DOCUMENT RESUME

ED 426 555 EC 306 991

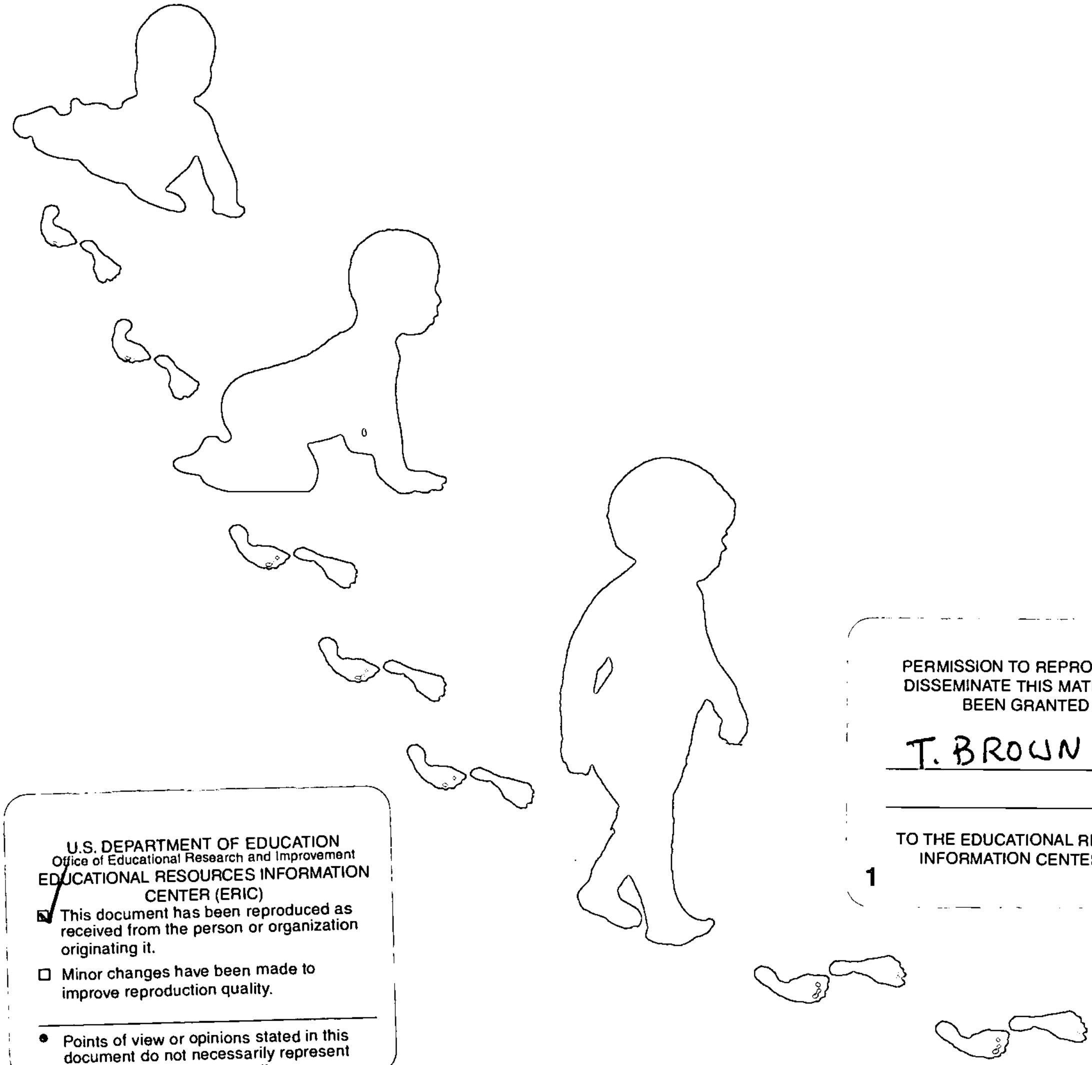
TITLE	Evaluation of Early Intervention in Washington State. Literature Summary: Acronyms, Summaries of Selected Research Studies, Theoretical Viewpoints, Bibliography.
INSTITUTION	University of South Florida, Tampa. Dept. of Gerontology.
PUB DATE	1998-00-00
NOTE	117p.; For related document, see EC 306 990.
AVAILABLE FROM	Research and Data Analysis, Department of Social and Health Services, Olympia, Washington 980504-5204; Report Number 7.95b.
PUB TYPE	Information Analyses (070)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Disabilities; Early Childhood Education; Early Intervention; *Educational Strategies; Exceptional Child Research; Infants; *Outcomes of Education; *Program Effectiveness; Research Projects; *Teaching Methods; Toddlers
IDENTIFIERS	Washington

ABSTRACT

This report summarizes research studies on the effectiveness of early intervention for children with disabilities in Washington state. In chart form, each summary includes information on the study program, study group, description of the research, outcome measures, and the results of the study. It includes 34 research studies and 20 theoretical research studies. (Contains over 300 references.) (CR)

Evaluation of Early Intervention in Washington State

Literature Summary



Washington State Department of Social and Health Services
Research and Data Analysis
Infant Toddler Early Intervention Program

ACRONYMS

SUMMARIES OF SELECTED RESEARCH STUDIES

THEORETICAL VIEWPOINTS

BIBLIOGRAPHY

When ordering, please refer to
Report Number 7.95b

ACRONYMS

ADD	Attention Deficit Disorder
APGAR	Scoring system named after Virginia Apgar used to evaluate condition of a new infant
BDI	Battelle Developmental Inventory
BPD	Bronchopulmonary Dysplasia
BW	Birth Weight
CA	Chronological Age
CAMS	Curriculum and Monitoring System
CAPER	Early Childhood Continuum of Assessment, Programming Evaluation, and Resources
CBCL	Child Behavior Checklist
CEEPS	Comprehensive Early Evaluation Programming System
CEFF	Comprehensive Evaluation of Family Functioning
CES-D	Depression Scale
CIQ	Child Improvement Questionnaire
CVS	Child Vulnerability Scale
DA	Developmental Age
DAS	Dyadic Adjustment Scale
DD	Developmentally Disabled
DQ	Developmental Quotient
ECRI: SU	Early Childhood Research Institute: Service Utilization
EI	Early Intervention
EICS	Early Intervention Collaborative Study
EIRI	Early Intervention Research Institute
FACES	Family Adaptation and Cohesion Evaluation Scale
FFSS	Family Functioning Style Scale
FILE	Family Inventory of Life Events and Changes
FRS	Family Resource Scale
FSS	Family Support Scale
GAS	Goal Attainment Scaling
HOME	Home Observation for Measurement of the Environment Inventory
IEI	Intervention Efficiency Index
IEP	Individualized Education Plan
IFSP	Individualized Family Service Plan
IHDP	Infant Health and Development Program
INFANIB	Infant Neurological International Battery
INREAL	A language intervention program
ISCS	Inferred Self-Concept Scale
ITQ	Carey Infant Temperament Scale
IVH	Intraventricular Hemorrhage

JSI	Joseph Preschool and Primary Self-Concept Screening Test
LBW	Low Birth Weight
LICC	Local Interagency Coordinating Council
MA	Maturity Age
MCDI	Minnesota Child Development Inventory
NEILS	National Early Intervention Longitudinal Study
NICU	Neonatal Intensive Care Unit
OSEP	Office of Special Education Programs
PAAT	Parent as a Teacher Scale
PCI	Proportional Change Index
PIE	Parent Involvement in Education
PPS	Parent Protection Scale
PPVT	Peabody Picture Vocabulary Test
PSAS	Parent Self-Awareness Scale
PSI	Parenting Stress Index
SD	Standard Deviation
SEM	Structural Equation Modeling
SES	Socioeconomic Status
SIB	Scales of Independent Behavior
SICD	Sequenced Inventory of Communication Development
SMA	Standard Metropolitan Area
SPECS	System to Plan Early Childhood Services
SRI	Stanford Research Institute
SRRS	Social Readjustment Rating Scale
SSRS	Social Skills Rating Scale
WISC III	Wechsler Intelligence Scale
WJ-R	Woodcock-Johnson Tests of Achievement
CA,CO,CT,FL,	California, Colorado, Connecticut, Florida,
HA,MI,NJ,NC,	Hawaii, Minnesota, New Jersey, North Carolina,
PA,UT	Pennsylvania, Utah

SUMMARIES OF SELECTED RESEARCH STUDIES

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Andrews, H., Goldberg, D., Wellen, N., Pittman, B., and Struening, E. (1995). Prediction of Special Education Placement from Birth Certificate Data. *American Journal of Preventive Medicine, 11*(3), 55-61.	N=471,165 children born in New York 1976 through 1986 and enrolled in NYC public schools in 1992	Survival analysis testing certain parental, child-related, and pregnancy-related factors for significant differences between the comparison populations (special ed vs. regular ed). In addition, modeled for 3 different subgroups: learning disability, emotional disorder, mental retardation	Variables considered as possible predictors in addition to those mentioned at right included mother's age, evidence of substance abuse by mother, and presence of complications of pregnancy.	Significant predictors of special ed placement were Medicaid payment for birth (a poverty indicator), unmarried status of mother, large family size, low parental ed, mother born in the US, low level of prenatal care, male gender, low birthweight, and a low Apgar score.
Bailey, E.J., and Bricker, D. (1985). Evaluation of a Three-Year Early Intervention Demonstration Project. *Topics in Early Childhood Special Education, 5*(2), 52-65. The Early Intervention Program at the Univ of OR, supported by OSEP and Rehabilitative Service's Handicapped Children Early Education Program.	36 children 1981-2, ages 6 to 142 weeks of age, of which 80% were handicapped (wide range of severity). 46 children the following year, ages 9 to 137 weeks of age, of which 74% were handicapped.	Objective was documentation of child change, as well population characteristics, parent satisfaction, and program operation costs. Program components: home based up to 15 months, center based 15 to 36 months.	Child change: one-group pre-posttest comparison with a 5- to 7-month interval between test administrations. Norm-referenced: Gesell Developmental Schedules (adaptive behavior, gross motor, fine motor, language, personal-social development). Criterion-referenced: Comprehensive Early Evaluation and Programming System (CEEPS) (gross-motor, fine-motor, communication, cognition, self-help, social; thought to measure skills that will lead to increasing independence; assessment results [i.e. failed items] direct intervention goals). DQ also used. Parents were given a consumer satisfaction survey.	Suggest a positive impact. Uniformly positive CEEPS pre- post-test comparisons. Comparisons using Gesell maturity age (MA) were significantly different for the total groups. Comparisons using DQ scores were gen non-sig across all groups. Subgroup analysis by level of disability: CEEPS and MA comparisons were statistically sig except for CEEPS for the at-risk group (Years 2 & 3) and MA for at-risk & severe groups, Year 2. Gesell DQ scores were nonsig, but suggests the majority maintained their rate of development.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Barnett, S.W., and Pezzino, J. (1987). Cost-effectiveness Analysis for State and Local Decision Making: An Application to Half-Day and Full-Day Preschool Special Education Programs. *Journal of the Division for Early Childhood, 11*(2), 171-179.	39 half-day preschoolers 39 full-day preschoolers Children matched within primary handicapping condition on: chronological age, months of prior preschool program experience, and developmental level at program entry. Ave age 48 months.	Compared half-day and full-day preschool programs in cost-effectiveness analysis.	No differences in educational outcomes measured by standardized tests (*Minnesota Child Development Inventory (MCDI)*, based on mother's observations, and *the Early Childhood Continuum of Assessment, Programming, Evaluation, and Resources (CAPER)*, criterion-referenced measure of children's mastery of skills). Combined test domains: cognitive, language, motor, social, and self-help.	No differences in educational outcomes; half-day programs appear to be more cost-effective.
Belsky, J.,Rovine, M., and Taylor, D.G. (1984). The Pennsylvania Infant and Family Development Project, III: The Origins of Individual Differences in Infant-Mother Attachment: Maternal and Infant Contributions. *Child Development 55*, 718-728.	60 mother-infant dyads participating in the Pennsylvania Infant and Family Development Project. Primarily middle-class.	Used naturalistic home observations on mother-infant interaction to assess the hypotheses that infants classified as securely attached had experienced the most sensitive care, as revealed by intermediate levels of reciprocal interaction and maternal stimulation, with resistant infants experiencing the least and avoidant infants the most such interactive experience. Tested to determine whether, relative to mothers of secure infants, mothers of resistant infants were significantly less responsive to infant distress and nondistress vocalizations, and those of avoidant infants provided significantly less physical contact. Also tested whether insecure infants would be fussier than securely attached infants.	Mother-infant interaction observed at infant age of 1, 3, and 9 months; at 1 yr brought to lab to assess quality of attachment. Behavior categories: maternal vocalization to infant, infant vocalization, maternal responsive vocalization (to infant vocalization), maternal stimulation/arousal, infant response to stimulation/arousal, maternal positive affect, infant looks at mother, maternal undivided attention, three-step contingent exchange, infant fuss/cry, maternal soothe (physical or verbal), maternal hold, and maternal feed (breast or bottle). Attachment measured using Ainsworth and Wittig (1969) strange situation, coded using Ainsworth et al.'s (1978) *Patterns of Attachment*.	62% of attachments rated as secure; 38% as insecure (25% avoidant, 13% resistant). Data supported the general contention that individual differences in attachment are a function of both maternal care and potentially enduring characteristics of the infant. Cannot conclude that either is more responsible, but inclined to believe that care provided by the mother plays a greater role. Levels of reciprocal interaction ranked as expected, although this was only statistically sig at 9 mo. Same for the maternal involvement component of reciprocal interaction. There is no support for the prediction that avoidance is associated with maternal disdain for physical contact with the infant. Can conclude that the covariation of fussiness and attachment is determined, at least in part, by the effect of mothering on infant behavior.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Bradley, R.H., Whiteside, L., Mundfrom, D.J., Casey, P.H., Kelleher, K.J., and Pope, S.K. (1994). Contribution of Early Intervention and Early Caregiving Experiences to Resilience in Low-Birthweight, Premature Children Living in Poverty. *Journal of Clinical Child Psychology 23*, 425-434.	Subgroup of the Infant Health and Development Program; 410 LBW children living in poverty. Excluded those with serious chronic health problems.	Multi-site, randomized, clinical trial compared the resilience of LBW children in two groups: 1) standard pediatric follow up for first 3 years; and 2) an intervention program which added family education and support services provided in the home, plus an educational day care experience from age 1 until age 3. Program: • Weekly home visits through age 1, biweekly thereafter • From age 1 to 3, child development center at least 4 hrs/day, 5 days/wk Home visits included a problem-solving curriculum, and both components used a coordinated educational curriculum of learning games and activities. Resilient children were identified as those who were functioning at age 3 within acceptable ranges in the areas of cognitive competence, behavioral competence, health status, and growth status.	Conditions found to afford some protection from the deleterious consequences of prematurity compounded by poverty include: • Low density in the home • A safe area in which to play • Responsivity of the parent • Acceptance of the child • Variety of experiences for the child • The availability of enriching learning materials Information on these conditions were measured from the *Home Observation for Measurement of the Environment* inventory (HOME; Caldwell & Bradley, 1984), the Infant-Toddler and Early Childhood versions. Child measures: • *Stanford-Binet Intelligence Test* • *Child Behavior Checklist* • Health status (question to parent) • Growth status	The incidence of resilience in the intervention group was significantly greater (39%) than the incidence for the follow-up group (12%). Secondary analysis: In the absence of having at least three protective caregiving experiences at 12 months, the odds that a premature, LBW child living in poverty will show early signs of resilience are low (<28%) despite participating in an intensive multifaceted intervention such as IHDP. Consequences were somewhat less severe at 36 months (32%). (Limitations to definition: criterion values rather than continuum; based on developmental scores at a single age; measure of health status weak; high number defined based solely on IQ score; high number (70%) of African Americans)

TUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Britain, L.A., Holmes, G.E., and Hassanein, R.S. (1995). High-Risk Children Referred to an Early Intervention Development Program. *Clinical Pediatrics, 34*(12), 635-41.	698 children referred to an early intervention program over 15 years (1975 to 1989), 464 of whom attended the program for at least 6 months.	Described the presenting problems of all children by medical condition groups (25 groups). Compared groups regarding birth weight, gestational age, and gender. Looked at changes in group proportions over time. Compared group DQ changes during intervention for those remaining in the program at least 6 months. Program was based on a neurodevelopmental approach, with an educational component. Initial assessment; reevaluations every 12 months (every 6 months from 1975-1980).	Developmental quotient and comparison of group characteristics such as birth weight, gestational age, and gender.	Results included: • Chronological age ranged from a mean of 6.6 months for the 114 children with Down syndrome, to a mean of 39.9 months in 14 children with speech articulation problems. Except for Down syndrome children and those born of mothers with intrauterine infection, most were 1 yr or older, but less than 24 months, on admission. • Many problems were fairly evenly distributed between the sexes. However, girls were represented significantly more in the moderate/severe DD and microcephaly groups. Boys were strikingly and significantly more involved with mild DD behavioral problems and speech articulation problems. • Most groups had statistically significant shorter gestational ages than the norm of 40 weeks (exceptions were for groups with central nervous system tumor, postnatal infection, autism, mostly speech problems, speech articulation, intrauterine infection, spina bifida, metabolic problems, macrocephaly, and postnatal trauma). Group means ranged from 36.1 to 39.8. • Tests for linearity of trend in proportions over three time periods showed a downward trend over time in admission of groups with mild DD, increased muscle tone or decreased muscle tone, mostly motor problems, and hydrocephalus. There was a significant upward trend for groups with seizure history, micrcephaly, Down syndrome, and autism. Increased representation may be related to earlier diagnosis and/or referral.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
				• The 2 DD groups did not differ much either in mean gestational age or in birth weight. Moderate/severe DD children were more likely than those in the mild DD group to have abnormal muscle tone, microcephaly, decreased vision or hearing, strabismus, and seizures. The mild DD group was nor likely to have had macrocephaly or mostly speech problems. • There was relative stability in the mean DQ from admission to discharge. Exceptions: groups with postnatal trauma, mostly speech problems, and speech articulation problems showed some overall improvement, and those with Down syndrome and intrauterine infection showed a decline over time (significant for Down group). Note that maintenance of a child's DQ over time can be viewed as progress and is a realistic goal for intervention programs to achieve.
Caro, P., and Derevensky, J.L. (1991) Family-Focused Intervention Model: Implementation and Research Findings. *Topics in Early Childhood Special Education 11*(3), 66-80.	16 families having infants with moderate or severe disabilities from all SES levels, with age range 2 - 43 months.	Evaluated the effectiveness of an EI program based on the family-focused intervention model as conceptualized by Bailey et al., recognizing the transactional nature of families and the use of various child, sibling, and parent assessments to illustrate individual strengths & needs. Program: 2-hr weekly home visit over 5 month period. Parent(s) & infants present at each session, sibs attending sessions monthly. Set weekly goals.	Child Variables: • *Battelle Developmental Inventory* • *Movement Assessment of Infants* Parent Variables: • *Family Resource Scale* • *Family Support Scale* • *Parent Satisfaction Scale* Parent-Child Attachment and Interaction: • *Parent Behavior Progression* (Forms 1 & 2) • *Teaching Skills Inventory* • *Critical Events Checklist*	Parents perceived significant progress in the ability of their families to meet the challenges of living with young children with disabilities. As a group, increases in the children's age equivalent scores on the BDI were nearly equivalent to performances expected for nondisabled children. All children had a diminished risk score and improvement in the quality of their motor movements. EI appeared to reinforce, modify, or significantly enhance the perceived quality of the interactional behaviors among family members. Increments in the observed behaviors indicated the acquisition of a strong parent-child bond and parental ability to

