

Running Head: TEAM PRACTICES IN EARLY INTERVENTION

Evidence-base for Team Assessment Practices in Early Intervention

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The purpose of this review of the applied professional practice and research literature was to identify variables associated with efficacious collaboration among team members in assessing young children from birth through age five for early intervention (EI) eligibility. We conducted a review and synthesis of relevant studies to delineate characteristics reported by stakeholders to facilitate effective collaborative evaluation for early intervention. Little empirical evidence was found regarding effective features of team assessment for early intervention eligibility beyond position papers; therefore, the search criterion was broadened to encompass factors influencing early intervention/early childhood special education teams in general. Also included were studies which reported results in terms of barriers, inconsistencies, or factors that were lacking which resulted in hindrances to teamwork and the collaborative effort. Descriptive and survey research methods are used in most of the studies.

### Background

Consultative collaboration has emerged from the fields of business and medicine and has naturally evolved in early intervention. This evolution was based on the rationale that young children in early intervention and their families have complex, diverse, and individual needs (McGonigel & Garland, 1988). A coordinated team process where professionals bring perspectives from their area of expertise and work collaboratively to assess and plan interventions is practical and necessary in order to meet child and family needs. “Teamwork relies on a process of collaboration in which professionals and parents share common philosophies, use common practices, and work toward mutual goals” (Bagnato & Neisworth, 1999, p. 347).

A team approach has been recognized as essential to quality services since the beginning of early childhood education programs (Allen, Holm & Scheifelbusch, 1978; Olson, Murphy, & Olson, 1998). It has been posited that teams make better, less biased decisions than individuals (Kabler & Genshaft, 1983; Pfeiffer, 1981) and effective teaming can result in improved services (Scholtes, 1995). Using a team approach expands the scope of information on which to base more comprehensive, adaptive and accurate assessment or diagnosis which can lead to functional goals, interventions and progress monitoring (Bagnato, 1984; Bagnato & Neisworth, 1981; Goodman, 1977).

Many researchers have described in detail three types of prevalent team models in early intervention: multidisciplinary, interdisciplinary, and transdisciplinary (Briggs, 1997; McGonigel et al., 1994, McWilliam, 2005). According to McGonigel et al. (1994), these three models of team functioning are not mutually exclusive; rather, they represent points on a continuum moving from less to more interaction among disciplines. In the multidisciplinary team (MDT), professionals work independently within their own field of expertise and come up with evaluations that are discipline-specific. Family members are not on the team and interventionists operate independently, resulting in fragmentation of assessment and services. The interdisciplinary team (IDT) model was developed to solve some of the issues inherent in the MDT model. Members assess children individually, but consult and integrate common goals across developmental areas and come up with a coordinated report. Families are full members in the IDT. Transdisciplinary teams (TDT) are characterized by a sharing of expertise across disciplinary boundaries, including with family members in the process. The child is jointly assessed by the team members, although one or two people directly interact with the child in assessment and program implementation. Professionals must be willing to engage in role release

or the sharing of information and acquisition of new skills from their team partners (McGonigel et al. (1994); McWilliam, 2005). In the transdisciplinary model, there is an exchange of competencies between team members which enhances the effort to provide holistic services across contexts (McWilliam, 2005).

Recommended practice in the field of EI/ ECSE has long advocated for utilizing multidimensional assessment methods when evaluating the developmental status and progress of children who have suspected or evident developmental delays and/ or disabilities.

Multidimensional assessment approaches rely on the use of multiple methods to gather information (such as normative, curriculum-based, judgment-based, and play-based assessment strategies) from multiple sources, including parents and other important caregivers in a child's life, in multiple settings across domains of development. As a result of the complexity of the tasks inherent in multidimensional assessment procedures, a team approach is required.

Collaborative team decision-making is crucial for the process of synthesizing and integrating assessment information so as to produce an accurate and holistic picture of the developmental status of a child. In early childhood special education, one particular assessment system that was created explicitly to foster collaborative team assessment and decision making with regard to the developmental status and needs of children with developmental delays from 2 to 6 years of age is the System to Plan Early Childhood Services (SPECS; Bagnato & Neisworth, 1990). SPECS provides interdisciplinary teams with a comprehensive format for structuring assessment data gathered from families and professionals, and for reaching collaborative decisions about children's level of functional capabilities, as well as in planning and evaluating early intervention services (Suen, Lu, Neisworth, & Bagnato, 1993).

Federal regulations also advocate the team approach to assessment and services for young children and their families. Part C of the Individuals with Disabilities Education Act of 2004 (IDEA) (20 USC 1435, sec. 636) refers to the “multidisciplinary assessment of the unique strengths and needs of the infant or toddler and the identification of sources appropriate to meet such child needs”.

