

The Impact of Inclusion on Language Development and Social Competence Among Preschoolers With Disabilities

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ABSTRACT: *This article describes progress in language development and social competence among 96 preschoolers with disabilities in inclusive and segregated classes. Pretest ability was the strongest predictor of progress. Other child, parent, and family characteristics were not associated with pretest developmental abilities or with progress. Degree of disability did not moderate the impact of placement type on developmental outcomes, controlling for pretest ability. Effect sizes, however, indicated that posttest scores were comparable in both settings for children with “not severe” disabilities, but not for children with “severe” disabilities. Children with severe disabilities in inclusive classes had higher posttest scores in language development and social skills than their peers in segregated classes, but problem behaviors were lower for children in segregated classes.*

Despite the legal, moral, and empirical arguments in support of preschool inclusion (Bailey, McWilliam, Buysse, & Wesley, 1998), there is considerable debate in both the literature and in practice as to whether or not inclusion hinders or enhances children’s language, social, emotional, and cognitive development (Odom & Diamond, 1998). Inclusion refers to the process of placing children with disabilities in the same classes or programs as their typically developing peers and providing them with the necessary services and

supports (Winter, 1999). Reverse inclusion is used to describe classes whereby a relatively small group of children who are typically developing (25% - 40%) is added to a specialized program for children with disabilities (Guralnick, 2001). Although early childhood special educators generally staff reverse inclusion classes, there are substantial variations across programs in terms of structure, curriculum, and educational philosophy (Guralnick, 2001).

The goal of inclusion is to provide all children with equitable opportunities for a successful education (Janko, Schwartz, Sandall, Anderson,

& Cottam, 1997; Odom et al., 1996; Peck, Odom, & Bricker, 1993). Definitive conclusions regarding its effectiveness, however, are hampered by the absence of a comprehensive research base that describes its social and academic impact on children with and without disabilities (Bricker, 1995; Odom, 2000). A number of studies have focused on mainstreaming or integration and, although not synonymous with inclusion, provide insight into the benefits and risks involved. Mainstreaming, for example, refers to the practice of removing children from their special education classes for part of the day and placing them in general education classes (McLean & Hanline, 1990). Children are given access to general education classes only when they are able to function on the same level, without instructional modifications or support services. Integration is a broader term and refers to the process of actively mixing children with and without disabilities (Odom & McEvoy, 1990).

The goal of inclusion is to provide all children with equitable opportunities for a successful education.

Jenkins, Speltz, and Odom (1985) conducted the first major study with a comparison group to examine the effects of integration on child development and social interaction among preschoolers with disabilities. There were no posttest differences in cognitive, preacademic, language, or fine motor development between children in integrated and segregated classes. Children in the integrated classes scored higher on social interaction than children in the segregated classes when they were observed interacting with a typically developing peer in a playroom, but not during a free play period in class. Jenkins, Odom, and Speltz (1989) also found that placement type had no impact on the outcomes assessed (preacademic, language, motor, social development). A planned intervention, designed to promote social interaction, had a significant impact on language development, but not on the other outcomes. An interaction was found between placement type and a planned intervention for social competence; children in integrated

classes with the planned intervention scored higher than their peers on social competence at posttest. A third study conducted by Hundert, Mahoney, Mundy, and Vernon (1998) included only children with severe disabilities. Children in integrated settings made greater gains using measures of communication and social or self-help skills, as well as on an overall measure of developmental ability, but not on preacademic or motor development. Gains made in adaptive behaviors, using both teacher and parent reports, were comparable across settings.

A second series of studies not only compared developmental outcomes among children in integrated and segregated classes, but also examined whether or not degree of disability moderated the impact of placement type on child development. In the first such study, Cole, Mills, Dale, and Jenkins (1991) found no difference between preschoolers in integrated and segregated settings on the developmental outcomes assessed (preacademic or cognitive development, language knowledge, language development, early reading ability). There was, however, some evidence indicating that degree of disability might moderate the impact of placement type on development. Children with greater cognitive and language ability at pretest benefited more from integrated classes in terms of their language development, with 3 of 16 interaction terms showing statistical significance. The overall effect size, however, was relatively small, accounting for 4%–5% of the variance in test performance. Pretest scores, in contrast, accounted for 16%–27% of the variance in the posttest scores. In a subsequent study, Mills, Cole, Jenkins, and Dale (1998) also found comparable gains in cognitive and language development among preschoolers in segregated and integrated classes. Similar to the earlier study, 4 of the 12 interactions examined were statistically significant, indicating that for some measures of quantitative and verbal skills, children who were higher functioning benefited more from integrated classes, whereas children who were lower functioning benefited more from segregated classes. The interaction between ability and placement type, however, accounted for a relatively small proportion (<11%) of the variance on cognitive and language measures. Holohan and Constenbader (2000) also found comparable gains in