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
				promote mature child behaviors in all developmental domains. Significant increases in parental teaching skills. Increased attachment and interactional behaviors in families were observed; all families realized effective attachments (but all were volunteers & may have been motivated to respond).
Casto, G.C., and Mastropieri, M.A. (1986) The Efficacy of Early Intervention Programs: A Meta-Analysis. *Exceptional Children, 52*(5), 417-424.	74 primary research studies with handicapped children	Statistically integrated findings from 74 studies investigating the efficacy of early intervention with handicapped preschoolers, conducted from 1937 to 1984 (most since 1970).	IQ, language, motor, social-emotional, self-help, academic achievement, parent attitude, parent skill levels, mother/infant eye contact, weight gains, various types of mother/infant interaction	Early intervention programs do result in moderately large immediate benefits for handicapped populations. Evident in variables such as IQ, motor, language, academic achievement (few results for outcomes such as self-concept, social competency, or family and peer relationships). (Note: the effect sizes when only good quality studies are considered are noticeably lower) Data related to the four variables most cited by previous reviewers: 1) Intervention programs which utilize parent involvement are not more effective than those which do not. 2) There are few data to support the notion that "earlier is better" in starting intervention programs. 3) Within disadvantaged populations, more highly structured programs are associated with more effective outcomes. This is not as well supported by the data from the handicapped population. 4) Within disadvantaged populations, program intensity/duration is not found to be related to intervention effectiveness. For handicapped populations, longer, more intense programs are associated with intervention effectiveness.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Dihoff, R.A., McEwan, M., Farrelly, M., Brosvic, G.M., Carpenter, L., Anderson, J., Kafer, L.B., Rizzuto, G. E., and Bloszinshky, S. (1994). Efficacy of Part- and Full-Time Early Intervention. *Perceptual and Motor Skills, 79*, 907-911.	Study 1: From those eligible within the geographic area, 3 groups were identified and subjects in each were matched on race, sex, disease state, severity of impairment, and cognitive function. • Part-time: 16 boys, 11 girls • Full-time: 16 boys, 21 girls Control group: 14 boys, 9 girls referred for and qualified, but parents did not enroll. Did not participate in program activities, but were screened initially and again 6 months later. Study 2: 33 mothers and 3 fathers of enrolled children served voluntarily as subjects	Study 1 reported effectiveness of a transdisciplinary program for children 0-3 during 12 months of part- or full-time intervention. Study 2 examined stress of parents, and effects of a bimonthly parent group	Evaluation was by developmental standing: • Physical and occupational therapy with *Mecklenburg Scale* • *Receptive-Emergent Language Scale* • *Learning Accomplishment Profile* (social-adaptive skills) • *Bayley Scales of Infant Dev* or *Standford-Binet—Revised Scale* (cognitive functioning) Study 2: *Parenting Stress Inventory* chosen because subscales measure the reciprocal nature of child-to-parent interactions as well as behaviors reported to be related to dysfunction within the child-parent system. Child Characteristics Domain scale includes subscales measuring the child's adaptability and plasticity, acceptability to the parent, demandingness, mood, distractibility and hyperactivity, and the extent to which a child reinforces the parent. Parent Characteristics Domain scale includes subscales measuring a parent's depression, unhappiness, and guilt, attachment, restrictions imposed by the parental role, sense of competence, social isolation, relationship with spouse, and health.	Study 1: Supports the effectiveness of early intervention in general, with most progress made in full-time class. Improvement not just maturation; not reflected in matched control group. Programmatic differences also reflected in different assessments (part-time largely gross motor activities, full- largely fine-motor w/speech/language instructor) • No sig differences between groups at start • No sig changes in cognitive functioning for any of the groups • Gross motor skill: relative to the control children, both program groups showed sig improvements over 6 months (additional gains for part-time group over 2nd 6 months) • Fine motor skills: relative to the control children, both program groups showed sig improvements over 6 months (additional gains for full-time group over 2nd 6 months) • Language: relative to the control children both program groups showed sig improvements over 12 months (sig gains for full-time group also after 6 months) • Social adaptation skills showed sig improvements from baseline for both groups after 12 months of intervention Study 2: Mutual predictability indicated sig relationships between stress attributed to characteristics of the child and the parent. Parents attending the bimonthly parents' group reported significant decreases in stress attributable to the adaptability and the demandingness of their children.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
				The most predictive measure for the Child Char. Domain was children's adaptability and flexibility. For Parent Char.: 1) parents' perceptions of depression, unhappiness, and guilt, and 2) sense of competence as a parent.
Edgar, E., Heggelund, M., and Fischer, M. (1988) A Longitudinal Study of Graduates of Special Education Preschools: Educational Placement After Preschool. *Topics in Early Childhood Special Education, 8*(3), 61-74.	582 special ed preschool graduates from 10 school districts in WA during the 1983-1986 school years (3).	Addressed 2 questions: 1) What is the first educational placement for special education preschool graduates after age 6? 2) How stable are these placements over the first 2 years of elementary school?	Special education placement	**Initial placement**: 13% were placed in regular education settings without special ed support (19% of all mildly handicapped, 12% of the mildly retarded, and 6% of the severely handicapped). An additional 19% were placed in regular ed with special support services. 64% were in placed in either self-contained or resource room settings **Stability of placement** appeared to be very high. Of the 45 children who made placement changes, 28 (62%) moved to less restrictive settings.
Innocenti, M.S. (1996). Final Report for Project Period October 1, 1990 - December 31, 1995 of the Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute. Submitted to the U.S. Department of Education by the Early Intervention Research Institute.	9 sites (of 16 sites included in the original 5-yr study) Stratified, random sample within sites. Parental consent; assessors unaware of subject assignments or study hypotheses.	10-yr longitudinal study contracted by the Dept of Ed addressed: • Treatment intensity (compared existing high-quality programs to more intensive alternatives developed for the study, i.e., 1/week and 3/week) • Most appropriate age for services to begin (compared treatment at first entry or at a future point in time—severely medically fragile children) • Systematic program differences (i.e., added more intense family component to classroom-based program, for some) • Compared program cost data for cost effectiveness discussions Testing commonly involved one pretest, up to eight reassessments	Cognitive, motor, language functioning, mother and child interaction, parental attitudes toward their child with a disability, child success in school as indicated by special education class placement and retention, and perceived stress as reported by the parents. For each case, the specific goals and activities of the intervention program was the primary consideration in selecting assessment instruments. Assessment instruments used for final assessment battery at all sites (and complemented by site-specific complementary measures) are: Child Measures: *Battelle Developmental Inventory* (BDI) (Newborg et al., 1984); *Woodcock-Johnson Tests of Achievement* (WJ-R)(Woodcock & Johnson, 1989);	See individual site study descriptions

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
		Measured effect size by comparing the difference of group means to the standard deviation of the comparison group scores	*Scales of Independent Behavior* (SIB) (Bruininks et al, 1985); *Social Skills Rating Scale* (SSRS)(Gresham & Elliott, 1990); *Pictorial Scale of Perceived Competence and Acceptance* (Harter & Pikes, 1983) Family Measures: *Parenting Stress Index* (PSI)(Abidin, 1983); *Family Support Scale* (FSS)(Dunst et al., 1984); *Family Resource Scale* (FRS)(Dunst & Leet, 1985); *Family Inventory of Life Events and Changes* (FILE)(McCubbin et al., 1983); *Family Adaptation and Cohesion Evaluation Scale -III* (FACES)(Olson et al., 1985); *Child Health* (White et al., 1987); *Additional Services* (White et al., 1987); *Family Information Survey* (White et al., 1987)	
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute New Orleans Visual Impairment Study	35 children 0-30 months, with vision impairment as major disability, randomly assigned to two groups. Attrition: four subjects	Compared weekly individualized parent-child sessions with parent group meetings approximately 12 times per year The intervention emphasized developmental therapy directed toward the child, rather than providing primary support and assistance to the family.	Measures included those used for all studies (see overview), and: Child Measures: *Play Assessment Scale Videotaped Scenario of Exploration/Play;* *Early Intervention Developmental Profile;* *Vineland Adaptive Behavior Scales;* *Carolina Record of Individual Behavior;* *Boehm Test of Basic Concepts;* *Test of Language Development, Primary, 2nd ed.;* *McCarthy Scales of Children's Abilities;* *Social Skill Rating System;* *Forced Choice Preferential Looking Technique;* *Hill Performance Scale;* *WISC III*	There were no consistent differences between the children or their families that participated in the weekly parent-child sessions and those that did not.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
			Family Measures: *Family Adaptation and Cohesion Scales;* *Videotaped Scenario of Parent/Child Interaction;* *Holmes-Rahe Schedule of Recent Events;* *Parent Self-Awareness Scale;* *Family Functioning Style Survey*	
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute SMA/Lake McHenry Summary Report	72 children served by three different early intervention programs, 24 months of age or less at referral with a diagnosed disability or functioning at 65% or less of what was expected of children their age based on the Wisconsin Behavior Rating Scale (assesses basic survival skills). Subjects entered as they were identified. Groups were stratified by developmental status and parent's level of stress, and were highly comparable when additional demographic and contextual data were examined. Testing: one pretest, 7 annual reassessments Attrition: 24 subjects (groups remained comparable)	Each site, which originally served only once per week, added a three-times-per-week component to which subjects at each site were randomly assigned. Programs focused on improving child development (personal/social, adaptive, motor, language, cognitive) and teaching skills to parents that would allow them to assist with their child's developmental progress during daily living activities. The programs emphasized the importance of addressing parent-identified needs as well as strengths in an effort to empower parents to become capable of dealing with the demands of caring for a child with special needs.	Measures included those used for all studies (see overview), and: Family Measures: *Parent Stress Index* (PSI)(Abidin, 1986);	No evidence that increasing the amount of intervention from one to three times per week is cost effective for children similar to those enrolled. There were no statistically significant differences between the groups re child measures. Mothers reported higher levels of support during the first three years, and less stress during Year 4.
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute	78 children ages 3 to 48 months receiving services before 86/87, or entering services fall of 87, at two sites. Groups were stratified by age and level of disability and children were randomly assigned to one of two treatment groups. Attrition: 27 children	Compared two levels of intensity of home-based early intervention services: once every other week, increased to once per week in 2nd year of study, compared to twice per week. Intervention focused on developing functional skills based on child's developmental level and family functioning as represented in the IEP. Comparison tests including demographics suggest a slight pretest	Measures included those used for all studies (see overview), and: Child Measures: *The Vineland Adaptive Behavior Scales—Survey Edition* (Sparrow et al., 1984); *Sequenced Inventory of Communication Development* (SICD)(Hedrick et al., 1984); *Child Health* (E.I.R.I.); *Inferred Self-Concept Scale* (ISCS)	Results do not support the hypothesis that more intense frequency of home early intervention visits from twice per week compared with once per week will result in better outcomes for participating children or families. While there are a few statistically significant results, the overall pattern is one of no effect.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
rkansas Intensity Study		difference between groups in favor of the expanded intervention group. Analysis of covariance procedures were used to adjust for these differences. Dropout patterns also favored the expanded intervention group. Pretest and reassessments at 8, 18, 30, 42, 66, 78, 90, and 102 months.	Family Measures: *Parent Self-Awareness Scale* (PSAS)(Snyder et al., 1985); *Social Readjustment Rating Scale* (SRRS)(Holmes & Rahe, 1967); *Teacher Rating of Parent's Participation in Education Program* (E.I.R.I.); *Parenting Stress Index* (PSI) Short Form (Abidin, 1990);	
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute Jordan Intensity Study	53 children between 36 and 62 months of age, mild to moderately disabled with a wide array of disabilities. Stratified by severity of disability and randomly assigned. Attrition: 1 subject	Compared two year-long preschool intervention programs in four classrooms at two schools. Standard program 2 hrs, 3 days per week. More intensive program developed for 2 hrs, 5 days per week with higher staff ratios. Pretest and 7 annual reassessments Groups comparable overall, significant differences existed, but did not favor a particular group.	Measures included those used for all studies (see overview), and: Child Measures: *Joseph Preschool and Primary Self-Concept Screening Test* (JSI)(Joseph, 1979); *Developmental SPECS (System to Plan Early Childhood Services)* (Bagnato & Neisworth, 1990); *Perceived competence and Social Acceptance* (Harter & Pikes, 1983); *Cooper Farran Behavioral Rating Scales* (Cooper & Farran, 1988) Family Measures: *Parent Stress Index* (PSI) Short Form (Abidin, 1986); *Comprehensive Evaluation of Family Functioning* (CEFF)(McLinden, 1989); *Parent Self-Awareness Scale (PSAS)(Snyder et al., 1985)*	More intensive intervention had a mild immediate and longitudinal impact on child developmental outcomes, most clearly on measures of child development and adaptive behavior. Children with more severe disabilities benefited more from the more intensive intervention than children with less severe disabilities. Some immediate and conflicting findings were found following intervention, but not maintained longitudinally. Given the possibility of substantial impacts in later life from increases in adaptive behavior functioning, issues around the cost-benefit of this intervention are still under investigation.
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with	60 infants from either of 3 tertiary Neonatal Intensive Care Units (NICUS), recruited 1985-1988, who had experienced neonatal intraventricular hemorrhage (IVH). All but 5 were low birthweight. Subjects were stratified on severity of hemorrhage and birthweight, and randomly assigned.	Compared 2 groups of medically fragile children beginning intervention at different ages (3 months corrected age vs. 18 months). Early intervention involved sensorimotor treatment sessions once per month, for one hour (more intensive provided when needed). Parents participated and were given	Measures included those used for all studies (see overview), and: *Stanford-Binet Screening Test* (Thorndike et al., 1986); *Child Behavior Checklist* (CBCL)(Achenbach, 1991); Neonatal medical information from hospital discharge summaries; health and	For these children and at this intensity of intervention, beginning intervention at 3 months of age did not necessarily result in better developmental outcomes than beginning intervention at 18 months. As preschoolers, the early intervention group scored better than those in the delayed intervention group, but the groups

STUDY/PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Disabilities: Follow-Up Institute Salt Lake City Medically Fragile Study	Comparability: medical conditions of the early intervention group appeared generally somewhat more sever than those of the delayed intervention group, but not statistically significant except for gestational age. Developmentally important variables—considered potential covariates. Differed statistically on mother's age and father's occupation level, but similar on all other demographic characteristics. Comparable across study for contextual variables. Attrition: approx. 5 subjects	weekly assignments relative to child's development. At 18 months both groups in same program: CAMS program (as for early group) with now broader developmental emphasis including motor, social-emotional, self-help, receptive and expressive language, and cognitive programs. Also assisted in obtaining community-based EI services when needed. Program ended Sept 1990. Assessments at 3 months, 18 months, and annually thereafter until 102 months of age or program end.	neurological outcomes assessed by telephone survey with a parent in May, 1993.	did not differ in development at earlier or older ages. Health: while many of the children were developing within the normal range, a significant portion (1/4 to 1/3) scored lower than 1 std dev from the mean and a number had developed disabilities (9 w/CP, 2 w/ severe visual problems, 1 w/ severe hearing probs, 6 classified intellectually disabled). 15 qualified for sp ed services. Approx 25-30% had ADD symptoms.
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute South Carolina Medically Fragile Study	65 infants who had been patients in the Neonatal Intensive Care Unit, and had experienced intraventricular hemorrhage or had a birthweight of < 1000 g. Recruited 10/86 - 10/88. Stratified by severity of IVH, randomly assigned. Attrition: 21 subjects Comparability: higher proportion of males in the early intervention group. Medical differences favored the "delayed" group. Covariants.	Compared early versus delayed intervention program (3 months adjusted age, vs 12 months adjusted age). Phase 1: (3-12 months) EI group had twice-monthly one-hour sessions with PT. Parents asked to work w/child on techniques 20 min/day, 5 days/wk. Phase II: At 12 months all subjects began expanded program (motor, social-emotional, self-help, receptive language, expressive language). Parents collaborated on IFSP. Twice-monthly home visits, monthly parent-child (& sib) sessions. Pretest, 7 annual reassessments (last at 90 months, children ages 5.5 to 8.5)	Measures included those used for all studies (see overview), and: Child Measures: *Stanford-Binet Intelligence Scale (4th ed.)* (Thorndike et al., 1986); *Minnesota Child Development Inventory* (Ireton & Thwig, 1974); *The Child Behavior Checklist* (CBCL)(Achenbach & Edelbrock, 1987) Family Measures: *Parent Stress Index* (PSI)(Abidin, 1986); *Parent Stress Index Short Form* (Abidin, 1990); *Parent-Infant Interaction Videotape*	There were no measurable differences between experimental groups based on age at start (3 months vs. 12 months). Regardless of age at start, long-term developmental outcomes were better for infants with fewer medical complications at birth and infants whose mothers were better educated.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
nnocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute Columbus Medically Fragile Study	54 infants with medical complications, stratified by primary diagnosis of Bronchopulmonary Dysplasia (BPD) or neurological damage, randomly assigned. No significant differences between groups on demographic variables examined at pretest. Some sig diffs during some of the later assessments. Covariance procedures used. Attrition: approx. 14	Compared two intensities of service to medically fragile infants and their families: routine medical services provided after discharge by the hospital vs. a coordinated and comprehensive system of early intervention services initiated before discharge. Assessed 2 wks after discharge and at 6, 12, 18, 24, 36, 48, 60, and 72 months of age.	Measures included those used for all studies (see overview), and: Child Measures: *Bayley Scales of Infant Development* (Bayley, 1969); *Vineland Adaptive Behavior Scales* (Sparrow et al., 1984); *Infant Neurological International Battery* (INFANIB)(Ellison et al., 1985); *Carey Infant Temperament Scale* (ITQ) Family Measures: *Holmes & Rahe Major Life Events* (Homes & Rahe, 1967); *Parent Protection Scale* (PPS); *Child Vulnerability Scale* (CVS)(Forsyth)	A more intensive intervention did not demonstrate differential positive effects for medically fragile children but somewhat small effects on family functioning. No evidence that it was cost-effective. Children in the low-intensity group were more likely to be classified as difficult than children in the high-intensity group.
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute Des Moines Parent Involvement Study	76 children in a classroom-based early intervention preschool program (42 classroom only, 34 with added parent involvement), not profoundly disabled, whose parents' schedules allowed them to attend the parent involvement meetings. 75% demonstrated developmental delay, with disability range severe to mild. Stratified by chronological age by teacher perception of parent motivation, with developmental functioning information. Attrition: 16 subjects Comparability: slight advantage for enhanced group	Compared EI services with differing parent involvement. Enhanced groups involved parents in planned activities primarily, but not exclusively, focused on child-oriented issues. Parent meetings organized around the Parents Involved in Education curricula (child development, observation and recording, targeting intervention behaviors, teaching processes, decision making, and communicating with professionals). Parent support component. All subjects received classroom-based, half-day, 5-day-per-week intervention services. Pretest, reassessments at end of academic year and annually thereafter (8 in all)	Measures included those used for all studies (see overview), and: Child Measures: *Joseph Preschool and Primary Self-Concept Screening Test* (JSI)(Joseph, 1979); *Stanford-Binet Intelligence Test* Form L-M (Terman & Merrill, 1973); *Developmental SPECS* (System to Plan Early Childhood Services) (Bagnato & Neisworth, 1990) Family Measures: *Parenting Stress Index* Short Form (PSI)(Abidin, 1990); *CES-D Depression Scale* (Radloff, 1977); *Child Improvement Questionnaire* (CIQ; Devellis et al., 1985); *Parent as a Teacher Scale* (PAAT; Strom, 1984); *Comprehensive Evaluation of Family Functioning* (CEFF)(McLinden, 1989); *Parent Self-Awareness Scale* (PSAS)(Snyder et al., 1985); *Holmes and Rahe Major Life Events*	Evidence for cost-effectiveness of this kind of parent component is not very compelling. There was a small, positive impact on children's developmental progress and parental perceptions of social support, but these were not maintained over time. Parents who received the parent involvement component were less likely than other parents to attribute their child's developmental progress to chance. Mild longitudinal impacts for enhanced group were found on teacher perceptions of children's classroom behaviors.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
			(Holmes & Rahe, 1967); *Dyadic Adjustment Scale* (DAS)(Spanier, 1976); *Family Functioning Style Scale* (FFSS)(Deal et al., 1988)	
Innocenti, M.S. (Early Intervention Research Institute), 1996 Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-Up Institute Utah Parent Involvement Study	56 preschool children 23 to 61 months of age, with moderate to severe disabilities, stratified by age, developmental level, and their teacher's rating of parent motivation, randomly assigned to 2 groups. Well-matched on demographic, child, and family measures. Attrition: approx 3 subjects	Explored whether addition of parent-as-intervener focus to center-based program influenced: • Child development • Later school placement • Parental interaction behaviors with child • Parents' perceptions of social support • Parenting stress • General family functioning (family cohesion & adaptability) Program: 3 hr/day, 5days/wk at center. Parents from treatment group attended 15 ninety min parent instruction sessions over 4 months, based on the Parent Involvement in Education (PIE) group. PIE curriculum includes introduction and overview; objective observation of child behavior, defining and measuring behavior, principles of behavior management, analyzing behavior chains, theories of child development, testing and retesting, criterion-referenced assessment, developing learning objectives, P.L. 94-142 and IEPs, intervention strategies, factors related to teaching success, practice teaching sessions, determining appropriate interventions, communicating with professionals, stress management, and review, comments, concerns, and questions. Also asked to practice	Measures included those used for all studies (see overview), and: Child Measures: *Developmental SPECS (System to Plan Early Childhood Services)* (Bagnato & Neisworth, 1990); *Minnesota Child Development Inventory* (MCDI)(Ireton & Thwing, 1974); *Child Health* (E.I.R.I.) Family Measures: *CES-D Depression Scale* (Radloff, 1977); *Child Improvement Questionnaire—Revised* (Devellis et al., 1985); *Peabody Picture Vocabulary Test* (PPVT)(Dunn & Dunn, 1981); *Test of Parent Knowledge* (E.I.R.I.); *Parent-Child Interaction* (E.I.R.I.); *Parent Self-Awareness Scale* (PSAS); *Major Life Events Scale* (Holmes & Rahe, 1967); *Comprehensive Evaluation of Family Functioning* (CEFF)(McLinden, 1990); *Family APGAR* (Smilkstein, 1978); *Family Functioning Style Scale* (FFSS)(Deal, Trivette, & Dunst, 1988); *Dyadic Adjustment Scale* (DAS)(Spanier 1976); *Religiosity Questionnaire*	A number of benefits were gained from this easily administered, relatively inexpensive program of a short duration. **Social support** and **family cohesion** measures were significantly in favor of parent involvement, but only during the involvement period. The involvement program appears to have had not effect on **parent stress** (which appears to be more related to other contextual aspects of the parent's life). Parents from the involvement group were consistently considered more **knowledgeable and more supportive of their children's education**. However, significant variance in **teachers' ratings of parents' attitudes toward, and participation in, their child's educational program** at reassessment #4 did not continue with later reassessments. A marked increase in the **developmental scores** of children in the involvement group appears to be the result of the intervention (statistically significant difference from 2nd reassessment on). Involvement group children showed fewer **problem behaviors** and **more socially appropriate behavior**. Note, however, that two replications of this study reported fewer advantages. Some analyses across sites has been underway.