In order for teams to function effectively, in general and specifically for early intervention/early childhood special education (EI/ECSE), certain features must be present. Researchers have applied various constructs to organize and explain the aspects of effective team practices. Martinson (1982) originally described barriers to interagency coordination in terms of personality and administrative factors. In their research on successful service integration, Park and Turnbull (2003) classified features which result in successful coordination into two dimensions: structural and interpersonal. They describe factors at the interpersonal level as “characteristics of relationships between individuals that enhance or inhibit collaborative efforts” (p.50). Structural factors were defined as the “components of the relationship between agencies or systems that smooth the progress of or restrain collaborative efforts” (p. 50).

The results of Project Bridge, an educational program for interdisciplinary early intervention teams, found that before a team can be successful, they must have the following components: a superordinate goal, interdependence, commitment, accountability, and leadership. In an article reviewing the project, Spencer and Coye (1988) divided the factors affecting the team’s success into three dimensions: individual characteristics (knowledge and skills, personality and attitudes); group characteristics (roles, cohesiveness, status relationships); and situational factors (goals, stability, resources, and setting).

The Interagency Collaboration model consists of five constructs: environmental factors (political, economic, and social environment); situational factors (organizational elements which are conducive to interagency collaboration), task characteristics (probability of project outcomes), transactional factors, and outcomes (Alter & Hage, 1993; Gray, 1985; Morrissey, Tausig, & Lindsey, 1985; Van de Ven & Ferry, 1980; Whetten, 1981). Consistent with these various frameworks is the concept that successful collaboration for early intervention requires interpersonal skills, structural factors, and features which represent a combination of both individual and structural factors.

For the purposes of this practice-based research synthesis, the constructs and models cited previously in addition to the best practice characteristics derived from the Division for Early Childhood (DEC) were used to develop ten components of effective teamwork in early intervention and early childhood special education.

#### *Description of the practice*

The studies included in this practice based synthesis were investigated and coded according to the ten indicators shown in Table 4. The practice characteristics are: (1) Communication; (2) Cooperation and Commitment; (3) Family-centered philosophy; (4) Leadership; (5) Time allocation; (6) Knowledge of other agencies; (7) Consensus; (8) Training; (9) Systematic, Integrated Process; and (10) Administrative support. Studies were evaluated in terms of the inclusion of these ten practice characteristics.

*Communication* was defined in terms of providing perspectives and expertise, and exchanging information to other team members, agencies, and families. This entails being attentive, receptive to input, and consistent in sharing information in a timely and clear manner.

*Cooperation/Commitment.* This practice characteristic was examined in terms of establishing trust and respect in relationships with children, their families, and colleagues from other disciplines and agencies. Dedication to the process, philosophy, vision shared by the collaborating agencies, and willingness to work together are important aspects of the process.

*Family-Centeredness* referred to a philosophy and practice in which parents and caregivers participate fully in discussion, planning, and decisions; family friendly terminology is used to make process meaningful for all.

*Leadership* was defined as a key person, to act as coordinator, to organize and manage the process. The role must be someone who has agency authority to advocate or provide direct assistance with problems.

The practice characteristic *Time allocation* was characterized by sufficient time allowances for appointments convenient for all parties, and flexibility to accommodate families' schedules. This also implies adequate staffing within the agencies that result in feasible caseloads.

*Knowledge of other agencies.* This practice characteristic indicated system wide knowledge of other agencies, available programs, and the ability to assist families and engage in cooperative service delivery.

*Consensus* was defined as shared philosophy, and the ability to articulate, discuss, and define problems in a manner that enables members to come to agreement on a common purpose and on the goals they value. All members have the opportunity to participate equally, problem solve, and reach joint decisions.

*Training* was defined as instruction or preparation in interpersonal skills such as active listening, negotiating, and effective communication when dealing with professionals from different disciplines, as well as with children with special needs and their parents.

*Systematic integrated process.* This practice characteristic consisted of organized procedures, ground rules, planning and structure for meetings, identifying child and family needs, discussing child's evaluation with families, the referral process, and paperwork.

*Administrative support.* For the purposes of this research, this was defined as creating the conditions for collaborative work (i.e., policies at the program, state and federal level). Support included sufficient numbers of skilled staff, funding, and ample resources to meet child and family needs.

## Search Strategy

### *Search Terms*

Searches were performed using the terms: *early intervention teams, team models, teaming, team assessment, multi-agency, interagency, multidisciplinary, interdisciplinary, transdisciplinary, joint working, and collaboration.* The terms *infants* or *toddlers* or *preschoolers* or *young children* were added as a condition to further focus or narrow the search of the subject under investigation.

### *Sources*

The primary databases searched were: MEDLINE, Educational Resources Information Center (ERIC), Psychological Abstracts online, PsychINFO, Science Direct, Dissertation Abstracts International, OVID, Google Scholar, Ingenta, Academic Search Premiere, and Cochrane databases. Reference lists of the studies found in the databases were also reviewed in

addition to hand searches to locate relevant studies and background information in book chapters and articles. We also conducted selective searches of unpublished doctoral dissertations through ProQuest dissertations and theses to find relevant research.