developmental abilities (general knowledge or comprehension, self-help, social or emotional, overall) across integrated and segregated settings. There was one statistically significant interaction, providing minimal support for the moderating impact of degree of disability on developmental outcomes. Children with a higher level of social and emotional development progressed at a faster rate in integrated than in segregated classes. The gains made for children with a lower level of functioning were comparable for children in both settings.

In summary, the six studies that compared the developmental progress of preschoolers with disabilities in integrated and segregated settings found that integration was either comparable or more beneficial than segregation for children. One study suggested that social interaction was greater in integrated settings, and that social competence was further enhanced for children in integrated settings when structured interactions are in place (Jenkins et al., 1989). These studies also indicated that developmental gains in integrated and segregated settings might vary depending on the child's initial level of development or degree of disability. Three studies suggested that for some developmental outcomes, children who were higher functioning in integrated settings progressed at a faster rate than their peers in segregated classes (Cole et al., 1991; Holohan & Constenbader, 2000; Mills et al., 1998). The findings for children with severe disabilities were less consistent. One study (Hundert et al., 1998) found that for some developmental outcomes children in integrated settings progressed at a faster rate than their peers in segregated settings, and three studies found that the settings were either comparable or that greater progress was made by children in segregated classes (Cole et al.; Holohan & Constenbader; Mills et al.). In each case, however, the effect size was relatively small, with pretest scores accounting for substantially greater variance in posttest scores than type of placement.

Despite the strength of this empirical support for inclusion, definitive conclusions are difficult to make (Buysee & Bailey, 1993; Lamorey & Bricker, 1993; Odom & McEvoy, 1988). First, most of the studies focused on mainstreaming or integration and not inclusion. Second, most of

the research was conducted in university-based preschool programs that limit generalization to community-based programs. Third, comparisons are difficult to make across studies because of the use of different measures, even if they assessed similar developmental domains. Finally, studies have generally focused on children with mild or moderate disabilities and rarely included children with severe disabilities. In addition, terms such as "mild" and "severe" were not consistently defined.

PURPOSE OF STUDY

This study examined the developmental progress of preschoolers with disabilities in inclusive and segregated classes focusing on language ability (auditory comprehension and expressive language) and social competence (social skills and problem behaviors). It was guided by an ecological systems conceptual framework that hypothesizes that human development is influenced by a variety of factors that exist at multiple system levels (Bronfenbrenner, 1986). They include the individual characteristics of the child and characteristics of the family and home environment. Two research questions were addressed:

1. Which specific attributes of the child, parent, and family show positive relationships with children's developmental abilities at (a) pretest and (b) at posttest, controlling for pretest abilities?
2. Does placement type (inclusion vs. segregated) interact with degree of disability (not severe vs. severe) in predicting developmental progress from pretest to posttest, controlling for pretest ability? Specifically, do children with less severe disabilities make greater progress in inclusion classes, and do children with more severe disabilities make greater progress in segregated classes?

METHOD

PARTICIPANTS

The children consisted of 96 preschoolers with disabilities attending a community-based preschool program in New York State. Overall, 71% were male and 87% were Caucasian. Their

TABLE 1
Description of Children in Inclusion and Segregated Classes

	<i>Inclusion</i>	<i>Segregated</i>	<i>Significance Level</i>	<i>Effect Size^a</i>
Gender	<i>n</i> = 68	<i>n</i> = 28	<i>ns</i> ($X^2 = .169$, <i>df</i> = 1)	<i>V</i> = .04
Male	72%	68%		
Female	28%	32%		
Race/Ethnicity	<i>n</i> = 68	<i>n</i> = 28	<i>ns</i> ($X^2 = 2.10$, <i>df</i> = 1)	<i>V</i> = .15
Caucasian	90%	79%		
NonCaucasian	10%	21%		
Age in Months:	<i>n</i> = 68	<i>n</i> = 28	<i>ns</i> (<i>t</i> = 1.17, <i>df</i> = 94)	<i>d</i> = .26
Mean (<i>SD</i>)	48.35 (6.12)	46.79 (5.57)		
Range	33-57	36-57		
Age when Services Began	<i>n</i> = 68	<i>n</i> = 28	<i>ns</i> (<i>t</i> = 1.44, <i>df</i> = 94)	<i>d</i> = .32
Mean (<i>SD</i>)	31.60 (11.54)	27.86 (11.58)		
Range	4-55	2-42		
Prior EI Services	<i>n</i> = 68	<i>n</i> = 28	<i>ns</i> ($X^2 = 3.38$, <i>df</i> = 1)	<i>V</i> = .19
Yes	41%	21%		
No	59%	79%		
Duration of EI Services ^b	<i>n</i> = 37	<i>n</i> = 18	<i>ns</i> (<i>t</i> = -.009, <i>df</i> = 53)	<i>d</i> = .25
Mean (<i>SD</i>)	14.92 (8.84)	14.94 (11.06)		
Range	2-38	2-42		