STUDY/PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
		training activities at home. Note that all parents were involved in IEP, teacher interaction, occasionally parent-helping. Assessments at start, after parent instruction (7 mo later) and annually thereafter for 7 yrs.		
McCarton, C.M., Brooks-Gunn, J., Wallace, I.F., Bauer, C.R., Bennett, F.C., Bernbaum, J.C., Broyles, R.S., Casey, P.H., McCormick, M.C., Scott, D.T., Tyson, J., Tonascia, J., Meinert, C.L., for the Infant Health and Development Program Research Group. (1997). Results at Age 8 Years of Early Intervention for Low-Birth-Weight Premature Infants. *Journal of the American Medical Association, 277*(2), 126-132.	874 children involved in a randomized clinical trial of special services for LBW premature infants during the first 3 years of life. Now 8 years of age, 336 children were assessed from the intervention group, and 538 from the follow-up only group. Eligible infants had a birthweight of 2500 g or less, a gestational age of 37 weeks or less, resided in the catchment area, and did not have a sever medical illness or neurological impairment. Enrollment occurred 10/84 through 8/85. Groups were stratified by 2 birthweight groups (≤ 2000 g; and from 2001 to 2500 g.) Infants were randomly assigned to intervention (n = 377) and control (n = 608) groups. Groups were balanced for birthweight, gender, maternal age, maternal education, and maternal race.	Eight-site, randomized clinical trial investigated the efficacy of an intensive, integrated health and education program for low birthweight, premature infants. The trial included four main intervention modalities: pediatric monitoring and referral, weekly (1st year) or biweekly (thereafter) home visits by a family educator, parent support groups 4 times/yr, and attendance at a full-day child development center operated by early childhood educators. The control group received only pediatric monitoring and referral. Intervention began immediately after infant's discharge from the hospital and continued until age 3 corrected for pre-maturity. The hypotheses for this study phase were that enhancements of global measures of cognitive function that were found at 3 yrs would be attenuated by age 8, but that significant differences favoring the intervention group would be found in school performance measures of reading and mathematics achievement and in reduced rates of grade failure.	Cognitive functioning: • *Weschler Intelligence Scale for Children—III;* • *Peabody Picture Vocabulary Test—Revised*; • *Developmental Test of Visual-Motor Integration;* • *Rey-Ostemeth Complex Figure* • *Matrices;* • *Wide-Range Assessment of Memory and Learning: Story Memory* Academic achievement: • *Woodcock-Johnson Tests of Achievement—Revised;* • Grade retention and special education Behavior: • *Behavior Rating Profile—2;* • *Psychological Examination Behavior Profile;* • *Child Behavior Checklist* Health: • Growth measures; • Health questionnaire • *Child General Health Survey*	**At age 3**, children in the intervention group had significantly higher intelligence test scores and receptive vocabulary test scores and lower scores on a parental measure of reported behavior problems than the children in the follow-up group. The rate of maternally reported health conditions over the first 3 years was greater for children in the intervention group, although they were not hospitalized to a greater extent than those in the follow-up group. EI advantages were more pronounced in the heavier LBW stratum than in the lighter stratum in terms of IQ score, receptive vocabulary score, and behavior problem score. Rate of maternally reported health problems was greater in the lighter LBW EI group than in the lighter follow-up group; no differences were found on this measure between groups in the heavier stratum. **At age 5**, there were no significant overall differences in IQ score, receptive vocabulary, reported behavior problems, or health measures between the intervention and follow-up only children. However, within the heavier LBW stratum, the intervention group had higher full-scale IQ scores (4 pts) and verbal IQ scores (4 pts) as well as higher receptive vocabulary scores (6 pts).

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
				At age 8: *Cognitive:* • Overall, there were no statistical differences between the intervention and follow up groups. However, among the heavier LBW children, the intervention group showed significantly higher scores (no difference between groups among lighter LBW children). • In the entire group, there were significant IQ differences between children as a function of the mother's level of education. However, the differences noted above between the intervention and follow-up groups were consistent across the 3 maternal education groups. *School Performance:* • There were no overall differences on composite tests. However, among the heavier LBW children, the intervention group had significantly higher math scores than the follow-up group. Among the lighter LBW children, there were no differences in reading or math. • Percentages of grade repetition and of children classified for special ed were similar in the overall intervention and follow-up only groups and within the 2 strata. (Authors note that differences may be more likely to emerge) *Behavior:* • Scores were comparable between groups and within strata. *Health:* • The groups had similar ratings on

TUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
				most scales. However, the intervention group was perceived as being more limited in physical functioning. Within strata, the heavier LBW intervention group was not distinguished from the follow-up, but the lighter LBW intervention group received lower ratings than the lighter LBW follow-up group on assessment of role/social limitations due to behavior. (Note: intervention training may have increased accuracy of mothers' observations) Authors note that intervention through age 3 may be insufficient to sustain long-term effects for the lower strata group due to greater biomedical problems. This group showed higher rates of neurological abnormalities, lower IQ, receptive vocabulary, reading, and math scores.
National Early Intervention Longitudinal Study (NEILS)	Nationally representative, 20-state sample of 3300 children and families receiving early intervention services. Recruitment will be for children 0-31 months who are newly entering EI during 1997 and 1998.	Five-year study by SRI for OSEP per request by Congress. Main study questions include: • Who are the children and families receiving early intervention services? • What early intervention services do participating children and families receive and how are those services delivered? • What outcomes do participating children and families experience? • How are outcomes related to variations in child and family characteristics and services provided? Data collection includes: • Telephone interviews with families about child and family characteristics, child functioning, and families' perceptions of	Include: • Child's functional abilities are increased and sustained • Increase in the percent of families reporting that EI has increased the family's capacity to enhance their child's development • Increase in the number of children transitioning to inclusive settings	In progress.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
		services, and will take place upon enrollment, annually while still enrolled, at 3, and at 5 • Semi-annual reports by service providers about services • One-time survey of program directors about program • One-time survey of providers about their background, training, and ways they deliver services • One-time survey of teachers when children are 5, about the child's progress and the services being provided		
Part H Service Utilization Research Institute (ECRI:SU) 1997/just finishing	Children with disabilities and their families, both infant/toddler & preschool (no information on specifics).	Identify/compare differing service models	Percent served, array of services offered, degree of coordination and navigability of the system, amount of services received, amount of individualization, use of inclusive settings, meeting service needs of children & families.	The best outcomes for children & their families were found in the most comprehensive and coordinated service delivery model for *all* young children and their families.
Quality Practices for Infants and Toddlers with Disabilities and their Families Research Study. National Center for Early Development and Learning, Frank Porter Graham Child Development Center.		Research on the quality of services provided to infants & toddlers w/disabilities and their families. Information gathering through survey and focus groups. Goals include: • To identify practices believed to be high quality • Develop an instrument to evaluate service quality • Field test instrument • Use to evaluate variations in service quality • Look at the influence of variations in quality on child and family outcomes		In progress. Developing instrument and outcome measures.

TUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Ramey, C.T., Bryant, D.M., Wasik, B.H., Sparling, J.J., Fendt, K.H., and La Vange, L.M. (1992). Infant Health and Development Program for Low Birth Weight, Premature Infants: Program, Elements, Family Participation, and Child Intelligence. *Pediatrics* 3: 454-465.	985 LBW, premature infants and their families from hospitals in 8 cities. Infants were randomly assigned to intervention (n = 377) and control (n = 608) groups. Groups were balanced for birthweight, gender, maternal age, maternal education, and maternal race. Stratification by 2 birthweight groups was included: 2/3 of infants weighed < 2000 g; remaining third between 2001 and 2500 g.	Eight-site, randomized clinical trial investigated the efficacy of an intensive, integrated health and education program for low birthweight, premature infants. The trial included four main intervention modalities: pediatric monitoring and referral, home visits by a family educator, parent support groups, and attendance at a full-day child development center operated by early childhood educators. The control group received only pediatric monitoring and referral. Intervention began immediately after infant's discharge from the hospital and continued until age 3 corrected for pre-maturity. The design and implementation of the IHDP study was guided by the biosocial systems model for early development. Although this model recognizes multiple influences from conception onward, the researchers emphasize the caregiver-child interaction as the key.	• Cognitive development (Stanford-Binet Intelligence scale, Form L-M, 3rd ed.) • Behavioral competence (Achenbach Child Behavior Checklist) • Health status (indexes summarizing reported morbidity, the Functional Status II (R) Scale, and General Health Ratings Index) • Family Participation Index = summative measure of number of home visits, attendance at parent group meetings, and days attended at child development	The research program was designed to test the efficacy of three combined program elements including currently recommended pediatric practices, family supports, and early childhood education. Children in the intervention group demonstrated significantly higher Stanford-Binet IQ performance, and fewer problem behaviors, and a small but significant increase in report of child's' morbidity (acute nonserious illnesses for ages 2-3). BW group < 2001 g averaged a 6.6-point IQ advantage. BW group 2001 - 2500 g scored average of 13.2 IQ points higher than controls. The intervention group performed significantly better than the controls and the degree of participation was positively related to cognitive development. The study findings linked intensity of intervention services with degree of positive cognitive outcomes for high risk infants.
Research Institute on Early Childhood Growth and Development Measures (funded by OSEP)		Reasons for study: 1) increasing demands for accountability; and 2) a lack of conceptual linkages between early childhood assessments and later competencies. Purposes/intent: • To identify and validate a set of growth/development indicators to describe the developmental progress of children with or at-risk of disabilities, 0-8, and their families • Use this to measure progress and identify procedures with positive impacts	They anticipate developing a national set of developmental outcomes for children at ages 3, 5, & 8 in cognitive, communication, social/emotional, adaptive, and motor domains.	In progress; in very preliminary stages of study development.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
Shonkoff, J.P., and Hauser-Cram, P. (1987). Early Intervention for Disabled Infants and Their Families: A Quantitative Analysis. *Pediatrics, 80*	31 studies on the impact of early intervention services for biologically vulnerable children younger than 3, with no major threats to validity from history, maturation, testing, instrumentation, statistical regression, selection bias, and mortality. Studies were experimental (either random assignment or matched pair designs) or pre-/postadjusted comparisons.	Used meta-analysis to examine effect sizes.	There were few dependent measures involving parents, so only child outcomes were considered. Most effects fell into 3 groups: IQ or developmental quotient; motor skill, and language development.	Results point to moderate positive effects. On average, the best available studies demonstrate a 0.62 SD superiority in performance for children receiving services compared to a contrast or control group. Of the three main measures examined, language ability was the least frequently assessed but associated with the highest mean effect, and motor tests associated with the lowest mean effect. Programs that focused on “mildly” impaired children demonstrated significantly highly outcomes when the children were enrolled before 6 mo. Results suggest that the most effective programs are those that work with parents and children together and are equipped to serve children with a variety of disabilities using a structured approach. Considerations for future research include lack of data on differential program impacts depending on diverse child/family characteristics, disproportionate reliance on IQ measures, and absence of family-oriented dependent variables.
Shonkoff, J.P., Hauser-Cram, P., Krauss, M.W., and Upshur, C.C. (1992). Development of Infants with Disabilities and their Families: Implications for Theory and Service Delivery. Monographs of the Society for Research in Child Development:	Analysis of 190 children: • 54 with Down syndrome • 77 with motor impairment • 59 with developmental delays of uncertain etiology (mean age at entry: 10.6 months) Also conducted analysis of the following subgroups:	The Early Intervention Collaborative Study (EICS) was a longitudinal study conducted in association with 29 community-based EI programs in Massachusetts and New Hampshire, between November 1985 and December 1987.	**Dependent variables:** 1) *Child competence* mental age equivalence spontaneous play adaptive behavior 2) *Mother-child interaction* mother contribution child contribution	**Effects of EI services on child and family outcomes:** 1) Intensity of service provision (avg number of hours received each month) correlated significantly with the severity of psychomotor impairment. 2) Mothers whose families averaged more hours per month of home visits reported significant decreases in several aspects of parenting stress.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
erial No. 230 Vol. 57 No. 6	1) Children with seizure disorders 2) Families reporting atypically high stress 3) Mothers with a high school education or less 4) Families where mothers had large gains in interactive skills	**Purpose:** 1) To assess the correlates of adaptation in young children with disabilities and their families over time 2) To inform social policy by analyzing the influences of family ecology and formal services on child and family outcomes 3) To generate conceptual models to guide further investigation **Study design:** non-experimental, pre-vs. post-intervention analysis; post period was one year after entry into early intervention program **Data collection:** Data were collected during two home visits (within 6 weeks of program entry and 1 year later) and included formal child assessments, observations of mother-child interaction, maternal interviews, and questionnaires completed independently by both parents as well as monthly service data collected from service providers. **Statistical methods:** Employed residual change scores (difference between post-test score and the score that would be predicted by a regression line derived from the pre-test score) in order to single out those who have changed more or less than expected, rather than absolute change (since those with initial low scores tend to change more than those with high initial scores).	3) *Social support* network size helpfulness 4) *Family adaptation* parenting stress effects on family **Independent variables:** 1) *child demographic and health characteristics* (age, type of disability, severity of psychomotor impairment, gender, pre-maturity status, presence of cardiac problem or seizure disorder) 2) *family demographic characteristics* (i.e. maternal education, marital status, employment, and health status) **Mediating variables:** child temperament, family ecology, early intervention services (staffing structure, service intensity, location, and format), and other services **Instruments used:** Bayley Scales of Infant Development, EICS Play Scale, Vineland Adaptive Behavior Scales, Nursing Child Assessment Teaching Scale, Parenting Stress Index, EICS Parent Support Scale, Impact-on-Family Scale, Home Observation for Measurement of the Environment (HOME), Family Adaptability and Cohesion Evaluation Scales (FACES II), Monthly Service Records.	3) Families whose social support networks showed the greatest increase in size and were perceived as more helpful were those families with children who made less developmental progress. 4) Families who received most of their services through a single provider showed significant decreases in parenting stress. 5) Reduced parenting stress was associated with services delivered primarily through a single provider. 6) Greater gains in children's mental age were associated with individualized services. **Other findings:** • Type of disability is not useful in explaining differences in developmental patterns of change in either infants or their families • Average developmental change in mental age, adaptive behavior, and play was predicted best by the severity of the child's psychomotor impairment at the time of study entry, and was not correlated with family characteristics. • Parents who exhibited high levels of parenting stress were not significantly different in terms of their demographics or the developmental characteristics of their children than the rest of the sample • Overall, fathers exhibited greater levels of parenting stress than mothers

TUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
State Study, Connecticut: 1) Social Competence Research Project (funded by Early Education Program for Children with Disabilities branch of the U.S. Department of Education) 2) Study 2 (funded by OSEP) Occurred 1993-1996; example included in State Part H Evaluators' Consortium Synthesis Report.	Study 1: 37 children receiving early intervention services in 2 service patterns. No between group differences in family, age at referral, primary developmental need. Study 2: 68 children receiving services in inclusive community settings operated by the State Department of Mental Retardation.	Study 1 examined the effect of two early intervention settings (integrated community placements vs. segregated center-based programs) on social behavior and development of enrolled children. Data was collected at 6-month intervals beginning when children entered the study at 24 months of age until exit at 36 month. 42-month follow-up. Study 2 examined the differential effects of early intervention of children who receive early intervention in day care programs. The sample was demographically diverse. Children were functioning at half their expected developmental age on average. IFSPs included an average of 4 outcomes, mainly child related. All children received specialized instruction in the classroom.	Outcomes include child status (developmental and social competency indices), family status (measures of social support, community resources use, attitudes), service characteristics (intervention setting, staffing qualifications and patterns, service type and intensity).	Study 1: • In inclusive classrooms, more children w/disabilities were being served, more time/wk was spent by the children in the classroom, and instructors had higher levels of education. No difference found in number of staff in classrooms. • Children in segregated setting received more nursing, speech, PT and OT, while those in inclusive setting received higher intensity of specialized instruction. • No differences were found on IFSP outcomes or focus of outcomes. • At 36 months, no evidence was found for an effect of setting on development. Study 2: • The average number of children per day care classroom was 9.13, with an average of 3.42 adults. Average length/day: approx 3 hrs. Most frequently occurring activity was free play (43% of observations). • Greater developmental delay was related to earlier age of referral and higher family income was related to earlier referral. Children with greater developmental delay and children with a greater family income also received more services.
State Study, Michigan: Early On Evaluation Project. Funded by lead agency, example included in State Part H Evaluators' Consortium Synthesis Report.	Large-scale sampling of those involved in the state early intervention program.	Evaluates the state early intervention program using state tracking data, program coordinator surveys, family surveys, interviews and surveys with administrators & service coordinators, site summaries, vignettes of family experiences. The local implementation survey has	Include: • Improved availability of and access to services by families and their service coordinators • Improvements in the service delivery process (specifically, increases in the dimensions of family centeredness, family satisfaction, and family perceptions of impacts)	Ongoing. Now have 3 years of data. Data show clear significant relationships which back the model: high implementation→ stronger perception that staff is family centered→ stronger family perception of support and empowerment→ perception of decreasing stress→ increased empowerment.

