (McLean et al., 2002; Odom & McLean, 1996).

The results of our survey also suggest that interdisciplinary personnel preparation programs do emphasize almost all the areas of early intervention practices contained in the survey. This model of training early intervention personnel has been growing and may be an

effective method of not only training recommended practices but also modeling the practice of teaming throughout the preparation process (c.f., Bruder, Brinckerhoff, & Spence, 1991; Crais et al., 2004; Kilgo & Bruder, 1997; Mellin & Winton, 2003). Unfortunately, as with the other disciplines, service coordination is a deficit area within these cross-disciplinary programs and is one area that must be reemphasized throughout early intervention preparation and practice (Bruder, in press).

A number of projects have successfully tried to reform higher education personnel preparation through system efforts initiated by program faculty (Bruder, Lippman, & Bologna, 1994; Mellin & Winton, 2003; Winton, 1996). Others have focused on improving early intervention personnel preparation practices through specific methodological improvements (Snyder & McWilliam, 2003), administrative improvements (Miller & Stayton, 1998), or disciplinary improvements (Hanft & Anzalone, 2001). Although these efforts are noteworthy, they apparently have not had a widespread impact among the programs that participated in this survey.

One area of reform that could have direct implications for enhancing the content of personnel preparation programs for early intervention practitioners would be for states, and the United States as a whole, to adopt standards that specify areas of competency that are required in order to provide early intervention services (Bruder, Klosowski, & Daguio, 1991). These areas would include specific service delivery requirements (e.g., family-centered, IFSPs, natural environments, teaming, service coordination) from which the philosophy of Part C was crafted. Currently, 27 states have Part C-specific standards for some of their workforce (see <http://www.uconnuicedd.org/Publications/files/PPDataPartCweb.pdf>), and the Division of Early Childhood (DEC), Council for Exceptional Children has created personnel standards for individuals working with children from birth to 8 years old and their families (DEC, 2000). A reasonable suggestion would be that states initiate personnel standards that can ensure quality services and effective outcomes for those children and families receiving Part C services. These standards could be adopted by higher education programs as guidelines for curricula.

Limitations to this study involve a relatively small survey sample from the population of higher education programs. Although the sample represented a variety of disciplines, programs, and university types, one concern is that these respondents were biased in that they chose to respond to this survey on early intervention. Another limitation to the study was that we did not examine practice statements in the context of the coursework and practica identified by the responding universities and colleges. Additional studies of higher education and personnel preparation programs must occur to examine these findings in the context of a larger sample of programs.

As the early intervention field moves into an outcome-focused paradigm to measure effectiveness, service providers must be prepared to implement the practices that will achieve such outcomes. Higher education faculty must in turn be prepared to embed these practices into their preparation programs so that children and families can benefit from the best research, practices, and personnel we can offer. ♦

AUTHORS' NOTES

1. The study described in this article was supported through a cooperative agreement with the U.S. Department of Education, Office of Special Education Programs, Research to Practice Division (HO24S96008). The opinions expressed, however, are solely those of the investigators and do not necessarily reflect the official position of the Department.
2. Appreciation is extended to the faculty participating in the study.

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