^a Cramer's *V* for Chi Squares; Cohen's *d* for *t*-tests. ^b Among those who had received EI services.

ages ranged from 33 to 57 months ($M = 47.9$, $SD = 6.0$). Their ages when they began to receive services ranged from 2 to 55 months ($M = 30.5$, $SD = 11.6$). Most (65%) had received early intervention services prior to entering the preschool program ($M = 14.9$, $SD = 9.5$). The majority (71%) was in inclusion classes ($n = 68$). There was no statistically significant difference on demographic characteristics between children in inclusion and segregated classes (Table 1).

Almost all of the children's parents were biological (94%), and 80% were currently married. Parents' ages ranged from 22 to 58, with a mean of 33.6 years ($SD = 5.7$) for mothers and a mean of 35.5 years ($SD = 5.7$) for fathers. Almost half of the parents had education beyond the high school level (48% of mothers; 40% of fathers), and 45% of mothers and 92% of fathers were employed outside the home. The total number of children in each family ranged from 1 to 7 ($M = 2.4$, $SD = 1.2$); and the total number of children currently living at home ranged from 1 to 6 ($M = 2.3$, $SD = 1.1$).

THE PRESCHOOL SETTING

The preschool was a private, agency-run, community-based program that provided services for young children from birth to 5 years of age. Chil-

dren with disabilities, who received services under the Public Preschool Program (Part B, Section 619) of the Individuals with Disabilities Education Act (IDEA), were included with typically developing children, who received services through day care and the Universal Prekindergarten program. Each classroom's curriculum was designed to meet the developmental levels of all children within the group and focused attention on the individual learning differences of each child. The curriculum was developmentally organized and included the areas of receptive and expressive language, cognition (preacademic arithmetic and reading), socialization (play and peer interaction, affect and self-concept), adult interactions, classroom behavior, motor development, and self-help skills. Children participated in many play and language activities, which were child-directed and teacher-supported, and had the opportunity to work and play in small groups, large groups, and individually.

The inclusion classes contained 12 to 18 children, 1 special education teacher, and 1 early childhood teacher. The proportion of children with disabilities in the inclusion classes ranged from 53% to 75% ($M = 64.4$, $SD = 6.3$). The segregated classes contained 6 children with disabilities, 1 special education teacher, and 1 aide.

Some children had individual paraprofessionals to assist them. Most of the special education teachers (82%) had obtained a master's degree. Their years of teaching experience ranged from 1 to 25 years ($M = 9.6$, $SD = 6.4$). Most of the early childhood teachers had an associate's degree (78%) and 2 to 13 years of teaching experience ($M = 5.5$, $SD = 3.1$).

MEASURES

Language Development. The Preschool Language Scale-3 (PLS-3; Zimmerman, Steiner, & Pond, 1992) was used to assess receptive and expressive language skills. The PLS-3 is a standardized, norm-referenced instrument with two subscales that yield the Total Score. The Auditory Comprehension subscale evaluates receptive language skills in the areas of attention, semantics (vocabulary and concepts), structure (morphology and syntax), and integrative thinking skills. The Expressive Language subscale evaluates expressive language skills in the areas of vocal development, social communication, semantics, structure, and integrative thinking skills. The internal consistency reliability coefficients for the Total Scores range from .74 to .94 and the test-retest stability coefficients range from .91 to .94. In terms of content validity, it offers a thorough and balanced sample of language skills. With regard to construct validity, it consistently differentiates children who are language disordered from children who are not. In addition, scores are highly correlated with scores obtained from other valid measures of language ability.