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
		been distributed annually to all local Part H coordinators and their agency counterparts. Family survey has been administered annually for the past 3 years to 600 families. This year, long or short versions will go to all families in the state (approx. 3500).	• Increases in the support families receive from both formal and informal sources • Increases in area of family functioning, including empowerment and coping Influence of family and child characteristics upon the above-mentioned outcomes	
State Study, New Jersey: New Jersey Early Intervention System Study. Barnett, W.S., and Frede,E.C., in progress, example included in State Part H Evaluators' Consortium Synthesis Report.	Two samples: 1) One-time, cross-sectional random sample of 220 families stratified by county who had received services for at least 12 months 2) A longitudinal random sample of 350 families stratified by county who had just qualified for services. Baseline assessments, follow-up interviews every 6 mo and at exit (age 3). Continuing.	Designed to obtain and analyze data on the cost, quality, and outcomes of EI in New Jersey. Major questions included: 1) What services are provided? 2) Who is served? 3) How much do services cost? 4) What is the quality of services? 5) How does quality relate to cost and outcomes for children and families?	*Sample #1* was interviewed about their costs, the services they were receiving, and perceptions of program quality and effects of services on their children and families. *Sample #2* Information on services was prepared from parents, program staff, records, and independent observation. Measures on child and family benefits are obtained from parent self-report and standard assessments, including child development and behavior, parenting stress, mother-child interaction, family characteristics. In future, hope to have data on preschool ed placements, evaluations for preschool special ed, and other info on child outcomes.	In progress.
Utah Early Intervention (Birth to 5) Project; Early Intervention Research Institute	150 Part H 155 Part B volunteers selected from 6 representative sites	Three year study. Questions include: • How have Parts H & B for children 0-5 and their families been implemented in accordance with federal & state policies? • What are the effects of EI services? • What are the overall costs of EI? 1996: One treatment verification, 1 parent survey 1997: up to 8 treatment verifications, 2 parent surveys 1998: like 1997, plus survey of	Design includes: • Parent interviews using 2 separate tools (*Vineland Adaptive Behavior Scale*—communication skills, daily living skills, motor skills, and socialization skills) (*Pediatric Evaluation of Disability Inventory*—self-care skills, mobility skills, and social functioning) • Parent/Teacher/Interventionist Questionnaire (*Social Skills Rating Scales*--social skills & school behavior) (*Treatment Verification Form*--quantity of services) • Family Questionnaires (Parents were paid $30 for completed questionnaires	In progress. Some preliminary results from the transition study include satisfaction of parents, providers, level of importance placed on process, programs transitioned into, site placement differences (no significant difference).

STUDY/ PROGRAM	STUDY GROUPS	DESCRIPTION	OUTCOME MEASURES	RESULTS
		transition out of Part H Also looked at program implementation issues such as service provision, effectiveness of LICCs,	– return rate was high): *Parenting Stress Index*—parental stress, in general and specific to the child; *Family Support Scale*--perceived support received by family; *Family Adaptability and Cohesion Evaluation Scale*—family's connectedness to each other and the ways the family deals with different family situations; *Early Coping Inventory*--parent perceptions re the way their child reacts to different events; *Life Events Inventory*—inventories life events that may have occurred during the past year; *Demographic Form; Child Health Form; Family Focused Intervention Scale*—asks about services being received from the school district/early intervention provider, satisfaction with these services, and how important the services are considered to be; *Additional Services Form*--describes services families and children receive outside of primary service program. • Direct Child Assessments (*Batelle Developmental Inventory*--direct measure of cognitive skills) • Regional program costs determined	

THEORETICAL VIEWPOINTS

AUTHOR	THEORY-RECOMMENDATIONS
Barnett, W.S., and Escobar, C.M. (1990). Economic Costs and Benefits of Early Intervention. In S.J. Meisels and J.P. Shonkoff (Eds.), *Handbook of Early Intervention* (pp. 560-582). New York: Cambridge University Press.	Discusses considerations in taking a cost-benefit approach. Examples of cost-benefit analyses presented include the Perry Preschool Project, the addition of INREAL (a language intervention program) to preschool and kindergarten programs, the Yale Family Support Project, and pooled analyses by the Consortium for Longitudinal Studies. Outcomes for these projects included measures of IQ, school attendance, grade retention, special education placement, level of education, earnings, reduced welfare costs, and crime/delinquency. Some cost benefits have been projected over a lifetime. Evidence is strong that early intervention with disadvantaged children increases school success, thereby reducing the costs of schooling. In addition, research links educational success to key variables for economic benefits: earnings and employment, criminal activity, childbearing, and health. The author notes that there is a substantial basis for concluding that EI can produce immediate benefits for biologically impaired children, and that these are of the same order of magnitude as initial benefits for disadvantaged children. This leaves the possibility of similar long-term benefits for biologically impaired children. Benefits for disadvantaged children and their parents were found in the areas of child care, educational costs, employment and earnings, crime and delinquency, and welfare. Benefits to biologically impaired children and their families seem possible in all these areas, other than crime and delinquency, which the author assumes to be negligible for persons with more severe handicaps. Benefits to parents would likely differ. Modest decreases in the intensity of required special education might generate significant cost savings, and increases in cognitive and social abilities, and especially daily living skills, might generate significant benefits to families of handicapped persons and generally reduce costs to society to the extent that the ability for independent living is increased.
Blair C. and Ramey C.T. (1997). Early Intervention for Low-Birth-Weight Infants and the Path to Second-Generation Research.. In M.J. Guralnick (Ed.),	The authors examine randomized controlled trials of early intervention for low birthweight infants conducted since 1986 by focusing on second-generation research issues related to general program factors that determine effectiveness of the intervention and issues related to child and family characteristics that may mediate or moderate the early preventive intervention. Underlying program factors of effective intervention appear to be: intensity, timing, direct versus intermediary provision of services, environmental maintenance of gains, comprehensiveness, and attention

AUTHOR	THEORY-RECOMMENDATIONS
The Effectiveness of Early Intervention. Baltimore: Paul H.Brookes Publishing Co, pp. 77 - 97.	to individual differences in program delivery. Child factors such as responsitivity to early intervention as a function of the infant's birthweight, temperamental, motivational and attentional differences are considered as well as family characteristics such as maternal attitudes, maternal education and social support. Suggested outcomes needing systematic attention include: • Participation in intervention routines • Knowledge gained through intervention • Maternal responsiveness • Parent-child interaction In summary, since 1986 the effectiveness of early intervention for low birthweight infants has been reliably observed in a number of methodologically sound studies. Study results indicate that early intervention attenuates the decline in IQ that typically occurs in low birthweight infants in contrast to normal birthweight infants over the first few years of life. Intervention group IQ appears stable or declines slightly over time. Control group infants show a more precipitous decline over the first years of life. Research findings concerning determinants of effectiveness for low birthweight infants indicate that comprehensive, intensive interventions that begin early are most likely to be effective and that maternal education level and birthweight act as moderating influences on effectiveness. Recommendations are made for parent-focused services (to create an environment in which intervention gains can be maintained) combined with a child-focused educational child care program. Suggested investigational areas include: parent-focused interventions for children with birthweight <1,500g and NICU stimulation.
Guralnick, M..J. (1997). Second-Generation Research in the Field of Early	There appears to be a general consensus that the broad principles guiding successful early intervention programs include programs that center on the needs of families, are based in local communities, are able to thoroughly and efficiently integrate the contributions of multiple disciplines, and have the capacity to plan and coordinate supports and services from numerous agencies within a systems framework.

AUTHOR	THEORY-RECOMMENDATIONS
Intervention. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention*. Baltimore: Paul H. Brookes Publishing Co, pp. 3- 20.	A conceptual model of development is presented that represents a linkage between factors influencing early childhood development and the components of early intervention programs. Underlying this linkage is the conceptualization of risk and disability status as stressors capable of adversely affecting family interaction patterns that govern the developmental outcomes of children. The three proximal family patterns of interaction that have well-established associations with a child's developmental outcome are: • Quality of parent-child transactions • Family-orchestrated child experiences • Health and safety provided by family Family characteristics or contextual factors which affect these family patterns of interaction include: • Personal characteristics of parents (e.g., degree of depression, level of education, intergenerational parenting experiences including cultural expectations) • Characteristics not related to child's disability or biological risk status (e.g., social support, marital relationship, financial resources, child temperament) In addition to the potential of family characteristics acting as stressors to optimal family patterns, there are four categories of potential stressors for families created by child disability or biological risk: • Information needs • Interpersonal and family distress • Resource needs • Confidence threats Different approaches to early intervention are called for depending on the origin and nature of stressors and to be effective, services must be responsive to family-identified needs. Components for a coordinated early intervention program where needs have been identified in all four categories of potential stressors created by children with established disabilities or those at biological risk include: resource supports, social supports, and information and services. It was pointed out that various early intervention program features will be differentially effective for children with different types of disabilities.

AUTHOR	THEORY-RECOMMENDATIONS
	Program components for families at high risk may require intensification of the formal aspects of early intervention programs associated with the information and services component including extensive home visits regarding child care to facilitate the quality of parent-child transactions, enrollment in high-quality, highly intensive, intervention-oriented child care or preschool programs to provide needed experience not found in the home, and establishment of close connections with local public health centers to ensure health and safety. In the review of the effectiveness of early intervention programs for children with developmental disabilities and biological risk, while acknowledging methodological problems with first generation research studies, support for the generally held opinion that early intervention programs are effective was noted with effect sizes averaging between one-half and three-quarters of a standard deviation. In discussing directions for second-generation research, the identification of those specific program features that are associated with optimal outcomes for children and families was noted as an important task. The model presented in this chapter linking factors that affect early childhood development and the components of early intervention is suggested as a framework for organizing second-generation research questions. Important factors to examine in looking at interaction patterns between program features and child and family characteristics include severity of the child's disability or risk status, severity of family risk, and the type of child-related disability or risk. The expansion of outcome measures from the primary domains of cognitive, language, affective, and motor development to outcome measures that reflect a broader perspective of the goals of early intervention such as the integrative domains of children's social competence or improvement of children's health status is recommended. In summary a multidimensional model is presented noting the three primary elements that should be considered by second-generation researchers: the influence of program features, the influence of child and family characteristics, and the specific outcomes or goals of early intervention.

AUTHOR	THEORY-RECOMMENDATIONS
Guralnick, M.J. and Bricker, D. (1987). The Effectiveness of Early Intervention for Children with Cognitive and General Developmental Delays. In M.J. Guralnick and F.C. Bennett (Eds.), *The Effectiveness of Early Intervention For At-Risk and Handicapped Children.* New York: Academic Press, pp. 115-173.	In relation to outcome measures, the authors recommend expansion of measurement systems beyond primarily cognitive measures to the potentially important following outcomes of early intervention: • Social competence • Motivation • Family functioning Problem-solving skills
Guralnick, M.J. and Neville, B. (1997). Designing Early Intervention Programs to Promote Children's Social Competence. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention.* Baltimore: Paul H. Brookes Publishing Co, pp. 579 - 610.	The domain of social competence, a central organizing construct in the study of human development, is recommended as an important outcome of early intervention. Social competence is seen as a central mechanism fostering the goal of independence, which has been a long established priority. Research in the general population has documented intricate linkages that exist between family and peer relationships. Four aspects of family influence that appear to have strong associations with children's peer-related social competence include: • Early caregiver-child relationships • Parent-child interactions • Child's peer social network • Parental attitudes and beliefs regarding peer relationships. Social support appears to be an important factor in fostering development. This includes both informal sources of support by family members and friends and formal sources of support provided by professionals and agencies; e.g., informational support. Social support is related to peer-related social competence. It appears to be particularly valuable in buffering difficult circumstances such as those associated with a child's characteristics (children with difficult temperaments). Social support has both direct and indirect

64

65

AUTHOR	THEORY-RECOMMENDATIONS
	linkages to children's peer-related social competence. The nature of this influence is presumed to occur primarily through indirect effects, such as through facilitating secure attachments, helping to establish positive maternal perceptions or cognitions or reducing intrusive parenting styles. It is noted that children at biological risk, especially premature, low birthweight children and those with established disabilities have unusual difficulties in peer-related social competence. Risk factors to the development of a child's social competence include difficult child characteristics paired with the absence of adequate social supports. Preterm, low birthweight infants without intervention show a gradual decline over the first three years of life. This can be avoided with family-centered interventions, which result in increased cognitive competence and social competence. Intervention strategies are suggested including 10 principles or practices that are related to the social competence framework. One of these principles recommends emphasizing parent-child social and emotional relationships rather than parent-child instructional or didactic types of relationships.
Harris, S. R. (1997). The Effectiveness of Early Intervention for Children with Cerebral Palsy and Related Motor Disabilities. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 327-348). Baltimore: Paul H. Brookes Publishing Co.	The existing body of research offers little, if any, support for treatment goals that are aimed at "normalizing" muscle tone or enhancing the "quality" of movement. The current trend is to examine outcomes that are more functional in nature, aimed at minimizing the child's disability, rather than try to change underlying impairments. Functional skills: • Are immediately useful • Enable a child to be more independent • Allow a child to learn more complex skills • Allow a child to live in a less restrictive environment • Enable a child to be cared for more easily by the family and others. The emerging emphasis is on using outcome measures that are both evaluative (used to assess the amount of change over time or as a direct result of intervention) and responsive to change.

AUTHOR	THEORY-RECOMMENDATIONS
	Critics have commented that there has been a mismatch between the goals of intervention and the tools used to measure the effects of intervention. Studies have relied on discriminative tests of motor milestones or specific measures of impairment, such as range of motion, muscle strength, or muscle tone. Future research must include outcomes that are functional, clinically relevant, and responsive to change, and should evaluate the effects of intervention on the child's caregivers. Research should continue to examine the relative effects of different programs and service models.
Hauser-Cram, P., and Shonkoff, J.P. (1988). Rethinking the Assessment of Child-Focused Outcomes. *Evaluating Family Programs* (pp. 73-94). New York: Aldine de Gruyter.	Describes commonly used normed assessment scales/instruments : • Bayley Scales of Infant Development are the best standardized, most frequently used. However, cognitive assessments are still heavily dependent on motor skills. • IQ and achievement tests are reflective of personality variables and motivation in a test situation. They are narrow in focus, while programs typically aim to change behavior in many domains (as 1 of several outcome measures, they can be useful—as the only measure of program effectiveness, they may be inappropriate and misleading). Recommends both short- and long-term outcomes. Short: usually specific skill areas such as motor skills, language performance, cognitive ability. Persistent long-term outcomes may include sustained improvement in self-esteem and task motivation, less special education, better high school completion, avoidance of delinquency, successful employment in adult life. New domains to consider: *Social competence*: school-related includes rates of absenteeism, completion of homework, teacher & student ratings of classroom behavior, attitudes toward school, aspirations for the future; describes instruments/scales which measure social competence/ peer interactions; *Self-regulatory behaviors:* attention (measured by Parent or teacher checklists, direct observation measures, vigilance tasks—instrument examples); motivation and curiosity.
Hauser-Cram, Penny. (1990). Designing meaningful evaluations of early intervention services. In S.J. Meisels and J.P. Shonkoff (Eds.), *Handbook of Early Intervention* (pp. 583-	*Program:* • While there may be a need for broad-based findings in evaluation, programs may differ substantially from one another. Suitable and efficient ways of documenting such variation need to be found. • Consider services actually implemented. Services planned for a child and family are often quite different from those received. Aspects of implementation which require attention include: 1) whether there has been sufficient quantity of service for an impact; 2) how the program produces its results; and 3) measurable specification and identification of services.

AUTHOR	THEORY-RECOMMENDATIONS

602). New York: Cambridge University Press.	*Success:*
	• Most evaluations have defined success as child cognitive gain. Yet conventional measures of IQ and DQ for infants and toddlers have poor predictive validity. Criticism of these measures includes:
	    • Inability to distinguish between normal and disabled children within the youngest age groups
	    • Steep gradient of certain tests, such that small differences yield large score changes
	    • Lack of an appropriate (disabled) reference population
	    • Heavy dependence on motor and perceptual-motor skills, hence misleading results for children with motor impairments
	    • Global nature—often insensitive to types of specific changes in development (target changes may be obscured by lack of changes in other areas, such as motor skills)
	• EI programs seek to affect a broad range of developmental domains, such as functional skills, social competence, self-regulatory behaviors, motivation, and curiosity. An array of child outcomes is often required to understand program effects. New instruments have been reported which are directed at domains for which there are no standardized measures. Triangulation of measurement can diminish risk involved in using instruments which may lack sufficient documentation of psychometric properties and standardization for atypical populations.
	• Consider both short- and long-term effects, such as later school adjustment, peer interaction, amount and type of additional services, placement in an integrated or segregated setting, parental advocacy, and parent-school relationships.
	• EI programs serve a wide range of children and families. Consider subgroup classifications. Past evaluations have generally been based on diagnostic groups. Other recommendations have included focusing on differences in functional status, and by severity of disability rather than by type of disability.
	• In most programs, parents are also participants. Selection of outcome measures of family impact should be guided by program model. Model examples include the parent therapy model (assisted through counseling or support groups to help resolve stress related to raising a child with disabilities), the parent training model (emphasizes role of parent behavior in teaching skill to a child), and the parent-child interaction model (assisting the parent in learning to read the child's cues and in being sensitive to the child's needs). These models rely on the ecological view of child and family and on the transactional nature of development.
	• More precise and accurate findings can be generated if data are analyzed in terms of subgroups of families. Strategies include demographic grouping (income or educational attainment), grouping by differences along a dimension thought to be theoretically important (such as extent and satisfaction with

AUTHOR	THEORY-RECOMMENDATIONS
	• a support network), and cluster analysis on a number of theoretically important variables. Such differences may help explain how families differ in their response to EI. *Research Design* A number of issues complicate attempts at true experimental design. The author discusses 4 quasi-experimental designs: • The untreated control group design utilizes pre- and post-test comparisons (example is for a parent component when there is limited staff and a waiting list). Threats to validity include regression to the mean and selection-maturation. • Cohort design gathers data from one cohort, adds a component, and gathers comparison data from the next cohort. History is a major threat to validity. • A nonequivalent dependent variables design involves one group, with comparisons of change on different outcome measures. A difficulty in this design is in the determination of one set of outcomes assumed to be affected and another assumed not to be affected by EI. • Planned variation design analyzes groups that receive different levels of service. Ideally, assignment is random. Each design (including randomized study) has potential weaknesses. These should be anticipated and evidence collected to counter alternative explanations for findings. Problems of *Statistical Power* are common. Samples of at least 70 subjects per group are needed to detect differences on ½ standard deviation 90% of the time, but few EI studies have such large samples. This may require summative evaluations across programs. *Measuring Change* A great dilemma in EI evaluation is how to measure the effects of services in the absence of randomized or rigorously selected control groups. Approaches—each with pros and cons—have included: • Norm-referenced models (see discussion above) • Indexes of change look at the rate of developmental gain over time, and may compare these to the rate of development before EI. However, these are only useful with standard measures of developmental age, and are based on the assumption (without supporting empirical evidence) that the ratio of developmental age to chronological age would be stable in the absence of intervention.