Social Competence. The Social Skills Rating System (SSRS)—Teacher Version (Gresham & Elliott, 1990) is a standardized, norm-referenced instrument designed to provide a broad assessment of social behaviors that can affect teacher-student relations, peer acceptance, and academic performance. It consists of two standardized subscales: Social Skills and Problem Behaviors. The internal consistency reliability coefficients are acceptable for both Social Skills (.83 to .94) and Problem Behaviors (.73 to .88). The test-retest stability coefficients are .85 for Social Skills and .84 for Problem Behaviors. Content validity was demonstrated by indicating that the SSRS items were developed based on extensive empirical research. In

support of its construct validity, scores are highly correlated with other similar measures.

Cognitive Ability. The Wechsler Preschool and Primary Scale of Intelligence-Revised (WPPSI-R; Wechsler, 1989) is a standardized measure of global intelligence. The six Verbal Scale subtests consist of language-based items and yield a Verbal IQ score. The Performance Scale subtests include visual-motor items and yield the Performance IQ score. The average of these two scores is the Full Scale IQ score. It is one of the more commonly used preschool intelligence scales; previously reported scores have demonstrated acceptable reliability and validity (Wechsler).

Background Characteristics. Data on a variety of background characteristics were obtained from the children's files. They included (a) child characteristics (gender, race or ethnicity, age, placement in family); (b) earlier measures of disability, including the Bayley Mental Development Index (MDI; Bayley, 1993) and the Vineland Daily Living Skills (Sparrow, Balla, & Cicchetti, 1984), age when services began, and Early Intervention placement; (c) parent characteristics (relationship to child, marital status, and mother's and father's age, education, and occupation); and (d) family characteristics (total number of children, number of children in the home).

PROCEDURES

Child, parent, and family demographic information was garnered from the children's files. The PLS-3 and the SSRS were administered as pre- and posttests in October and May. Speech therapists at the preschool conducted the language assessments. Teachers completed the SSRS. School psychologists administered the WPPSI-R. Degree of disability was calculated using the WPPSI-R. Children were categorized as being "Severely Disabled" if they scored at or below two standard deviations from the mean on either Verbal or Performance IQ or if WPPSI-R scores were not available because the severity of their disability prevented formal cognitive assessment. Children who did not meet these classification criteria were categorized as having "not severe" disabilities. Overall, 49% ($n = 47$) were categorized as having

TABLE 2
Developmental Abilities at Pretest of Children in Inclusion and Segregated Classes

	<i>Inclusion</i>	<i>Segregated</i>	<i>Significance Level</i>	<i>Effect Size^a</i>
	<i>Current Measures of Disability</i>			
Auditory Comp.	<i>n</i> = 67	<i>n</i> = 28	***(<i>t</i> = 4.37, <i>df</i> = 93)	<i>d</i> = .97
Mean (<i>SD</i>)	80.97 (14.52)	66.32 (15.76)		
Range	50-123	50-102		
Expressive Language	<i>n</i> = 68	<i>n</i> = 28	***(<i>t</i> = 4.07, <i>df</i> = 94)	<i>d</i> = .91
Mean (<i>SD</i>)	79.90 (15.23)	66.18 (14.48)		
Range	50-129	50-100		
Social Skills	<i>n</i> = 68	<i>n</i> = 28	***(<i>t</i> = 5.23, <i>df</i> = 94)	<i>d</i> = 1.18
Mean (<i>SD</i>)	87.06 (13.55)	69.21 (18.62)		
Range	40-118	40-101		
Problem Behaviors	<i>n</i> = 68	<i>n</i> = 28	ns (<i>t</i> = .11, <i>df</i> = 94)	<i>d</i> = .03
Mean (<i>SD</i>)	103.69 (12.71)	103.36 (14.59)		
Range	84-133	84-137		
WPPSI-R Full Scale IQ	<i>n</i> = 61	<i>n</i> = 18	**(<i>t</i> = 2.97, <i>df</i> = 77)	<i>d</i> = .80
Mean (<i>SD</i>)	86.31 (9.63)	77.83 (13.68)		
Range	66-119	48-102		
	<i>Earlier Measures of Disability</i>			
Bayley MDI	<i>n</i> = 42	<i>n</i> = 26	***(<i>t</i> = 4.97, <i>df</i> = 58)	<i>d</i> = 1.40
Mean (<i>SD</i>)	76.14 (14.30)	55.67 (15.21)		
Range	49-106	49-109		
Vineland Daily Living	<i>n</i> = 60	<i>n</i> = 26	***(<i>t</i> = 3.57, <i>df</i> = 84)	<i>d</i> = .84
Mean (<i>SD</i>)	80.10 (13.69)	68.50 (14.21)		
Range	54-119	52-124		

^a Cohen's *d*.

p* < .05; *p* < .01; ****p* < .001.

severe disabilities and 51% (*n* = 49) were categorized as having not severe disabilities.

RESULTS

DEVELOPMENTAL ABILITIES OF CHILDREN IN INCLUSION AND SEGREGATED SETTINGS

As shown in Table 2, children in inclusion classes had greater developmental abilities at pretest than did their peers in segregated classes, producing large effect sizes for auditory comprehension (*d* = .97), expressive language (*d* = .91), and social skills (*d* = 1.18), but not for problem behaviors (*d* = .03). Large effect sizes were also found for earlier measures of disability including the Bayley MDI (*d* = 1.40) and Vineland Daily Living Skills (*d* = .84). These findings indicate that children who were higher functioning were more likely to be placed in inclusion classes, and children who were lower functioning were more likely to be placed in segregated classes.

CHILD, PARENT, AND FAMILY FACTORS: RELATIONSHIPS TO CHILD DEVELOPMENT

The first research question focused on factors associated with language ability (auditory comprehension and expressive language) and social competence (social skills and problem behaviors). Pearson correlation coefficients were computed to determine if specific attributes of the children or their families were associated with (a) developmental abilities at pretest (the beginning of the school year), or (b) the change in development from pretest to posttest (i.e., posttest scores, controlling for pretest scores, also referred to as developmental gains or change scores).

Child, parent, and family characteristics were not associated with pretest developmental outcomes or with the change in development from pretest to posttest. Other measures of disability were associated with language ability and social skills at pretest, but not with problem behaviors. They were also associated with developmental gains in language development, but not with progress in either social skills or problem be-

TABLE 3
Factors Associated With Developmental Abilities (Pretest and Gains From Pretest to Posttest)

Variables	Language Development				Social Competence			
	Auditory Comm.		Expressive Lang.		Social Skills		Problem Behavior	
	Pretest	Gains	Pretest	Gains	Pretest	Gains	Pretest	Gains
Child Characteristics								
Gender (Male vs. Female)					-.37			
Race/Ethnicity								
Age								
Child's placement in family								
Language Ability (PLS-3)								
Auditory Comprehension			.85	.39	.46			
Expressive Communication	.85	.39			.40			
Social Competence (SSRS)								
Social Skills	.46		.40	.36				
Problem Behaviors								
Cognitive Ability (WPPSI-R)								
Full Scale IQ	.65		.46	.39				
Verbal IQ	.76	.43	.69	.37	.36			
Performance IQ	.36			.35				
Early Measures of Disability								
Bayley MDI	.73	.45	.77	.44	.50			
Vineland Daily Living	.34		.30		.45			
Age when services began								
Placement in EI					-.33			
Parent Characteristics								
Relationship to child								
Marital status								
Age (Mom/Dad)								
Education (Mom/Dad)								
Occupation (Mom/Dad)								
Family Characteristics								
Number of children								
Number of children (home)								

haviors. Most associations, however, were relatively weak ($r = .50$). Pearson correlation coefficients that reached the .30 level, or higher, are presented in Table 3.

IMPACT OF PLACEMENT TYPE AND DEGREE OF DISABILITY ON DEVELOPMENTAL GAINS

The second research question focused on the interaction between placement type (inclusion vs. segregated) and severity of disability (severe vs. not severe) in predicting developmental abilities

at posttest, with pretest scores as covariates. Two specific questions were asked: (a) Do children with less severe disabilities make greater progress in integrated settings than in segregated settings? and (b) Do children with more severe disabilities make greater progress in segregated settings than in integrated settings?

On the first step of these analyses, the proportion of children in inclusion and segregated classes at each level of disability (severe vs. not severe) were compared. Consistent with the earlier

TABLE 4
Hierarchical Regression Analyses Predicting Language Development at Posttest

Predictor Variables	Auditory Comprehension Beta at Each Step				Expressive Language Beta at Each Step			
	STEP #1	STEP #2	STEP #3	STEP #4	STEP #1	STEP #2	STEP #3	STEP #4
Pretest Score	.842	.811	.727	.727	.848	.828	.719	.709
Placement Type		-.075	-.067	-.065		-.051	-.033	.065
Degree of Ability			-.121	-.120			-.176	-.140
Program × Ability				-.002				-.138
F	223.60	113.17	77.21	57.27	237.60	118.82	85.36	64.83
df	(1, 92)	(2, 91)	(3, 90)	(4, 89)	(1, 93)	(2, 92)	(3, 91)	(4, 90)
Adjusted R ²	.705	.707	.711	.708	.716	.715	.729	.731
R ² Change	.705***	.005	.007	.000	.716***	.002	.018*	.005

Note: Inclusion = 0; Segregated = 1; Not Severe = 0; Severe = 1.
p* < .05; *p* < .01; ****p* < .001.