AUTHOR	THEORY-RECOMMENDATIONS
	• Difference, or gain, scores are the difference between pre-and post-test scores. These scores are criticized for lack of reliability. Current standard approach has moved to the use of residual change scores, in which a regression equation is developed that describes the relation between posttest scores and pretest scores for the entire sample. Then individual scores are calculated representing the difference ("residual") between the actual posttest score and the score that would be predicted by inserting pretest score into the regression equation. The relationship between aspects of early intervention and size of residuals is analyzed. Some specific limitations: 1) tells little about how an individual actually changes; and 2) relies heavily on group data and large samples and is relatively insensitive to the individualized nature of services provided in most EI programs. • Goal attainment scaling (GAS) offers a quantitative measure of progress toward goals, which can be standardized. Shortcomings: 1) the question of the validity of the goals; and 2) the meaning of the program level outcome measure (mean goal attainment) is obscure. • Although not yet applied to EI evaluations, growth modeling highlights different rates of growth of different individuals. This allows examination of whether differences in change are a function of characteristics of child, family, or services. It does not require a linear model of development. • Structural equation modeling (SEM, sometimes referred to as path analysis) involves the development of a series of hierarchical regression equations to test predicted relations in a model of hypothesized relationships. Limitations include the large number of cases required (the more variables specified, the larger the sample size required), the contention that confirmation of a model does not imply proof of the model's validity, and the concern that SEM will replace the theoretical development of models.
Krauss, M.W. (1997). Two Generations of Family Research in Early Intervention. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention*. Baltimore: Paul H. Brookes Publishing Co, pp. 611 - 624.	The mandates of the Education of the Handicapped Act Amendments of 1986 (PL 99-457) redirected the focus of service planning in early intervention programs from a child-oriented model to a family-oriented model. It is now assumed that the best way to ensure positive effects on families is to have the individual families drive the service system according to their unique goals and needs. There has been a corresponding shift in the basic questions that underlie investigations of the impact of early intervention programs on families to: • The supportive role of early intervention programs for families • The mechanisms by which family goals and strengths are articulated for program planning purposes • The provision of culturally responsive services to an increasingly diverse population of service recipients

AUTHOR	THEORY-RECOMMENDATIONS
	First generation research on family effects was focused on identifying how families function, the effect of early intervention services on different aspects of parental or family functioning, and determination of factors that are sources of variability. In relation to future research, one important direction noted is understanding the complex interactions regarding family goals and outcomes in relation to family (e.g., need for support) and child (e.g., severity of disability) characteristics and program features. New directions of research point to second generation questions of how and how well early intervention programs promote positive family functioning and enhanced child development.
Lee Snyder-McLean. (1987). Reporting Norm-Referenced Program Evaluation Data: Some Considerations. *Journal of the Division for Early Childhood, 11*(3), 254-264.	Instruments that yield IQ scores are among the most widely used. Most tests of this type result in a developmental age (DA) and a developmental quotient (DQ) for each domain tested as well as for overall performance. DQ is the ratio of current DA to current chronological age (CA). **Pretest/Posttest** comparison of DA does not factor out or control for the effects of maturation and increasing CA. Attempts to address this include: *DQ comparisons* assume that the child's preintervention rate of development is a stable and characteristic learning rate for the child. Because DQ is calculated on the basis of a child's current, cumulative DA and CA, it tends to minimize intervention effects. The older the child prior to intervention, the less sensitive DQ will be to relative changes in the developmental status. It is not uncommon to find that statistical analyses conducted on DQ change scores yield nonsignificant results, even when the actual gains by children seem educationally significant. *Comparisons of predicted change to actual change* use preintervention DQ to predict the developmental gains that might be expected without intervention. The assumption that entry DQ represents a valid and stable rate of development is problematic, as development patterns are more typically represented as a series of peaks and plateaus. *Efficiency and change indices:* • Efficiency index (EI) is calculated by dividing the child's actual gain by an "ideal gain" (1 month per chronological month), then dividing by child's pretest DQ, which in turn has been divided by 100. This gives a large score which allows comparison across children of different ages and developmental levels. • Proportional change index (PCI) divides developmental gain by time in intervention, which is then divided by pretest DQ (i.e. DA/CA). Hence, differs from EI only by decimal point.

AUTHOR	THEORY-RECOMMENDATIONS
	• Intervention efficiency index (IEI) is calculated by dividing developmental gain by amount of time between pre- and posttest. This has been criticized for not factoring in pretest DA or DQ. The author recommends for consideration the concept of "**Intervention DQ**" (IEI with a clearer name), calculated by dividing the months (or weeks) of measured change in child's DA between pre- and post-testing by the number of months (or weeks) that lapsed between pre- and post-test. This reflects the child's rate of development during intervention, which can be compared to the preintervention DQ.
Marfo, K., and Dinero, T.E. (1991). Assessing Early Intervention Outcomes: Beyond Program Variables. *International Journal of Disability, Development and Education, 38*(3), 289-303.	Weaknesses/recommendations for future research include: • Clearer specification of intervention procedures, client characteristics • Address benefits beyond child cognitive developmental gain (i.e. benefits to parents & family; knowledge & skills pertaining to child's development.) • Assess outcomes in relation to specific inputs • Greater program and population specificity in outcome assessment • Address factors associated with differential intervention outcomes Tools to assess EI determinants without the need for control groups: • *Multiple regression* to discern both the main and interactive effects of different classes of independent variables on a given outcome variable • *Path analysis* uses regression procedures in the estimation of path coefficients as a procedure for studying a pattern of hypothesized causal relationships within a set of variables. Path analysis can "decompose" a relationship between 2 variables into the direct effects, the indirect effects, spurious effects, any parts unanalyzed by the researchers as a matter of choice (or neglect) and residual effects. Variable classes in a framework for assessing outcomes depend on EI definition and underlying assumptions. Presents an example for traditional EI conceptualization in which independent variables might include *program characteristics* intensity, duration, parent/family commitment, worker competence, match between program as intended and as implemented...), *child characteristics* (chronological age, developmental competence, nature & severity of disability...), *family demography* (SES, parent age and ed level...), *family ecology* (quality of home environment, parental expectations, family resources, quality of parent-child interaction...), and *non-program auxiliary services* (variety, frequency...). Outcome variables might include

AUTHOR	THEORY-RECOMMENDATIONS
	child outcomes (improvement in developmental competence in targeted domains, changes in interactional skills, e.g., increased responsiveness, behavior engagement [time interacting in developmentally appropriate fashion]...) and *parent/family outcomes* (parental satisfaction with the program, parental interactional style, parental coping strategies, family well-being...)
McLean, L.K. and Cripe, J.W. (1997). The Effectiveness of Early Intervention for Children with Communication Disorders. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 271-306). Baltimore: Paul H. Brookes Publishing Co.	Early intervention for a broad spectrum of communication disorders affecting young children can be very effective in eliminating those disorders or at least mitigating their impact on a child's later speech and language development. Measures used in most of the studies reviewed were direct measures of the target communication ability or disorder (e.g., mean length of utterance, % syllables stuttered...). Many also reported pre- and post-treatment scores on one or more standardized, norm-referenced measures of communication development (such as *Sequenced Inventory of Communication Development* (Hedrick et al., 1975), *Communication and Symbolic Behavior Scales* (Wetherby & Prizant, 1990), and *Peabody Picture Vocabulary Test—Revised* (Dunn & Dunn, 1981)). Some included measures of general development or cognitive functioning (such as *Bayley Scales of Infant Development* (Bayley, 1993), and *Leiter International Performance Scale* (Leiter & Arthur, 1950)). The authors encourage use of social validity measures of communication functioning with peers and family members, evidence for cost-effectiveness in terms of ultimate impact on child's later school success and support needs, further comparison studies and second-generation research (clear that no single intervention approach is most effective for all young children with communication disorders), specification of child and program variables associated with differential outcomes for different treatment approaches. Specific topics for future research include: • Optimal timing for EI • Maximum cost-efficiency • Length & frequency of treatment • When is a cycles approach more efficient than a treatment-to-criterion approach • When is effectiveness better for group or 1-to-1 or home-based models • Integrated vs. special classes

AUTHOR	THEORY-RECOMMENDATIONS
Pakula, A.L. and Palmer, F.B. (1997). Early Intervention for Children at Risk for Neuromotor Problems. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 271-306). Baltimore: Paul H. Brookes Publishing Co.	Conclusive data on effectiveness of either broad-based or focused interventions for children "at-risk" for neuromotor disabilities and criteria for determining whether a specific service model will meet the individual needs of a specific child or family are not available. Recommends outcomes that are clinically and ecologically relevant, and which measure changes that are likely to be significant in the child and family's natural setting. In addition to IQ/DQ, should emphasize play skills, parent-infant interactions, family stress, infant adaptive skills, and the family's functional capacity to adapt to their child. Outcomes must be assessed in both the short- and long-term. Acknowledges the difficulty of compliance with treatment or diluting of control or contrast groups, but warns that small studies with inadequate sample size to detect the desired changes or inadequate control of confounding variables are likely to be misleading.
Roberts, R.N., Innocenti, M.S., and Goetze,L.D. (1997) By What Outcomes Should Part H be Evaluated at the State Level? Proceedings of the Part H Evaluators' Consortium. EIRI.	The authors note that most of the currently funded evaluations use a mixed methodology that include interviews, questionnaires, and record reviews. Direct assessment techniques are more expensive. Common measurement concerns include the reliability of reports from provider and parent, inadequacy of most state data bases for research purposes, and selectivity of administration of measures when control is in the hands of the community (i.e. surveys those who are favorably predisposed). One question of interest is whether eligibility requirements across agencies act to facilitate or limit services families can access. Describes state evaluations for: CA, CO, CT, FL, HA, MI, NJ, NC, PA, UT Discusses system & community measures: ***Family***: choice, control (satisfaction concern: research shows families report high satisfaction regardless of types of services), improved quality of life (child care access, parents able to resume work, able to participate in community activities, able to engage in life activities that support better mental health, child's needs more manageable for family--- can relate to improved adaptive behaviors, increases in medical outcomes, increases in appropriate social behaviors…) ***Child***: consensus that outcomes need to be measured not broadly but more specifically, in areas where one

AUTHOR	THEORY-RECOMMENDATIONS
	can reasonably expect Part H services to make a difference. *Additional outcomes*: child engagement with the environment, child persistence, child temperament, positive changes in parent/child interactions (a possible though problematic outcome), improved quality of life (risk status for abuse, more positive home environment), health and medical outcomes (improved health, appropriate immunizations, appropriate medical care for disability-specific concerns, appropriate well child care, evidence of a medical home).
Shonkoff, J.P. (1993). Developmental Vulnerability: New Challenges for Research and Service Delivery. In N.J. Anastasiow & S. Harel, (Eds.), *At-Risk Infants: Interventions, Families, and Research* (pp. 47-54). Baltimore: Paul H. Brooks Publishing Co.	Recommends that research: • Seek empirical verification of the transactional/ecological models that influence EI decision-making • Address a broader and richer outcome variable domain • Identify sources of resilience and protective factors (rather than just predictors of poor outcomes) • Explore differences among subgroups • Pursue longitudinal assessments of the influence of early experiences on the emerging competence of young children and on the ongoing adaptation of their families Discusses the Early Intervention Collaborative Study (described elsewhere in table) and draws three generalizations: 1. The receipt of early intervention services implies a multidimensional experience. 2. The determinants of change in children and families are multivariate and complex. 3. Subgroups of children and families within an early intervention system demonstrate differential vulnerability and resilience.
Shonkoff, J.P., Hauser-Cram, P., Krauss, M.W., and Upshur, C. (1988). Early Intervention Efficacy Research: What Have We Learned and Where Do We Go From Here? *Topics in Early Childhood Special Education, 8*(1), 81-93.	Shortcomings of many past studies include methodological flaws, linear models, reliance on child-related cognitive outcomes only, inadequate specification of independent variables, lack of blind data collection, and failure to minimize threats to validity from such effects as history, testing, and maturation. Recommendations include exploring influences within the ecology of child and family life, greater specificity in the definition of independent variables, delineation of child and family characteristics (such as diagnosis differences, severity of disability, age at entry, health status, temperament, behavioral characteristics, preintervention differences in sociodemographic characteristics, parental locus of control, resources within the family, external social supports, and parental health) which can facilitate or inhibit program effectiveness, defining service variables and types of services (intensity, duration, location, info about providers). Determine family effects by the goals and objectives of services being evaluated; variables may include parenting stress, family relationships, other social relationships, parent-child interaction, physical and emotional health of parents and siblings. Child impacts beyond cognitive might include exploratory

AUTHOR	THEORY-RECOMMENDATIONS
	behavior/motivation, social competence, interpersonal relationships with adults, preschool adjustment, and emerging peer interactions. Supports developing new measures and experimenting with new analytic strategies. Promotes deemphasis on significance of mean differences between groups and greater attention to subgroup analyses. Recommends exploring long-term impacts.
Spiker, D., and Hopmann, M.R. (1997). The Effectiveness of Early Intervention for Children with Down Syndrome. In M.J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 271-306). Baltimore: Paul H. Brookes Publishing Co.	Reviews show short-term benefits on developmental rates, especially fine motor and adaptive skills, and on overall DQ/IQ, with fewer and less consistent improvements in linguistic, cognitive, and gross motor skills. No strong evidence to support longevity of gains. Recommendations for future study foci include: • How prelinguistic communication is being addressed in EI programs • Differentiated questions considering family characteristics and child factors (e.g., hypotonia, cardiac problems), as well as program intensity and parent involvement • Positive family support • Comparisons of treatment models (and context such as inclusion, curricula, nature and extent of parent involvement, aptitude-treatment interaction effects)
The Accreditation Council on Services for People with Disabilities. (1995). Outcome Measures for Early Childhood Intervention Services. Towson, MD: The Accreditation Council.	The Council defines quality in terms of family and child outcomes rather than procedural compliance. Specifies values in the domains of choice, goals, rights, respect, health and safety, relationships, security, and satisfaction. In this context, recommends specific questions for family and staff, program documentation, and process issues related to the following outcomes: • Choice (families are informed, families choose services and supports) • Goals (families choose their goals, families choose child development goals, families attain their goals, children attain developmental milestones) • Rights (families exercise their rights, children are free from abuse and neglect)

AUTHOR	THEORY-RECOMMENDATIONS
	• Respect (families are respected, families decide when to share personal information) • Health and Safety (children have the best possible health, children are safe) • Relationships (families remain together, children spend time in inclusive environments, children develop relationships, families remain connected to natural supports, families are a part of their communities) • Security (families have economic resources, families experience continuity and security) • Satisfaction (families are satisfied with their services, families are satisfied with their life situations)

BIBLIOGRAPHY

Able-Boone, H., Sandall, S. R., *and* Fredrick, L. I. (1990). An Informed, Family-Centered Approach to Public Law 99-457: Parental Views. *Topics in Early Childhood Special Education, 10, No. 1*, 100-111.

Accreditation Council on Services for People with Disabilities. (1995). *Outcome Measures for Early Childhood Intervention Services.* Towson: The Accreditation Council on Services for People with Disabilities.

Achenbach, T. M., *and* Edelbrock, C. S. (1987). *Child behavior checklist.* Burlington: Author.

Agee, L. C., Innocenti, M. S., *and* Boyce, G. C. (1994). *I'm All Stressed Out: The Impact of Parenting on the Effectiveness of a Parent Involvement Program.* Logan: The Early Intervention Research Institute, Utah State University.

Ainsworth, M. D. S. (1973). The Development of Infant-mother Attachment. In B. M. Caldwell *and* H. Ricciutti (Eds.), *Review of Child Development Research* (pp. 1-94). Chicago: University of Chicago Press.

Alan Guttmacher Institute. (1993). Integral Role Played by Family Planning: Preconception and Prenatal Care Can Improve Birth Outcomes. *Issues in Brief*, 1-4.

Anastasiow, N. J. (1993). The Effects of Early Intervention. In N. J. Anastasiow *and* S. Harel (Eds.), *At-Risk Infants, Interventions, Families, and Research* (pp. 3-11). Baltimore: Paul H Brookes Publishing Company.

Andrews, H., Goldberg, D., Wellen, N., Pittman, B., *and* Struening, E. (1995). Prediction of Special Education Placement from Birth Certificate Data. *American Journal of Preventive Medicine, 11, No. 3*, 55-61.

Bagnato, Stephen J., Neisworth, John T., *and* Munson, Susan M. (1997). LINKing Assessment and Early Intervention. Baltimore: Paul H. Brookes Publishing Company.

Bailey, D., Hebbeler, K., Simeonsson, R., Spiker, D., *and* Wagner, M. (1998). Family Outcomes in Early Intervention: A Framework for Program Evaluation and Efficacy Research. *Exceptional Children, 64, No. 3*, 313-328.

Bailey, D., *and* Wolery, M. (Eds.). (1992). *Teaching Infants and Preschoolers with Disabilities.* New York: Macmillian Publishing Company.

Bailey, D. B., *and* Simeonsson, R. J. (1983). Design Issues in Family Impact Evaluation. In L. Bickman *and* D. L. Weatherford (Eds.), *Evaluating Early Intervention Programs for Severely Handicapped Children and Their Families* (pp. 209-230). Austin: Pro-Ed.

Bailey, E. J., *and* Bricker, D. (1985). Evaluation of a Three-Year Early Intervention Demonstration Project. *Topics in Early Childhood Special Education, 5, No. 2*, 52-65.

Bakeman, R., *and* Brown, J. V. (1980). Early Interaction: Consequences for Social and Mental Development at Three Years. *Child Development, 51*, 437-447.

Barnard, K. E. (1978). *Nursing Child Assessment Teaching Scale* (NCATS). WA: University of Washington School of Nursing.

Barnard K. E., Hammond, M., Booth, C., Bee H., Mitchell, S., *and* Spieker, S. (1989). Measurement and meaning of parent-child interaction. In F. Morrison, C. Lord *and* D. Keating (Eds.), *Applied developmental psychology,* 3. New York: Academic.

Barnard, K. E., *and* Kelly, J. F. (1990). Assessment of parent-child interaction. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 278-302). New York: Cambridge University Press.

Barnard, K. E. *and* Kelly J. F. (1990). *Nursing Child Assessment Teaching Scales* (NCATS) Assessment of parent-child interaction. In S. Meisels *and* J. Shonkoff (Eds.), *Handbook of early childhood intervention*. New York: Cambridge University Press.

Barnett, D. W., Macmamm, G. M., *and* Carey, K. T. (1992). Early Intervention and the Assessment of Developmental Skills: Challenges and Directions. *Topics in Early Childhood Special Education, 12, No. 1*, 21-44.

Barnett, W. S. *and* Escobar, C. (1987). The Economics of Early Educational Intervention: A Review. *Review of Educational Research, 57, No. 4*, 387-414.

Barnett, W. S. (1986). Methodological Issues in Economic Evaluation of Early Intervention Programs. *Early Childhood Research Quarterly, 1*, 249-268.

Barnett, W. S. (1988). Economic Analysis as a Tool for Early Intervention Research. *Journal of the Division for Early Childhood, 12, No. 4*, 376-383.

Barnett, W. S. (1995). Long-Term Effects of Early Childhood Programs on Cognitive and School Outcomes. *The Future of Children, 5, No. 3, Winter 1995.*

Barnett, W. S., *and* Escobar, C. (1988). The Economics of Early Intervention for Handicapped Children: What Do We Really Know? *Journal of the Division for Early Childhood, 12, No. 2*, 169-181.

Barnett, W. S., *and* Escobar, C. (1989). Research on the Cost Effectiveness of Early Educational Intervention: Implications for Research and Policy. *American Journal of Community Psychology, 17, No. 6*, 677-704.

Barnett, W. S., *and* Escobar, C. M. (1987). Economic costs and benefits of early intervention. In S. J. Meisels *and* J. P. Shonkoff (Eds.), *Handbook of Early Childhood Intervention* (pp. 560-582). New York: Cambridge University Press.

Barnett, W. S., *and* Pezzino, J. (1987). Cost-effectiveness Analysis for State and Local Decision Making: An Application to Half-day and Full-day Preschool Special Education Programs. *Journal of the Division for Early Childhood, 11, No. 2*, 171-179.

Bayley, N. (1993). *The scales of infant development* (Second edition). New York: Psychological Corp.

Barnett, D. W., Macmamm, G. M., *and* Carey, K. T. (1992). Early Intervention and the Assessment of Developmental Skills: Challenges and Directions. *Topics in Early Childhood Special Education, 12, No. 1*, 21-44.

Bee, H. L., Eyres, S. J., Gray, C. A., Barnard, K. E., Hammond, M. A., Spietz, A. L., Snyder, C., *and* Clark, B. (1982). Prediction of IQ and Language Skill from Perinatal Status, Child Performance, Family Characteristics, and Mother-Infant Interaction. *Child Development, 53*, 1134-1156.

Belsky, J. (1984). The Determinants of Parenting: A Process Model. *Child Development, 55*, 83-96.

Belsky, J., Hrncir, E., *and* Vondra, J. (1983). *Manual for the assessment of performance, competence, and executive capacity in infant play*. Unpublished Manuscript.

Belsky, J., Rovine, M., *and* Taylor, D. G. (1984). The Pennsylvania Infant and Family Developmental Project, III: The Origins of Individual Differences in Infant-Mother Attachment: Maternal and Infant Contributions. *Child Development, 55*, 718-728.

Benard, B. (1990). *The Case of Peers.* Portland: Western Regional Center for Drug-Free Schools and Communities.

Benard, B. (1991). *Fostering Resiliency in Kids: Protective Factors in the Family, School, and Community.* Portland: Western Center for Drug-Free Schools and Communities.

Benard, B. (1993). *Turning the Corner: From Risk to Resiliency.* A compilation of articles from the *Western Center News*. Portland: Western Regional Center for Drug-Free Schools and Communities.

Bennett, F. C., *and* Guralnick, M. J. (1991). Effectiveness of Developmental Intervention in the First Five Years of Life. *Pediatric Clinics of North America, 38, No. 6*, 1513-1528.