TABLE 5
Hierarchical Regression Analyses Predicting Social Competence at Posttest

Predictor Variables	Social Skills Beta at Each Step				Problem Behaviors Beta at Each Step			
	STEP #1	STEP #2	STEP #3	STEP #4	STEP #1	STEP #2	STEP #3	STEP #4
Pretest Score	.834	.844	.829	.817	.662	.660	.653	.662
Placement Type		.021	.089	.114		-.166*	-.144	-.217
Degree of Ability			-.074	-.043			-.005	-.094
Program × Ability				-.111				.101
F	215.02	106.95	71.85	54.04	73.33	40.52	27.13	20.31
df	(1, 94)	(2, 93)	(3, 92)	(4, 91)	(1, 94)	(2, 93)	(3, 92)	(4, 91)
Adjusted R ²	.693	.690	.691	.691	.432	.464	.462	.448
R ² Change	.693***	.000	.005	.003	.432***	.027*	.004	.002

Note: Inclusion = 0; Segregated = 1; Not Severe = 0; Severe = 1.
p* < .05; *p* < .01; ****p* < .001.

findings indicating that children in inclusion classes had greater developmental abilities at pretest than their peers in segregated classes, children with not severe disabilities were more likely to be placed in inclusion classes than in segregated classes (86% vs. 14%), and children with severe disabilities were more equally distributed between inclusion (55%) and segregated (45%) classes ($X^2 = 10.71$, $df = 1$, $p = .001$, $V = .33$). Therefore, of the 68 children in inclusion classes, 26 (38%) were categorized as having severe disabilities and 42 (62%) were categorized as having not severe disabilities. Of the 28 children in segregated classes, 21 (75%) were categorized as having severe disabilities and 7 (25%) were categorized as having not severe disabilities.

The impact of program type and degree of disability on developmental outcomes was assessed using hierarchical multiple regression procedures. For each developmental outcome, pretest scores were entered into the model on the first step. On the second and third steps,

program type (inclusion vs. segregated) and degree of disability (severe vs. not severe) were entered into the model. At each step, the proportion of variance accounted for, as well as the change in R^2 , was assessed. To determine whether or not program type had a differential effect on developmental outcomes based on degree of disability, the interaction term (program type X degree of disability) was entered into the regression on the fourth step (after main effects).

For both language development (Table 4) and social competence (Table 5), the interaction between program type and degree of disability was not statistically significant and did not explain additional variance in the children's scores at posttest, with pretest scores as covariates. As expected, pretest scores accounted for a substantial and statistically significant proportion of the variance in posttest ability, including auditory comprehension (71%), expressive language (72%), social skills (69%), and problem behaviors (43%).

Small effects were found for placement type and problem behaviors. Declines in problem behavior among children in segregated classes were slightly greater than among their peers in inclusion classes (R^2 change = .03). Small effects were also found for degree of disability and expressive language. Children with not severe disabilities made slightly greater gains in expressive language than their peers with severe disabilities (R^2 change = .02).

The final series of analyses focused on developmental abilities at posttest and compared the magnitude of the effect sizes for (a) children with not severe disabilities in inclusion classes versus their peers in segregated classes, and (b) children with severe disabilities in inclusion classes versus their peers in segregated classes. As shown in Table 6, posttest language development and social competence scores were comparable in both settings for children with not severe disabilities. In contrast, children with severe disabilities in inclusion classes showed substantially greater developmental abilities at posttest than their peers in segregated classes. This finding was consistent for auditory comprehension ($d = .81$), expressive language ($d = .84$), and social skills ($d = .94$). In contrast, children with severe disabilities in segregated classes showed fewer problem behaviors at posttest than their peers in inclusion classes ($d = .48$).