Berlin, L. J. (1998). *Opening the Black Box; What Makes Early Child and Family Development Programs Work?* Bulletin of Zero to Three, National Center for Clinical Infant Programs, *Feb/March 1998, 18, No. 4.* Arlington: Zero to Three, National Center for Infant Programs.

Berliner, B., *and* Benard, B. (1995). *More Than a Message of Hope: A District-Level Policymaker's Guide to Understanding Resiliency.* Washington DC: Office of Educational Research and Improvement.

Berrueta-Clement, J. R., Schweubgart, L. J., Barnett, W. S., Epstein, A. S., *and* Weikart, D. P. (Eds.). (1984). *Changed Lives: The Effects of the Perry Preschool Program on Youths Through Age 19*. Ypsilanti: High/Scope Press.

Bickman, L., *and* Weatherford, D. L. (Eds.). (1986). *Evaluating Early Intervention Programs for Severely Handicapped Children and Their Families*. Austin: Pro-Ed.

Billingsley, F. F., Gallucci, C., Peck, C., Schwartz, I. S., *and* Staub, D. (1996). But Those Kids Can't Even Do Math: An Alternative Conceptualization of Outcomes for Inclusive Education. *Special Education Leadership Review*, 1-13.

Blackman, J. A. (1991). Neonatal Intensive Care: Is It Worth It? *Pediatric Clinics of North America, 38, No. 6*, 1497-1511.

Blair, C., Ramey, C. T., *and* Hardin, J. M. (1995). Early Intervention for Low Birthweight, Premature Infants: Participation and Intellectual Development. *American Journal on Mental Retardation, 99, No. 5*, 542-554.

Boocock, S. S. (1995). Early Childhood Programs in Other Nations: Goals and Outcomes. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, pp. 94-114. Los Altos: The Center for the Future of Children.

Bowlby, F. (1969). *Attachment*. New York: Basic Books.

Boyce, G. (1993). The Effectiveness of Adding a Parent Involvement Component to an Existing Center-Based Program for Children with Disabilities and Their Families. In K. White *and* G. Boyce (Eds.), *Early Education and Development* (pp. 327-345).

Boyce, G. C., Smith, T. B., Immel, N., Casto, G. *and* Escobar, C. (1993). Early Intervention with Medically Fragile Infants: Investigating the Age-at-Start Question. In K. White *and* G. Boyce (Eds.), *Early Education and Development* (pp. 290-303).

Boyce, G. C., Behl, D., Mortensen, L., *and* Akers, J. (1991). Research Report-Child Characteristics, family demographics and family processes: Their Effects on the Stress Experienced by Families of Children with Disabilities. *Counseling Psychology Quarterly, 4, No. 4*, 274-288.

Bradley, R. H., Whiteside, L., Mundfrom, D. J., Casey, P. H., Kelleher, K. J., *and* Pope, S. K. (1994). Contribution of Early Intervention and Early Caregiving Experiences to Resilience in Low-Birthweight, Premature Children Living in Poverty. *Journal of Clinical Child Psychology, 23*, 425-434.

Breitmayer, B. J., *and* Ramey, C. T. (1986). Biological Nonoptimality an Quality of Postnatal Environment as Codeterminants of Intellectual Development. *Child Development, 57*, 1151-1165.

Bricker, D. (1996). Assessment for IFSP Development and Intervention Planning. In S. J. Meisels *and* E. Feniches (Eds.), *New Visions for the Developmental Assessment of Infants and Young Children* (First edition, pp. 162-192). Arlington: Zero to Three, National Center for Clinical Infant Programs.

Bricker, D. (Vol. 1), Cripe, J., Slentz, K. *and* Bricker, D. (Vol. 2), (1993). *Assessment, Evaluation, and Programming System for Infants and Children* (AEPS), 1, 2, Baltimore: Paul H. Brooks Publishing Co.

Bricker, D. D., Bailey, E., *and* Bruder, M. B. (1984). The Efficacy of Early Intervention and the Handicapped Infant: A Wise or Wasted Resource. *Advances in Developmental and Behavioral Pediatrics, 5*, 373-423.

Bricker, D. D., Bailey, E. J., *and* Slentz, K. (1990). Reliability, Validity and Utility of the Evaluation and Programming System: For Infants and Young Children (EPS-1). *Journal of Early Intervention, 14, No. 2*, 147-158.

Brinker, R. P., Seifer, R., *and* Sameroff, A. J. (1994). Relations Among Maternal Stress, Cognitive Development, and Early Intervention in Middle- and Low-SES Infants With Developmental Disabilities. *American Journal on Mental Retardation, 98, No. 4*, 463-480.

Britain, L. A., Holmes, G. E., *and* Hassanein, R. S. (1995). High-Risk Children Referred to an Early-Intervention Developmental Program. *Clinical Pediatrics, 34, No. 12*, 635-641.

Bromwich, R. (1983). *Parent Behavior Progression - manual and 1983 supplement.* Northridge: The Center for Research Development and Services, Department of Educational Psychology, California State University.

Bruininks, Woodcock, Weatherman, *and* Hill (1985). *Scales of Independent Behavior*. Allen: DLM Teaching Resources.

Burchinal, M. R., Bailey, D. B., *and* Snyder, P. (1994). Research Methods: Using Growth Curve Analysis to Evaluate Child Change in Longitudinal Investigation. *Journal of Early Intervention, 18, No.3*, 403-423.

Bzoch, K. R., *and* League, R. (1991). *The Bzoch-League Receptive-Expressive Emergent Language Scale: For the measurement of language skills in infancy* (Second edition). Baltimore: University Park Press.

Carey, W. B. *and* McDevitt, S. C. (1978). Revision of the infant temperament questionnaire. *Pediatrics, 61*, 735.

Carnegie Task Force on Meeting the Needs of Young Children. (1994). *Starting Points: Meeting the Needs of Our Youngest Children.* New York: Carnegie Corporation of New York.

Caro, P., *and* Derevensky, J. L. (1991). Family-Focused Intervention Model: Implementation and Research Findings. *Topics in Early Childhood Special Education, 11, No. 3*, 66-80.

Carr, J. (1987). Six Weeks to Twenty One Years Old: A Longitudinal Study of Children with Down's Syndrome and Their Families. *Child Psychology and Psychiatry, 29, No. 4*, 407-431.

Carta, J. J., *and* Greenwood, C. R. (1985). Eco-Behavioral Assessment: A Methodology for Expanding the Evaluation of Early Intervention Programs. *Topics in Early Childhood Special Education, 5, No. 2*, 88-104.

Casto, G. C. (1985). *Common Outreach Indicators.* Chapel Hill: Technical Assistance Development System (TADS), University Of North Carolina.

Casto, G. C. (1986). Research and Program Evaluation in Early Childhood Special Education. In S. Odom *and* M. Karnes (Eds.), *Early Intervention for Infants and Children with Handicaps: An Empirical Base* (1988 edition, pp. 51-62). Baltimore: Paul H. Brookes Publishing Company.

Casto, G. C. (1986). *Family Assessment.* Logan: The Early Intervention Research Institute, Utah State University.

Casto, G. C. (1986). *Early Intervention Efficacy Research: Separating Fact from Fiction.* Efficacy Research for the Early Intervention Research Institute. Logan: The Early Intervention Research Institute, Utah State University.

Casto, G. C. (1986). Plasticity and the Handicapped Child. In *Unknown* (pp. 103-113). Logan: The Early Intervention Research Institute, Utah State University.

Casto, G. C., Ascione, F., *and* Salehi, M. (1986). Current Perspectives in Infancy and Early Childhood Research. In S. Odom *and* M. Karnes (Eds.), *Early Intervention for Infants and Children with Handicaps: An Empirical Base* (1988 edition). Baltimore: Paul H. Brookes Publishing Company.

Casto, G. C., *and* Lewis, A. (1984). Selecting Outcome Measures in Early Intervention. *Journal of the Division for Early Childhood, 10, No 2*, 118-123.

Casto, G. C., *and* Mastropieri, M. A. (1986). The Efficacy of Early Intervention Programs: A Meta-Analysis. *Exceptional Children, 52, No. 5*, 417-424.

Casto, G. C., *and* Mastropieri, M. A. (1986). Strain and Smith Do Protest Too Much: A Response. *Exceptional Children, 53, No. 3*, 266-268.

Casto, G. C., *and* Tingey, C. (1985). *Critical Variables in Early Intervention.* Logan: The Early Intervention Research Institute, Utah State University.

Casto, G. C., *and* White, K. R. (1984). The Efficacy of Early Intervention Programs with Environmentally At-risk Infants. *Journal of Children in Contemporary Society, 17, No. 1*, 37-50.

Casto, G. C., *and* White, K. R. (1993). Longitudinal Studies of Alternative Types of Early Intervention: Rationale and Design. In K. White *and* G. Boyce (Eds.), *Early Education and Development* (pp. 224-235).

Children's Defense Fund. (1994). *The State of America's Children*. Washington DC: Children's Defense Fund.

Chugani, H. T., Phelps, M. E., *and* Mazziotta, J. C. (1987). Position Emission Tomography Study of Human Brain Functional Development. *Annals of Neurology, 22, No. 4*, 487-497.

Cleary, P. D. (1988). Social Support: Conceptualization and Measurement. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 195-216). Hawthorne: Aldine De Gruyter.

Cohen, S. E. (1991). Early Intervention with the At-Risk Infant. In J. W. Gray *and* R. S. Dean (Eds.), *Neuropsychology of Perinatal Complications* (pp. 204-224). New York: Springer Publishing Company.

Cole, K. N., Dale, P. S., Mills, P. E., *and* Jenkins, J. R. (1993). Interaction Between Early Intervention Curricula and Student Characteristics. *Exceptional Children, 60, No. 1*, 17-28.

Cole, K. N., Mills, P. E., *and* Dale, P. S. (1989). A Comparison of the Effects of Academic and Cognitive Curricula for Young Handicapped Children One and Two Years Postprogram. *Topics in Early Childhood Special Education, Vol. 9, No. 3*, 110-127.

Conger, J. A., *and* Kanungo, R. N. (1988). The Empowerment Process: Integrating Theory and Practice. *Academy of Management Review, 13, No. 3*, 471-482.

Connolly, B. H., Morgan, S. B., Russell, F. F., *and* Fulliton, W. L. (1993). A Longitudinal Study of Children with Down Syndrome Who Experienced Early Intervention Programming. *Physical Therapy, 73, No. 3*, 170-181.

Crowley, S. L., *and* Taylor, M. J. (1993). *The Parenting Stress Index: Psychometric Characteristics with Families Having Disabled Children.* Logan: The Early Intervention Research Institute, Utah State University.

Crowley, S. L., *and* Taylor, M. J. (1994). Mother's and Father's Perceptions of Family Functioning in Families Having Children with Disabilities. *Early Education and Development, 5, No. 3*, 214-225.

Datta, L. (1986). Benefits Without Gains: The Paradox of the Cognitive Effects of Early Childhood Programs and Implications for Policy. *Special Services in the Schools (GAO), 3, No. 1-2*, 103-126.

Dawson, G., *and* Osterling, J. (1997). Early Intervention in Autism. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 307-326). Baltimore: Paul H. Brookes Publishing Company.

Dempsey, I. (1995). The Enabling Practices Scale: The development of an assessment instrument for disability services. *Australia and New Zealand Journal of Developmental Disabilities, 20, No. 1*, 2/73.

Devellis, R. F., Devellis, B. M., Revicki, D. A., Lurie, S. J., Runyan, D. K., *and* Bristol, M. (1985). Development and validation of the Child Improvement Locus of Control (CILC) Scales. *Journal of Social and Clinical Psychology, 3*, 307-324.

Devellis, R., *and* Devellis, B. (1985). Development and validation of the Child Improvement Locus of Control Scales. *Journal of Social and Clinical Psychology, 3, No. 3*, 307-324.

Dihoff, R. A., Mcewan, M., Farrelly, M., Brosvic, G. M., Carpenter, L., Anderson, J., Kafer, L. B., Rizzuto, G. E., *and* Bloszinsky, S. (1994). Efficacy of Part- and Full-Time Early Intervention. *Perceptual and Motor Skills, 79*, 907-911.

Dodge, D. T. *and* Colker, L. (1992). *Creative Curriculum for Early Childhood* (Third edition). Washington DC: Teaching Strategies.

Dunst, C. J., Jenkins, V., *and* Trivette, C. M. (1984). The family support scale: Reliability and validity. In *Journal of Individual, Family, and Community Wellness, 1*, 45-52.

Dunst, C., Trivette, C., *and* Deal, A. (Eds.). (1988). *Enabling and Empowering Families.* Cambridge: Brookline Books.

Dunst, C., Trivette, C., *and* Deal, A. (Eds.). (1994). *Supporting and Strengthing Families* (Volume one). Cambridge: Brookline Books.

Dunst, C. J. (1985). Rethinking Early Intervention. *Analysis and Intervention in Developmental Disabilities, 5*, 165-201.

Dunst, C. J., *and* Trivette, C. M. (1990). Assessment of social support in early intervention programs. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 326-349). New York: Cambridge University Press.

Dunst, C. J., Trivette, C. M., *and* Jodry, W. (1997). Influence of Social Support on Children with Disabilities and Their Families. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 499-522). Baltimore: Paul H. Brookes Publishing Company.

Early Childhood Research Institute on Measuring Growth and Development. (1998). *Selection of General Growth Outcomes for Children Between Birth and Age Eight.* Technical Report # 1-DRAFT, Minneapolis: University of Minnesota.

Early Intervention Research Institute. (1996). *Publications of the Early Intervention Research Institute.* List of publications related to early intervention studies, Logan: Early Intervention Research Institute, Utah State University.

Eayrs, C., *and* Jones, R. P. (1992). Methodological Issues and Future Direction in the Evaluation of Early Intervention Programmes. *Child Care, Health and Development, 18*, 15-28.

Edgar, E., Heggelund, M., *and* Fischer, M. (1988). A Longitudinal Study of Graduates of Special Education Preschools: Educational Placement After Preschool. *Topics in Early Childhood Special Education, 8, No. 3*, 61-74.

Editorial. (1994). Complete Program Assesses Children from Birth to Three Years. *Curriculum Review, 33, No. 6*, 28.

Eisen, M., Donald, C. A., Ware, J. E., Brook, R. H. (1980). *Conceptualization and measurement of health for children in the Health Insurance Study*. Santa Monica: The Rand Corporation.

Eiserman, W. D., McCoun, M., *and* Escobar, C. M. (1990). A Cost-Effectiveness Analysis of Two-Alternative Program Models for Serving Speech-Disordered Preschoolers. *Journal of Early Intervention, 14, No. 4*, 297-317.

Entwisle, D. R. (1995). The Role of Schools in Sustaining Early Childhood Program Benefits. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs Winter editon., 5, No. 3*, pp. 133-143. Los Altos: The Center for the Future of Children.

Farran, D. C. (1990). Effects of Intervention with Disadvantaged and Disabled Children: A Decade Review. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 501-539). Cambridge: Cambridge University Press.

Farrow, D. C., *and* Baldwin, L. M. (1996). The Impact of Extended Maternity Services on Prenatal Care Use Among Medicaid Women. *American Journal of Preventative Medicine, 12, No. 2*, 103-107.

Fenson, L., Dale, P. S., Resnick, J. F., Thall, D., Bates, E., Hartung, J. P., Pethick, S., Reilly, J. S. (1993). *The MacArthur Communicative Development Inventory*. San Diego: Singular Publishing Group.

Fewell, R., *and* Glick, M. P. (1996). Program Evaluation Findings of an Intensive Early Intervention Program. *American Association on Mental Retardation*, 233-243.

Fewell, R. R., *and* Sandall, S. R. (1986). Developmental Testing of Handicapped Infants: A Measurement Dilemma. *Topics in Early Childhood Special Education, 6, No. 3*, 86-99.

Fewell, R. R., *and* Vadasy, P. F. (1987). Measurement Issues in Studies of Efficacy. *Topics in Early Childhood Special Education, 7, No. 2*, 85-96.

First, L. R., *and* Palfry, J. S. (1994). The Infant of Young Child With Developmental Delays. *The New England Journal of Medicine, 330, No. 7*, 478-483.

Frede, E. C. (1995). The Role of Program Quality in Producing Early Childhood Program Benefits. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, pp. 115-131. Los Altos: The Center for the Future of Children.

Fredericks, H., Baldwin, V., Moore, W., Moore, M., *and* Furey, T. (1978). Special Education Teaching Technology. *Journal of Special Education Technology, 2, No. 1*, 4-12.

Fredericks, H. D., Anderson, R., *and* Baldwin, V. (1977). The Identification of Competencies in Teachers of The Severely Handicapped. In P. Mittler *and* J. M. de Jong (Eds.), *Research to Practice in Mental Retardation: Education and Training,* II, pp. 361-367). Baltimore: University Park Press.

Fredericks, H. D., Baldwin, V., Moore, W., Metzger, B., Carstensen, S., Childers, M., Finkbeiner, M., *and* Walker, L. (1972). Preschool Individual Programming and Behavior Modification. *Child Care Quarterly, 1, No. 3*, 193-204.

Futterweit, L. R., *and* Ruff, H. A. (1993). Principles of Development: Implications for Early Intervention. *Journal of Applied Developmental Psychology, 14*, 153-173.

Gallagher, J. (1996). The family as a focus for intervention. In J. Shonkoff *and* S. Meisels (Eds.), *Handbook of Early Childhood Intervention* (First edition, pp. 540-559) Cambridge: Cambridge University Press.

Garwood, S. G., Fewell, R. R., Mori, A. A., *and* Neisworth. (1982). Program Evaluation. *Topics in Early Childhood Special Education, 1, No. 4*, 22.

Gerlach, C. L. (1988). Appendix A: Research Instruments and Their Sources. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 507-519). New York: Aldine de Gruyter.

Gibson, D., *and* Fields, D. L. (1984). Early Infant Stimulation Programs for Children with Down Syndrome. *Advances in Developmental and Behavior Pediatrics, 5*, 331-371.

Gibson, D., *and* Harris, A. (1988). Aggregated early intervention effects for Down's syndrome persons: patterning and longevity of benefits. *Journal of Mental Deficiency Research, 32*, 1-17.

Glover, E., Preminger, J., *and* Sanford, A. (1995). *Learning Accomplishment Profiles: Early Learning Accomplishment Profile (E-LAP).* Chapel Hill: Chapel Hill Training-Outreach Project.

Goldberg, S. (1977). Social Competence in Infancy: A Model of Parent-Infant Interaction. *Merrill-Palmer Quarterly, 23, No. 3*, 163-176.

Goldberg, S., Morris, P., Simmons, R. J., Fowler, R. S., *and* Levison, H. (1990). Chronic Illness in Infancy and Parenting Stress: A Comparison of Three Groups of Parents. *Journal of Pediatric Psychology, 15, No. 3*, 347-358.

Gomby, D. S., Larner, M. B., Stevenson, C. S., Lewit, E. M., *and* Behrman, R. E. (1995). Long-Term Outcomes of Early Childhood Programs: Analysis and Recommendations. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, pp. 6-24. Los Altos: The Center for the Future of Children.

Grandin, T. (1995). *Thinking in Pictures*. New York: Vintage Books.

Green, B. L., & McAllister, C. (1998). Theory-Based, Participatory Evaluation: A Powerful Tool for Evaluating Family Support Programs, *Opening the Black Box*, Bulletin of Zero to Three, National Center for Clinical Infant Programs, *February/March, 1998*. Arlington: Zero to Three, National Center for Clinical Infant Programs.

Greenough, W. T., *and* Black, J. E. (1992). Introduction of Brain Structure by Experience: Substrates for Cognitive Development. *Minnesota Symposia on Child Psychology, 24*, 155-200.

Greenough, W. T., Wallace, C. S., Alcantara, A. A., Anderson, B. J., Hawrylak, N., Sirevaag, A. M., Weiler, I. J., *and* Withers, G. S. (1993). Development of the Brain: Experience Affects the Structure of Neurons, Glia, and Blood Vessels. In N. J. Anastasiow *and* S. Harel (Eds.), *At-Risk Infants, Interventions, Families, and Research* (pp. 173-185). Baltimore: Paul H. Brookes Publishing Company.

Guralnick, M. J. (1988). Efficacy Research in Early Childhood Intervention Programs. In *Early Intervention for Infants and Children with Handicaps* (pp. 75-88). Baltimore: Paul H. Brooke.

Guralnick, M. J. (1989). Recent Developments in Early Intervention Efficacy Research: Implications for Family Involvement in P.L. 99-457. *Topics in Early Childhood Special Education, 9, No. 3*, 1-17.

Guralnick, M. J. (1989). Social competence as a future direction for early intervention programmes. *Journal of Mental Deficency Research, 33*, 275-281.

Guralnick, M. J. (1991). The Next Decade of Research on the Effectiveness of Early Intervention. *Exceptional Children, 58, No. 2*, 174-183.

Guralnick, M. J. (1993). Second Generation Research on the Effectiveness of Early Intervention. *Early Education and Development, 4, No. 4*, 366-378.

Guralnick, M. J. (1997). *The Effectiveness of Early Intervention*. Baltimore: Paul H. Brookes Publishing Company.

Guralnick, M. J. (1998). Effectiveness of Early Intervention for Vulnerable Children: A Developmental Perspective. *American Journal on Mental Retardation, 102, No, 4*, 319-345.

Guralnick, M. J., *and* Bennett, F. C. (1987). Early Intervention for At-Risk and Handicapped Children: Current and Future Perspectives. In M. J. Guralnick *and* F. C. Bennett (Eds.), *The Effectiveness of Early Intervention for At-Risk and Handicapped Children* (pp. 366-382). New York: Academic Press.

Guralnick, M. J., *and* Bricker, D. (1987). The Effectiveness of Early Intervention for Children with Cognitive and General Developmental Delays. In M. J. Guralnick *and* F. C. Bennett (Eds.), *The Effectiveness of Early Intervention for At-Risk and Handicapped Children* (pp. 115-173). New York: Academic Press.

Guralnick, M. J., Heiser, K. E., Eaton, A. P., Bennett, F. C., Richardson, H. B., *and* Groom, J. M. (1988). Pediatricians' Perceptions of the Effectiveness of Early Intervention for At-Risk and Handicapped Children. *Developmental and Behavioral Pediatrics, 9, No. 1*, 12-18.

Guralnick, M. J., *and* Neville, B. (1997). Designing Early Intervention Programs to Promote Children's Social Competence. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 579-610). Baltimore: Paul H. Brookes Publishing Company.

Gustafsson, S. S., *and* Stafford, F. P. (1995). Links Between Early Childhood Programs and Maternal Employment in Three Counties. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Program* (Winter edition), *5, No. 3*, pp. 161-173. Los Altos: The Center for the Future of Children.

Hack, M., Klein, N. K., *and* Taylor, H. G. (1995). Long-Term Developmental Outcomes of Low Birth Weight Infants. *The Future of Children, 5, No. 1*, 176-196.

Hamil, M. I. (1997). *A State-wide Evaluation of Preschool Intervention Programs for the Handicapped (Early Intervention)*. Dissertation Abstracts Online-University of Georgia.

Hanson, M. J. (1985). An Analysis of the Effects of Early Intervention Services for Infants and Toddlers with Moderate and Severe Handicaps. *Topics in Early Childhood Special Education, 5, No. 2*, 36-51.

Hanson, M. J., *and* Lynch, E. W. (1995). *Early Intervention Implementing Child and Family Services for Infants and Toddlers Who Are At-Risk or Disabled.* Austin: PRO-ED.

Harding, E., *and* Keating, B. (1995). *Birth to Three Years Study: Technical Appendices.* Olympia: Washington State Institute for Public Policy and Office of Legislative Budget Committee,

Harding, E., *and* Keating, B. (1995). *Birth to Three Years Study.* Olympia: Washington State Institute for Public Policy and Office of Legislative Budget Committee.

Haring, N. (Ed.). (1977). *Developing Effective Individualized Education Programs.* Washington DC: Bureau of Education for the Handicapped.

Harris, S. R. (1997). The Effectiveness of Early Intervention for Children with Cerebrel Palsey and Related Motor Disabilities. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 327-348). Baltimore: Paul H. Brookes Publishing Company.

Hatton, D. D., Bailey, Jr., D. B., Burchinal, M. R., *and* Ferrell, K. A (1997) Developmental Growth Curves of Preschool Children with Vision Impairments. *Child Development, 68, No. 5*, 788-806.

Hauser-Cram, P. (1988).The Possibilities and Limitations of Meta-Analysis in Understanding Family Program Impact. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 445-460). New York: Aldine De Gruyter.

Hauser-Cram, P. (1990). Designing meaningful evaluations of early intervention services. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 583-602). New York: Cambridge University Press.

Hauser-Cram, P., *and* Krauss, M. W. (1991). Measuring Change in Children and Families. *Journal of Early Intervention, 15, No.3*, 288-297.

Hauser-Cram, P., *and* Shonkoff, J. P. (1988). Rethinking the Assessment of Child-Focused Outcomes. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 73-94). New York: Aldine de Gruyter.

Hayley, S. M., Coster, W. J., Ludlow, L. H., Haltiwanger, J. T., *and* Andrellos, P. J. (1992). *Pediatric Evaluation of Disability Inventory (PEDI)*. Boston: PEDI Research Group.

Helm, J. M., *and* Bailey, D. B. (1990). Adolescent and adult mothers of handicapped children: Maternal involvement in play. *Family Relations, 39*, 432-437.

Hernandez, D. J. (1995). Changing Demographics: Past and Future Demands for Early Childhood Programs. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Program* (Winter edition), *5, No. 3*, pp. 145-161. Los Altos: The Center for the Future of Children.

Hollinger, J. H. (1995). The Uniform Adoption Act. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, pp. 205-211. Los Altos: The Center for the Future of Children.

Howrigan, G. A. (1988). Evaluating Parent-Child Interaction Outcomes of Family Support and Education Programs. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 95-130). New York: Aldine de Gruyter.

Huttenlocher, P. R. (1990). Morphometric Study of Human Cerebral Cortex Development. *Neuropsychologia, 28, No. 6*, 517-527.

Infant Health and Development Program. (1990). Enhancing the Outcomes of Low-Birth-Weight, Premature Infants: A Multisite, Randomized Trial. *Journal of the American Medical Association, 263, No. 22*, 3035-3042.

Innocenti, M. S. (1996). *Longitudinal Studies of the Effects of Alternative Types of Early Intervention for Children with Disabilities: Follow-up Institute*. Logan: The Early Intervention Research Institute, Utah State University.

Innocenti, M. S., Hollinger, P. D., Escobar, C. M., *and* White, K. R. (1993). The Cost-Effectiveness of Adding One Type of Parent Involvement to an Early Intervention Program. *Early Education and Development, 4, No. 4*, 306-326.

Ireys, H. T., *and* Nelson, R. P. (1992). New Federal Policy for Children With Special Health Care Needs: Implications for Pediatricians. *Pediatrics, 90, No. 3*, 321-327.

Janko, S. (1997). Beyond Microsystems: Unanticipated Lessons About the Meaning of Inclusion. *Topics in Early Childhood Special Education, 17, No. 3*, 286-327.

Jephson, M. B. (1989). *The Purposes, Importance, and Feasibility of Program Evaluation as Perceived by Directors of Zero-to-Three Early Intervention Programs.* Dissertation Abstracts Online-University of Texas, Austin.

Johnson, L. J., *and* LaMontagne, M. J. (1994). Program Evaluation: The Key to Quality Programming. In L. J. Johnson, R. J. Gallagher, M. J. LaMontagne, J. B. Jordan, P. L. Hutinger, J. J. Gallagher, *and* M. B. Karnes (Eds.), *Meeting Early Intervention Challenges: Issues from Birth to Three* (pp. 185-216). Baltimore: Paul H. Brookes Publishing Company.

Keenan, T., Hopps, D., Cawthon, L., Bowden, J., Dickey, R., Loerch, S., *and* Shureen, A. (1996). *Washington's Infant Toddler Early Intervention Program Study.* A comparison of *Enrollment Counts on December 1 1993, May 1, 1995, December 1, 1995 and May 1, 1996.* Olympia: Research and Data Analysis, Department of Social and Health Services.

Keenan, T., Lyons, D., Cawthon, L., Bowden, J., Dickey, R., Loerch, S., *and* Shureen, A. (1997). *Washington's Infant Toddler Early Intervention Program Study.* Enrollment of Washington Children with Disabilities and Special Health Care Needs in Washington State Programs on December 2, 1996.*n of Enrollment Counts on December 1, 1993, May 1, 1995, December 1, 1995 and May 1, 1996.* Olympia: Research and Data Analysis, Department of Social and Health Services.

Kelly, J. F., *and* Barnard, K. E. (in press). Assessment of parent-child interaction and implications for early intervention. In S. J. Meisels *and* J. P. Shonkoff (Eds.), *Handbook of Early Childhood Intervention.* Cambridge: Cambridge University Press.

Kelly, J. F., *and* Booth, C. L. (1997). *Child Care for Infants at Risk and with Disabilities: Description and Issues in the First 15 Months.* Seattle: Center on Human Development and Disability, University of Washington.

Kerner, J. F., Dusenbury, L., *and* Mandelblatt, J. S. (1993). Poverty and Cultural Diversity Challenges for Health Promotion Among the Medically Underserved. *Annual Review of Public Health, 14*, 355-377.

King, E. H., Logston, D. A., *and* Schroeder, S. R. (1992). Risk Factors for Developmental Delay Among Infants and Toddlers. *Children's Health Care, 21, No 1*, 39-52.

King, S. M., Rosenbaum, P. L., *and* King, G. A. (1996). Parents' Perceptions of Caregiving: Development and Validation of a Measure of Processes. *Developmental Medicine and Child Neurology, 38*, 757-772.

Kochanek, T. T., Kabacoff, R. I., *and* Lipsitt, L. P. (1987). Early Detection of Handicapping Conditions in Infancy and Early Childhood: Toward a Multivariate Model. *Journal of Developmental Psychology, 8*, 411-420.

Koren, P., DeChillo, N., *and* Friesen, B. (1992). Measuring Empowerment in Families Whose Children Have Emotional Disabilities: A Brief Questionnaire. *Rehabilitation Psychology, 37, No. 4*, 305-321.

Korsten, J. E., Dunn, D. D., Foss, T. V., *and* Francke, M. K. (1993). *Every Move Counts* (EMC). Antonio: Therapy Skill Builders/Psychological Corporation.

Kotelchuck, M. (1994). An Evaluation of the Kessner Adequacy of Prenatal Care Index and a Proposed Adequacy of Prenatal Care Utilization Index. *American Journal of Public Health, 84, No. 9*, 1414-1420.

Krauss, M. W. (1988). Measures of Stress and Coping in Families. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 177-194). New York: Aldine de Gruyter.

Kracke, K. R. (1981). A survey of procedures for assessing family conflict and dysfunction. *Family Therapy, 8,* 241-253.

Krauss, M. W., *and* Jacobs, F. (1990). Family assessment: Purposes and techniques. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 303-325). New York: Cambridge University Press.

Landry, S. H., Chapieski, M. L., Richardson, M. A., Palmer, J., *and* Hall, S. (1990). The Social Competence of Children Born Prematurely: Effects of Medical Complications and Parent Behaviors. *Child Development, 61*, 1605-1616.

Lazar, I., *and* Darington, R. (1982). *Lasting Effects of Early Intervention: A Report from the Consortium for Longitudinal Studies.* Monographs of the Society for Research in Child Development 47 (Serial No. 195).

LeMay, D. W., Griffin, P. M., *and* Sandford, A. R. (1977). *Learning Accomplishment Profile* (LAP). Winston-Salem: Kaplan Press.

Lewitt, E. M., *and* Baker, L. S. (1995). Health Insurance Coverage. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood* (Winter edition), *5, No. 3*, pp. 192-204. Los Altos: The Center for the Future of Children.

Lonner, T., Hempleman, B., *and* Longhi, D. (1994). *Exploratory Study of Barriers to Birth to Three Services.* Olympia: Research and Data Analysis, Department of Social and Health Services.

Lovaas, O. I. (1987). Behavioral Treatment and Normal Educational and Intellectual Functioning in Young Autistic Children. *Journal of Consulting and Clinical Psychology, 55*, 3-9.

Lowitzer, A. C. (1989). *The Costs and Benefits of Early Intervention for Children with Handicaps and Their Implications for the Future.* Paper presented at the 11th annual conference of the Young Adult Institute, Omaha: Special Education, Meyer Rehabilitation Institute, University of Nebraska Medical Center.

Lyons, D., Keenan, T., Hopps, D., Cawthon, L., Dickey, R., Fleming, J., Loerch, S., *and* Shureen, A. (1998). *Washington's Infant Toddler Early Program Study: Enrollment of Washington's Children with Disabilities and Special Health Care Needs in Washington State Public Programs on December 1, 1997.* Olympia: Research and Data Analysis, Department of Social and Health Services.

Lyons-Ruth, K., *and* Zeanah, C. H. (1993). The Family Context of Infant Mental Health: I. Affective Development in the Primary Care Giving Relationship. In C. H. Zeanah (Ed.), *Handbook of Infant Mental Health* (pp. 38-55). New York: Guiford Press.

MacEachin, J. J., Smith, T., *and* Lovaas, O. I. (1993). Long-Term Outcome for Children With Autism Who Received Early Intensive Behavioral Treatment. *American Journal on Mental Retardation, 97, No. 4*, 359-372.

Mahoney, G., *and* Spiker, D. (1996). Clinical Assessments of Parent-Child Interaction: Are Professionals Ready to Implement This Practice? *Topics in Early Childhood Special Education, 16, No. 1*; 26-50.

Malloy, M. H., Tzu-Cheg, K., *and* Lee, Y. J. (1992). Analyzing the Effect of Prenatal Care on Pregnancy Outcome: A Conditional Approach. *American Journal of Public Health, 82, No. 3*, 448-452.

Marfo, K., Browne, N., Gallant, D., Smyth, R., *and* Corbett, A. (1991). Issues in Early Intervention: Insights from the Newfoundland and Labrador Evaluation Project. *Developmental Disabilities Bulletin, 19, No. 2*, 36-65.

Marfo, K., *and* Dinero, T. E. (1991). Assessing Early Intervention Outcomes: Beyond Program Variables. *International Journal of Disability, Development and Education, 38, No. 3*, 289-303.

Mario, K., *and* Kysela, G. M. (1984). Early Intervention with Mentally Handicapped Children: A Critical Appraisal of Applied Research. *Journal of Pediatric Psychology, 10, No. 4*, 305-324.

Martin, E. W., Martin, R., *and* Terman, D. L. (1996). The Legislative and Litigation History of Special Education. *The Future of Children, 6, No 1*, 25-39.

McCarton, C. M., Brooks-Gunn, J., Wallace, I. F., Bauer, C. R., Bennett, F. C., Bembaum, J. C., Broyles, R. S., Casey, P. H., McCormick, M. C., Scott, D. T., Tyson, J., Tonascia, J., *and* Meinert, C. L. (1997). Results at Age 8 Years of Early Intervention for Low-Birthweight Premature Infants. *Journal of the American Medical Association, 277*, 126-132.

McCormick, M. C., McCarton, C., Tonascia, J., *and* Brooks-Gunn, J. (1993). Early Educational Intervention for very low birth weight infants: Results from the infant Health and Developmental Program. *Journal of Pediatrics*, 527-533.

Mccune, L., Kalmanson, B., Fleck, M. B., Glazewski, B., *and* Sillari, J. (1990). An interdisciplinary model of infant assessment. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 219-243). New York: Cambridge University Press.

McDonnell, L. M., McLaughlin, M. J., *and* Morison, P. (1997). *Perinatal Complications Educating One and All Students with Disabilities and Standards-Based Reform*. Washington DC: National Academy Press, 1997.

McEachlin, J. J., Smith, T., *and* Lovvas, O. I. (1993). Long-Term Outcome for Children With Autism Who Received Early Intensive Behavioral Treatment. *American Journal on Mental Retardation, 97, No. 4*, 359-372.

McLean, L. K., *and* Cripe, J. W. (1997). The Effectiveness of Early Intervention for Children with Communication Disorder. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 327-348). Baltimore: Paul H. Brookes Publishing Company.

McNaughton, D. (1994). Measuring Parent Satisfaction with Early Childhood Intervention Programs: Current Practice, Problems, and Future Perspectives. *Topics in Early Childhood Special Education, 14, No. 1*, 26-48.

McWilliam, R. A., Lang, L., Vandiviere, P., Angell, R., Collins, L., *and* Underdown, G. (1995). Satisfaction and Struggles: Family Perceptions of Early Intervention Services. *Journal of Early Intervention, 19, No. 1*, 43-60.

Meisels, S. J. (1986). *Using Criterion-Referenced Assessment Data to Measure the Progress of Handicapped Children in Early Intervention Programs.* Ann Arbor: University of Michigan.

Meisels, S. J., *and* Fenichel, E. (Eds.). (1996). *New Visions for the Developmental Assessment of Infants and Young Children* (First edition). Arlington: Zero to Three, National Center for Clinical Infant Programs.

Meisels, S. J., *and* Shonkoff, J. P. (Eds.). (1990). *Handbook of Early Childhood Intervention.* New York: Cambridge University Press.

Merrell, K. W., *and* Mauk, G. W. (1993). Predictive Validity of the Battelle Developmental Inventory as a Measure of Social-Behavioral Development for Young Children with Disabilities. *Diagnostique, 18*, 187-198.

Mills, P. E., Dale, P. S., Cole, K. N., *and* Jenkins, J. R. (1995). Follow-up of Children from Adademic and Cognitive Preschool Curricula at Age 9. *Exceptional Children, 61, No. 4*, 378-393.

Mitchell, D., Brynelsen, D., *and* Holm, M. (1988). Evaluating the Process of Early Intervention Programmes. *The Irish Journal of Psychology, 9, No. 2*, 235-248.

Moore, M. (1998). Treatment Outcomes Project Launches Adult Data Collection. *ASHA Leader, 3, No. 4, February 3, 1998*, Rockville: American Speech-Language Hearing Association.

Moore, M., Fredericks, H. D., *and* Baldwin, V. (1981). The Long-Range Effects of Early Childhood Education on a Trainable Mentally Retarded Population. *Journal of the Division for Early Childhood, 4*, 94-110.

Mott, S., Lewis, M., Meisels, S. J., Shonkoff, J. P., *and* Simeonsson, R. J. (1986). Methods for Assessing Child and Family Outcomes in Early Childhood Special Education Programs: Some Views from the Field. *Topics in Early Childhood Special Education, 6, No. 2*, 1-15.

Mott, S. E., *and* Casto, G. C. (1986). *Annotated Bibliography of Self-Report Measures of Family Functioning.* Logan: Early Intervention Research Institute, Utah State University.

Murphy, D. L., Lee, I. M., Turnbill, A. P., *and* Turbiville, V. (1995). The Family-Centered Program Rating Scale: An Instrument for Program Evaluation and Change. *Journal of Early Intervention, 19, No. 1*, 24-42.

Murray, A. (1992). Early intervention program evaluation: Numbers or narratives? *Infants and Young Children, 4, No. 4*, 77-88.

Newborg, J., Stock, J., Wnek, L., Guidubaldi, J., *and* Svinicki, J. (1984). *Battelle developmental inventory.* Allen: DLM Teaching Resources.

Odom, S. I., *and* Shuster, S. K. (1986). Naturalistic Inquiry and the Assessment of Young Handicapped Children and Their Families. *Topics in Early Childhood Special Education, 6, No. 2*, 68-82.

Oelwein, P. L., Fewell, R. R., *and* Pruess, J. B. (1985). The Efficacy of Intervention at Outreach Sites of the Program for Children with Down Syndrome and Other Developmental Delays. *Topics in Early Childhood Special Education, 5, No. 2*, 78-87.

Ottenbacher, K., *and* Petersen, P. (1985). The Efficacy of Early Intervention Programs for Children with Organic Impairment: A Quantitative Review. *Evaluation and Program Planning, 8*, 135-146.

Ottenbacher, K. J. (1989). Statistical Conclusion Validity of Early Intervention Research with Handicapped Children. *Exceptional Children, 55, No. 6*, 534-540.