DISCUSSION AND CONCLUSION

This study represents ongoing efforts to understand the effects of inclusion on the development of preschoolers with disabilities. One major finding is that children's degree of disability did not moderate the impact of placement type on either language development or social competence, once pretest scores had been taken into consideration. In other words, preschoolers with less severe disabilities did not make greater gains in inclusion settings, and children with more severe disabilities did not make greater gains in segregated settings. As noted earlier, empirical support for this interaction hypothesis is somewhat inconsistent in prior studies, with only 3 of 8 interactions reaching statistically significant in one study (Cole et al., 1991), 4 of 12

in another (Mills et al., 1998), and 1 of 4 in a third (Holohan & Constenbader, 2000).

Preschoolers with less severe disabilities did not make greater gains in inclusion settings, and children with more severe disabilities did not make greater gains in segregated settings.

An analysis of effect sizes, however, indicated that for children with not severe disabilities, inclusion and segregated classes did not have a differential impact in terms of either language ability or social competence. This finding is consistent with other studies (Cole et al., 1991; Jenkins et al., 1985; Jenkins et al., 1989; Mills et al., 1998). For those with severe disabilities, however, children in inclusion classes had greater language development and social skills at posttest, as well as more problem behaviors, than their peers in segregated classes. This finding is somewhat consistent with other studies. As noted earlier, Hundert and colleagues (1998) also found that children with severe disabilities in integrated classes made significantly greater gains than their peers in segregated classes on 3 of 16 developmental outcomes. In contrast, other studies found that the settings were either comparable or that greater gains were made by children with severe disabilities in segregated classes than their peers in integrated classes (Cole et al., 1991; Mills et al., 1998). The inconsistent findings with regard to the differential impact of inclusion on the two components of social competence are more difficult to interpret. Prior studies that compared social competence among preschoolers in integrated versus segregated settings did not differentiate between social skills and problems behaviors (Holohan & Constenbader, 2000; Hundert et al., 1998; Jenkins et al., 1985; Jenkins et al., 1989). In addition, no other research on this topic has used the same measure of social competence that was used in this study.

The finding that the preintervention level of development or degree of delay at pretest emerged as the strongest and most consistent predictor of gains in developmental outcome vari-

TABLE 6
Developmental Ability at Posttest According to Degree of Disability

Degree of Disability	Inclusion M (SD)	Segregated M (SD)	Significance Level	Effect Size ^a
<i>Auditory Comprehension</i>				
Not Severe	95.36 (16.02)	90.86 (16.63)	<i>ns</i> ($t = .685, df = 47$)	$d = .28$
Severe	72.42 (15.40)	61.38 (11.48)	** ($t = 2.69, df = 43$)	$d = .81$
<i>Expressive Language</i>				
Not Severe	91.83 (15.87)	92.71 (19.52)	<i>ns</i> ($t = -.132, df = 47$)	$d = -.05$
Severe	70.08 (15.69)	58.90 (9.70)	** ($t = 2.84, df = 44$)	$d = .84$
<i>Social Skills</i>				
Not Severe	93.74 (12.06)	92.43 (19.69)	<i>ns</i> ($t = .242, df = 47$)	$d = .10$
Severe	89.62 (15.41)	72.24 (21.71)	** ($t = 3.21, df = 45$)	$d = .94$
<i>Problem Behaviors</i>				
Not Severe	106.67 (14.16)	106.57 (17.53)	<i>ns</i> ($t = .016, df = 47$)	$d = .01$
Severe	104.00 (10.34)	98.67 (11.99)	<i>ns</i> ($t = 1.64, df = 45$)	$d = .48$

^a Cohen's *d*.

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

ables is consistent with other studies of early intervention and preschool program outcomes (Berlin, O'Neal, & Brooks-Gunn, 1998; Cole et al., 1991; Mafro et al., 1992; Mills et al., 1998; Schafer, Spalding, & Bell, 1987). As noted previously, pretest scores predicted a substantial and statistically significant proportion of the variance in posttest ability. The strength of these relationships, however, is partially influenced by the fact that only 7 or 8 months passed between pretest and posttest assessment. This short period of time, as well as the relatively small amount of variance unaccounted for by pretest scores, may also explain the minimal importance of child, parent, and family characteristics found in this study.

This study contributes to the literature by providing additional information about the impact of inclusion on preschoolers with disabilities. It addresses the major limitations of research in this area by studying inclusion rather than mainstreaming or integration, by using preschoolers in a community-based reverse inclusion program rather than a university-based model preschool program, by using a large sample of children, by including the full range of disabilities from mild to severe, and by providing a definition of degree of disability. It also compares children's progress in inclusion and segregated classes, while statistically controlling for children's initial level of developmental ability. As with other research on this topic (e.g., Buysse, Bailey, Smith, & Simeonsson,

1994; Holohan & Constenbader, 2000), this study also found that child characteristics, particularly degree of disability, influenced placement decisions: Children with higher levels of functioning were more likely to be placed in inclusive classes and children with lower levels of functioning were more likely to be placed in segregated classes.