Ounce of Prevention Fund. (1996). *Starting Smart: How early experiences affect brain development.* Chicago: Ounce of Prevention Fund.

Palfrey, J. S., Singer, J. D., Walker, D. K., *and* Butler, J. A. (1987). Early Identification of Children's Special Needs. *Journal of Pediatrics, 11, No. 5*, 111-659.

Peck, C. A. (1993). Ecological perspectives on the implementation of integrated early childhood programs. In C. A. Peck, S. L. Odom, *and* D. D. Bricker (Eds.), *Integrating young children with disabilities into community programs* (pp. 3-16). Baltimore: Paul H. Brookes Publishing Company Publishing Company.

Peck, C., Gallucci, C., Schwartz, I., Staub, D., White, O., *and* Billingsley, F. (1992). *Analysis of the outcomes of inclusive education and associated school contexts: A four year follow-along study.* Inclusive Schools Research Group-Washington State University, and University of Washington. Vancouver: Education Department, Washington State University.

Peck, C. A., Odom, S. L., *and* Bricker, D. D. (Eds.). (1993). *Integrating Young Children With Disabilities into Community Programs.* Baltimore: Paul H. Brookes Publishing Company.

Pierre, R. G., Layzer, J. I., *and* Barnes, H. V. (1995). Two-Generation Programs: Design, Cost, and Short-Term Effectiveness. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No.* 3, pp. 76-93). Los Altos: The Center for the Future of Children.

Polit, D. F. and Hungler, B. P., (1987). *Nursing research* (Third edition). Philadelphia: L. B. Lippincott.

Provence, S. (1985). On the Efficacy of Early Intervention Programs. *Developmental and Behavioral Pediatrics, 6, No. 6*, 363-366.

Ramey, C. T., Bryant, D. M., Sparling, J. J., *and* Wasik, B. H. (1985). Project CARE: A Comparison of Two Early Intervention Strategies to Prevent Retarded Development. *Topics in Early Childhood Special Education, 5, No. 2*, 12-25.

Ramey, C. T., Bryant, D. M., Wasik, B. H., Sparling, J. J., Fendt, K. H., *and* LaVange, L. M. (1992). Infant Health and Development Program for Low Birth Weight, Premature Infants: Program Elements, Family Participation, and Child Intelligence. *Pediatrics, 3*, 454-465.

Ramey, C. T., *and* Campbell, P. A. (1992). Poverty, Early Childhood Education, and Academic Competence: The Abecedarian Experiment. In A. Huston (Ed.), *Children in Poverty* (pp. 190-221). Cambridge: Cambridge University Press.

Ramey, C. T., *and* Haskins, R. (1981). The Modification of Intelligence through early experience. *Intelligence, 5*, 5-19.

Ramey, C. T., Stedman, D. J., Borders-Patterson, A., *and* Mengel, W. (1978). Predicting School Failure from Information Available at Birth. *American Journal of Mental Deficiency, 82, No. 6*, 525-534.

Rauh, V. A., Achenbach, T. M., Nurcombe, B., Howell, C. T., *and* Teti, D. M. (1988). Minimizing Adverse Effects of Low Birthweight: Four-Year Results of an Early Intervention Program. *Child Development, 59*, 544-553.

Rebar, R. W. (1991). The Contribution of Singletons, Twins and Triplets to Low Birth Weight, Infant Mortality and Handicap in the United States. *Journal of Reproductive Medicine, 37, No. 8*, 661-666.

Resnick, M. B., Armstrong, S., *and* Carter, R. L. (1988). Developmental Intervention Program for High-risk Premature Infants: Effects on Development and Parent-Infant Interactions. *Developmental and Behavioral Pediatrics, 9, No. 2*, 73-78.

Riskin, J. *and* Faunce, E. E. (1982). Family Interaction Scales: I. Theoretical framework and method. *Archives of General Psychiatry, 22,* 504-512.

Roberts, R. N., Innocenti, M. S., *and* Goetze, L. D. (1997). *By What Outcomes Should Part H be Evaluated at the State Level?* Proceedings of the State Part H Evaluators' Consortium. Logan: Early Intervention Research Institute, Utah State University.

Rojahn, J., Aman, M., Moeschberger, M., King, E., Logsdon, D., *and* Schroeder, S. (1995). Biological and Environmental Risk for Poor Developmental Outcome of Young Children. *American Journal on Mental Retardation, 97, No. 6*, 702-708.

Rosenberg, S. A., Robinson, C. C., Finkler, D., *and* Rose, J. S. (1987). An Empirical Comparison of Formulas Evaluating Early Intervention Program Impact on Development. *Exceptional Children, 54*, 213-219.

Sacks, O. (1994). An Anthropologist on Mars. *The New Yorker*, 106-125.

Sameroff, A. J., *and* Chandler, M. J. (1975). Reproductive Risk and the Continuum of Caretaking Casualty. In Horowitz (Ed.), *4,* pp. 187-244. Chicago: University of Chicago Press.

Sandall, S. (1990). Developmental Interventions for Biologically At-Risk Infants at Home. *Topics in Early Childhood Special Education, 10, No. 4*, 1-13.

Sarason, I. G., Levine, H. M., Basham, R. B., *and* Sarason, B. R. (1983). Assessing social support: The Social Support Questionnaire. *Journal of Personality and Social Psychology, 44*, 127-139.

Scarr-Salapatak, S., *and* Williams, M. L. (1973). The Effects of Early Stimulation on Low-birth-weight Infants. *Child Development, 44*, 94-101.

Schwartz, I., *and* Olswant, L. (1996). Exploring Alternative Strategies for Data Collection. *Topics in Early Childhood Special Education, 16, No. 1*, 82-101.

Schweinhart, L. J., Berruta-Clement, J. R., Barnett, W. S., Epstein, A. S., *and* Weikart, D. P. (1985). Effects of the Perry Preschool Program on Youths Through Age 19: A Summary. *Topics in Early Childhood Special Education, 5, No. 2*, 26-35.

Segal, Marilyn, *and* Webber, Noreen T. (1996). Nonstructural Play Observations: Guidelines, Benefits, and Caveats. In S. J. Meisels *and* E. Fenichel (Eds.). (1996). *New Visions for the Developmental Assessment of Infants and Young Children* (First edition). Arlington: Zero to Three, National Center for Clinical Infant Programs.

Seifer, R., Clark, G. N., *and* Sameroff, A. J. (1991). Positive Effects of Interaction Coaching on Infants with Developmental Disabilities and Their Mothers. *American Journal on Mental Retardation, 90, No. 1*, 1-11.

Seitz, V., *and* Zigler, E. (1980). Measure for Measure? Editorial in *American Psychologist, 25, No. 10*, 939.

Shonkkoff, J. P., *and* Meisels, S. J. (1991). Defining Eligibility for Services Under PL99-457. *Journal of Early Intervention, 15, No. 1*, 21-25.

Shonkoff, J. P. (1993). Developmental Vulnerability: New Challenges for Research and Service Delivery. In N. J. Anastasiow *and* S. Harel (Eds.), *At-Risk Infants, Interventions, Families, and Research* (pp. 47-54). Baltimore: Paul H Brookes Publishing Company.

Shonkoff, J. P., *and* Hauser-Cram, P. (1987). Early Intervention for Disabled Infants and Their Families: A Quantitative Analysis. *Pediatrics, 80, No. 5*, 650-658.

Shonkoff, J. P., Hauser-Cram, P., Krauss, M. W., *and* Upshur, C. (1988). Early Intervention Efficacy Research: What Have We Learned and Where Do We Go From Here? *Topics in Early Childhood Special Education, 8, No. 1*, 81-93.

Shonkoff, J. P., Hauser-Cram, P., Krauss, M. W., *and* Upshur, C. C. (1992). *Development of Infants with Disabilities and Their Families: Implications for Theory and Service Delivery.* Monographs of the Society for Research in Child Development, *Serial No. 230, 57, No. 6.*

Shonkoff, J. P., Hauser-Cram, P., Krauss, M. W., *and* Upshur, C. C. (1988). Early Intervention Efficacy Research: What Have We Learned and Where Do We Go From Here? *Topics in Early Childhood Special Education, 8, No. 1*, 81-93.

Shonkoff, J. P., *and* Meisels, S. J. (1990). Early childhood intervention: The evolution of a concept. In J. P. Shonkoff *and* S. J. Meisels (Eds.), *Handbook of Early Childhood Intervention* (pp. 3-31). New York: Cambridge University Press.

Simeonsson, R. J., Bailey, D. B., Huntington, G. S., *and* Comfort, M. (1986). Testing the Concept of Goodness of Fit in Early Intervention. *Infant Mental Health Journal, 7, No. 1*, 81-94.

Simeonsson, R. J., Huntington, G. S., McMillen, J. S., Haugh-Dodds, A. E., Halperin, D., Zipper, I. N., Leskinen, M., *and* Langmeyer, D. (1996). Services for Young Children and Families: Evaluating Intervention Cycles. *Infants and Young Children, 9, No. 2*, 31-42.

Smith, T. B., *and* Boyce, G. C. (1993). *Predictors of Developmental Outcomes for Infants who are Medically Fragile.* Paper presented at the 1993 Society for Research in Child Development Conference, March 26, 1993, New Orleans: The Early Intervention Research Institute, Utah State University.

Smith, T. B., Boyce, G. C., Innocenti, M. S., *and* Smith, C. S. (1986). *Caregivers' Locus of Control for Child Improvement.* Logan: The Early Intervention Research Institute, Utah State University.

Smith, T. B., *and* Innocenti, M. S. (1993). *Parenting Stress with Children with Disabilities: Normative Data on the PSI/SF.* Logan: Early Intervention Research Institute, Utah State University.

Snyder, K. D., Weeldreyer, J. C., Dunst, C. J., *and* Cooper, C. S. (1985). *Parent self-awareness scale*. Morganton: Western Carolina Center.

Snyder, S. (1993). Program Evaluation: DEC Recommended Practices. In *DEC Recommended Practices: Indicators of Quality in Programs for Infants and Young Children with Special Needs and Their Families*. Washington DC: Council for Exceptional Children.

Snyder-McLean, L. (1987). Reporting Norm-Referenced Program Evaluation Data: Some Considerations. *Journal of the Division for Early Childhood, 11, No. 3*, 254-264.

Songs, A., Jones, S., Lippert, J., Metzgen, K., Miller, J., *and* Borreca, C. (1984). Wisconsin Behavior Rating Scale: Measure of adaptive behavior for the developmental levels of 0 to 3 years. *American Journal of Mental Deficiency, 88*, 401-410.

Spiker, D., Ferguson, J., *and* Brooks-Gunn, J. (1993). Enhancing Maternal Interactive Behavior and Child Social Competence in Low Birth Weight, Premature Infants. *Child Development, 64*, 754-768.

Spiker, D., *and* Hopmann, M. R. (1997). The Effectiveness of Early Intervention for Children with Down Syndrome. In M. J. Guralnick (Ed.), *The Effectiveness of Early Intervention* (pp. 271-306). Baltimore: Paul H. Brookes Publishing Company.

Spiker, D., Scott, D. T., *and* Gross, R. T. (1991). Design Issues in a Randomized Clinical Trial of a Behavioral Intervention: Insights from the Infant Health and Development Program. *Developmental and Behavioral Pediatrics, 12, No. 6*, 386-393.

Staples, L. H. (1990). Powerful Ideas About Empowerment. *Administration in Social Work, 14, No. 2*, 29-42.

Strain, P. S., *and* Smith, B. J. (1986). A Counter-Interpretation of Early Intervention Effects: A Response to Casto and Mastropieri. *Exceptional Children, 53, No. 3*, 260-265.

Strom, R. (1984). Parent as a Teacher Inventory. Bensenville: Scholastic Testing Service.

Taylor, M., *and* Innocenti, M. S. (1993). Research Methods, Why Covarience? A Rationale for Using Analysis of Covarience Procedures in Randomized Studies. *Journal of Early Intervention, 17, No. 4*, 455-466.

112

Taylor, M. J., Crowley, S. L., *and* White, K. R. (1990). *Measuring Family Support and Resources: Psychometric Investigation of the FSS and FRS.* Logan: Early Intervention Research Institute, Utah State University.

Taylor, M. J., *and* Rodgers, P. L. (1986). *Meta-Analysis Coding Design and Analysis: Three Designs for Educational Research.* Logan: Early Intervention Research Institute, Utah State University.

Taylor, M. J., *and* White, K. R. (1990). *An Evaluation of Alternative Methods for Computing Standardized Mean Difference Effect Sizes.* Logan: Early Intervention Research Institute, Utah State University.

Taylor, M. J. (1993). The Cost Effectiveness of Increasing Hours Per Week of Early Intervention Services for Young Children with Disabilities. In K. White *and* G. Boyce (Eds.), *Early Education and Development* (pp. 238-254).

Telzrow, K. (1993). Commentary on Comparative Evaluation of Early Intervention Alternatives. *Early Education and Development, 4, No. 4*, 359-365.

Tjossem, T. D. (1976). Early Intervention: Issues and Approaches. In *Intervention Strategies for High Risk Infants and Young Children* (pp. 3-33). Baltimore: Baltimore University Park Press.

Tocci, L., McWIlliam, R., Sideris, J., *and* Melton, S. (1997). *Families' Reflections on their Experiences with Early Intervention Services.* Minneapolis: Service Utilization, Early Childhood Research Institute, University of Minnesota.

Treffert, D. (1988). The Idiot Savant: A Review of the Syndrome. *American Journal of Psychiatry, 145, No. 5*, 563-572.

Treffert, D. A. (1989). *Extraordinary People: Understanding Savant Syndrome*. New York: Harper and Row.

Turnbull, A. P., *and* Turnbull, H. R. (in press). Evolution of family professional models: Empowerment as the model for the early 21st century. In S. J. Meisels *and* J. P. Shonkoff (Eds.), *Handbook of Early Intervention* (Second edition). Cambridge: Cambridge University Press

Turnbull, A. P., *and* Turnbull, H. R. (Eds.). (1997). *Families, Professionals, and Exceptionality: A special partnership*. Upper Saddle River: Prentice-Hall.

Upshur, C. C. (1988). Measuring Parent Outcomes in Family Program Evaluation. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 131-152). New York: Aldine de Gruyter.

U. S. Department of Health and Family Services. (1997). *Family Impact Survey of Birth to Three Participants.* Washington DC: Department of Health and Family Services, Office of Strategic Finance-Strategic Planning and Evaluation Section.

U. S. Department of Health and Human Services. (1991). *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* Washington DC: Public Health Service.

Vaux, A., *and* Harrison, D. (1985). Support network characteristics associated with support satisfaction and perceived support. *American Journal of Community Psychology, 13*, 245-268.

Vulpe, S. G. (1994). *Vulpe Assessment Battery* (Revised edition). New York: Slosson Educational Publications.

Walker, D. K., *and* Crocker, R. W. (1988). Measuring Family Systems Outcomes. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 153-176). New York: Aldine de Gruyter.

Walsh, W. M., *and* Wood, J. I. (1983). Family Assessment: Bridging the gap between theory, research, and practice. *American Mental Health Counselor Association Journal*, 111-120.

Washington State Department of Health. (1995). *Children with Special Health Care Needs-1995 Client Data.*

Wasik, B. H., Ramey, C. T., Eryant, D. M., *and* Sparling, J. J. (1990). A Longitudinal Study of Two Early Intervention Strategies: Project CARE. *Child Development, 61*, 1682-1696.

Weiler, I. J., Hawrylak, N., *and* Greenough, W. T. (1995). Morphogenesis in Memory Formation: Synaptic and Cellular Mechanisms. *Behavioral Brain Research, 66*, 1-6.

Weston, D. R., Ivins, B., Heffron, M. C., *and* Sweet, N. (1997). Formulating the Centrality of Relationships in Early Intervention: An Organizational Perspective. *Infants and Young Children, 9, No. 3*, 1-12.

White, K. R. (1985). *The Role of Research in Formulating Public Policy about Early Intervention.* Presentation to Child and Youth Research Luncheon Forum, United States Congress, November 8, 1985. Logan: Early Intervention Research Institute, Utah State University.

White, K. R. (1985). Cost Benefit Studies of Primary Prevention Programs. *The Family Resource Coalition Report-1985, No. 1.* Logan: Early Intervention Research Institute, Utah State University.

White, K. R. (1985). *Efficacy of Early Intervention.* Paper presented at the Conference on Behavioral and Educational Intervention with High-Risk Infants, National Institute of Child Health and Human Development, Bethesda, Maryland on October 2, 1985. Logan: The Early Intervention Research Institute, Utah State University.

White, K. R. *And* Casto, G. C. (1987). What is Known About Early Intervention. In *Early Intervention* (pp. 1-27). Logan: The Early Intervention Research Institute, Utah State University.

White, K. R. (1988). Cost Analysis in Family Support Programs. In H. B. Weiss *and* F. H. Jacobs (Eds.), *Evaluating Family Programs* (pp. 429-443). Hawthorne: Aldine De Gruyter.

White, K. R. (1993). Using Research to Improve the Cost Effectiveness of Early Intervention Programs. *Early Education and Development, 4, No. 4*, 346-358.

White, K. R., Boyce, G. C., Casto, G. C., Innocenti, M. S., Taylor, M. J., Goetz, L., *and* Behl, D. (1994). Comparative Evaluations of Early Intervention Alternatives: A Response to Commentaries by Guralnick and Telrow. *Early Education and Development, 5, No. 1*, 56-68.

White, K. R., Bush, D. W., *and* Casto, G. C. (1985). Learning From Reviews of Early Intervention. *The Journal of Special Education, 19, No. 4*, 417-428.

White, K. R., *and* Casto, G. C. (1985). An Integrative Review of Early Intervention Efficacy Studies with At-Risk Children: Implications for the Handicapped. *Analysis and Intervention in Developmental Disabilities, 5*, 7-31.

White, K. R., Goodrich, G., *and* Taylor, C. (1982). *The Integration of Completed Research: Settings and Meeting Standards for High Quality Work.* Paper presented at the Annual Meeting of the Rocky Mountain Psychological Association, Snowbird, Utah, April 27, 1982.

White, K. R., *and* Pezzino, J. (1986). Ethical, Practical, and Scientific Considerations of Randomized Experiments in Early Childhood Special Education. In *Topics in Early Childhood Special Education 6.3* (pp. 100-116). Logan: The Early Intervention Research Institute, Utah State University.

Whitehead, L. C., Deiner, P. L., *and* Toccafondi, S. (1990). Family Assessment: Parent and Professional Evaluation. *Topics in Early Childhood Special Education, 10, No. 1*, 63-77.

Wolery, M. (1985). The Evaluation of Two Levels of a Center Based Early Intervention Project. *Topics in Early Childhood Special Education, 5, No. 2*, 66-77.

Wolery, M., Neisworth, J. T., *and* Fewell, R. R. (Eds.). (1992). *Topics in Early Childhood Special Education 12, No. 1.* Austin: Donald D. Hammill.

Yoshikawa, H. (1995). Long-Term Effects of Early Childhood Programs on Social Outcomes and Delinquency. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, pp. 51-75. Los Altos: The Center for the Future of Children.

Zero to Three, National Center for Clinical Infant Programs. (1992). *Heart Start: The Emotional Foundations of School Readiness.* Arlington: Zero to Three, National Center for Infant Programs.

Zervigon-Hakes, A. M. (1995). Translating Research Findings into Large-Scale Public Programs and Policy. In R. Behrman (Ed.), *The Future of Children: Long-Term Outcomes of Early Childhood Programs* (Winter edition), *5, No. 3*, (pp. 175-191). Los Altos: The Center for the Future of Children.

Zigler, E., *and* Balla, D. (1982). Selecting outcome variables in evaluations of early childhood special education programs. *Topics in Early Childhood Special Education, 4*, 11-22.

Zigler, E., *and* Trickett, P. K. (1979). IQ, Social Competence, and Evaluation of Early Childhood Intervention Programs. *Annual Programs in Child Psychology and Child Development*, (pp. 559-575). New York: Brunner/Mazel.

Washington State
DEPARTMENT OF
SOCIAL & HEALTH
SERVICES

Research and Data Analysis
Report Number 7.95b