This study also identified several factors associated with preschool inclusion that need to be explored further. The issue of the differential impact of inclusion on children with severe versus not severe disabilities needs further clarification, particularly with regard to each developmental domain. Future research might also explore developmental outcomes over a greater time period. There is also a need to study how children's exposure to inclusion programs in preschool impact on subsequent placements at the elementary school level. A recent study conducted by Hanson et al. (2001) found that parents were often forced to choose between integrated classes, without support services to address their children's disabilities, or getting specialized services and supports in a segregated setting. Future studies could explore how children adapt as they enter school-age inclusion programs and are required to transition to more structured classrooms and a more demanding curriculum. Finally, whereas benefits of inclusion typically focus on developmental gains, there are additional outcomes that are often overlooked. They include class participation, relation-

ships with peers and adults, activities outside of the classroom, and greater preparation for life in the community (McWilliam, Wolery, & Odom, 2001).

While instructive, this study has its limitations. First, the children were drawn from one preschool, which is basically homogeneous in both ethnic composition (i.e., primarily Caucasian) and socioeconomic status (i.e., low-middle income). Thus, it would be difficult to generalize the findings to other areas, particularly those in urban or rural settings and those with a more culturally diverse population. Second, the two groups consisted of nonequivalent intact groups whereby the children in segregated classes tended to consist of children with more severe disabilities than their peers in inclusion classes. Another limitation was the operational definition used to measure degree of disability. As previously mentioned, children were categorized as having severe disabilities if they scored at or below two standard deviations from the mean on either Verbal or Performance IQ or had no scores available because the severity of their disability prevented them from being formally cognitively assessed. This rather narrow operational definition of degree of disability may have impacted on some of the outcomes of the study. Young children with disabilities are a very heterogeneous group who often may have developmental delays of unknown etiology with a wide range and degree of disabilities. Defining subgroups of children for purposes of elucidating the differential effectiveness of a program is a central question for evaluators.

IMPLICATIONS FOR PRACTICE

Because schools are increasingly moving toward integrating children with disabilities, it is important for educators, parents, and policymakers to recognize the complexity of this issue. We need to continue to more systematically delineate the mediating influences of individual child, family, and program variables, as well as their interaction, in order to identify for whom and under what circumstances particular services and interventions are most effective. Programs must be provided with reliable and valid information about the impact of inclusion on preschoolers with and without disabilities. Special attention must be paid to

identifying the perceived benefits and risks associated with inclusion for young children. Placement decisions should be governed by individual needs and reevaluated over time. Some students may not function adequately in an integrated setting as their emotional and learning characteristics may require self-contained classes with fewer students. The least restrictive environment (LRE) is not a place; it is a continuum of services that balances at the point closest to a normative environment that is appropriate for each individual student. Thus, a full continuum of services and placement options should be available and determinations made according to each child's needs. As noted by Bricker (1995), the individual needs of children must be in the forefront when making placement decisions. Finally, the impact on classroom peers must also be considered. Related research suggests that parents of preschoolers with and without disabilities were more likely to support inclusion for children with mild-to-moderate disabilities than for those with more severe disabilities, as well as for those with behavioral or emotional problems (Rafferty, Boettcher, & Griffin, 2001).

Because schools are increasingly moving toward integrating children with disabilities, it is important for educators, parents, and policymakers to recognize the complexity of this issue.

No program, however, can be successful unless adequate resources are in place. While related research indicates that inclusive preschool programs have received equal or higher quality ratings when compared with segregated preschool programs or early childhood programs (Buisse, Wesley, Bryant, & Gardner, 1999; LaParo, Sexton, & Snyder, 1998), the overall quality of childcare environments needs improvement (National Institute of Child Health and Human Development [NICHD], 1998; Odom, 2000). Thus, one ongoing challenge to inclusion is to provide quality educational services in a way that maximizes the growth of children with and without disabilities (Bricker, 1995). A full system of supports

would benefit every child either directly or indirectly by strengthening the classroom and should have the highest priority. Simply stated, for inclusion to be successful, program quality must be high and appropriate support services must be provided. A lack of needed supports and services would deprive not only the student with special needs but also the rest of the class.

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