### *Selection Criteria*

Studies were included if they examined collaborative or team processes in assessment and intervention for EI programs for children from birth through five years of age, consisting of teams of professionals and caregivers serving children with or at risk for developmental delay or with diagnosed disabilities. The studies were chosen if teamwork was their primary focus and if two or more of the ten practice characteristics were reported, described or could be discerned. Studies were excluded if they addressed team assessment for children in primary grades or high school or for any purpose other than EI/ECSE. Studies relevant to early intervention were located, but not included if they focused on course content and/or training programs in teaming processes as part of preservice and inservice professional preparation for early intervention. Studies which included young children but reported mean ages of children of school age were also eliminated.

### Search Results

Nineteen studies met the selection criteria for the synthesis. Table 1 provides selected characteristics of the participants in the chosen studies.

### *Participants*

The 19 studies reported information from 1,374 professionals and 1,325 parents or caregivers. Most of the professionals (approximately 87%) were direct service providers, coordinators or consultants. Four studies included state, program or agency administrators, which

was approximately 13 of the participants. These numbers are estimations based on the available information. In one of the studies, professionals were not divided into administrators and direct service providers, but descriptors of the participants were mainly administrative in nature and were coded as such. The majority of participants were affiliated with home or center based early intervention programs, either as parents of a child or in a professional capacity, working with children in EI programs. Three of the studies included hospital or healthcare settings in their research. The number of children reported in the studies does not accurately reflect the number of children served by the parents and professionals surveyed. Only seven (37%) studies reported numbers of children served by the professionals in early intervention programs, resulting in a total count of 746 infants and young children. The children ranged in age from birth through five years of age.

#### *Type of Study*

The research was separated into three groups depending on the focus of the study as follows: Interagency/interdisciplinary collaboration (N = 10), Family and professional collaboration (N = 4), and Process and functional characteristics (N = 5). The first set of studies examined features of effective partnering between agencies and within disciplines serving children in early intervention. The second grouping of studies investigated characteristics which facilitated relationships and cooperation between caregivers and service providers. The third group examined the process and practices conducive to successful functioning and the evolutionary phases of team development specific to early intervention. Table 3 shows the focus of the research and the model reportedly used in the programs studied. The model could not be discerned in several of the studies, and two of them simply reported the use of an interagency approach. Thirty-two percent of the articles stated that the programs studied utilized a

multidisciplinary model. It is notable that only one study (Kaczmarek, Pennington, & Goldstein, 2000) reported using a transdisciplinary approach to teamwork, despite the indication from researchers that transdisciplinary working may offer the most benefit to children.

### *Research Designs*

All of the studies included in this research synthesis utilized a qualitative approach. Factors were not always based on outcomes, but on perceptions of the stakeholders as to what constituted effective teamwork in early intervention. Table 2 shows the types of study, data analysis techniques, and instruments used in each study. Content analysis was utilized in the majority of the studies. Content analysis has been defined as an objective coding method applied to field notes and various types of unobtrusive data in order to perform systematic comparisons and analysis (Berg, 2004). Two of the studies used a grounded theory approach to analysis, providing quotations from journal entries, interviews, and videotapes. Researchers developed their own instruments for assessing team practices in 15 studies. Three studies used existing instruments which are commercially available for collecting data, one of which (Interagency Collaboration Assessment Tool, ICAT) was a tool developed by the researcher for use in the study.

### *Outcomes*

Study outcomes were examined in terms of (1) *individual indicators* (i.e., interpersonal skills and qualities which effect relationships between team members), (2) *structural indicators* (i.e., administration, and agency policy and procedures), or (3) *interpersonal and structural indicators* (includes both aspects). Characteristics which involve both structural and individual components were reported most often in the research to facilitate teamwork (51.3%). Individual

factors were reported in 36.5% of the studies, and structural factors were reported the least (12.2%).

## Results

### *Practice Characteristics*

Table 4 shows the particular teaming characteristics that were included in each research report as indicative of effective teamwork. The characteristics were described or discussed in the articles and confirmed by two authors of the synthesis. In each of the 19 studies, at least two of the ten practice characteristics examined in the present analysis were discussed or reported as variables affecting collaboration among early intervention team members. On average, a total of 3.95 practice characteristics were included in each study ( $SD = 1.18$ , range = 2 - 6).

*Communication.* This characteristic was cited most often in the studies reviewed for this synthesis. Fifteen (79%) of the studies included honest, frequent and clear communication, willingness to listen to others, and bidirectional information sharing as factors contributing to successful collaborative relationships among agencies and between caregivers and service providers. Parents and professionals cited inadequate information sharing as a barrier to teamwork. This finding is consistent with surveys and literature reviews (Lamorey & Ryan, 1998; Hinojosa et al., 2001) which found that communication difficulty and lack of collaborative skills were barriers to team functioning.

*Cooperation/ Commitment.* Cooperation and commitment to collaboration were reported in 12 (63%) of the studies as factors associated with increased collaboration among team members. These variables underscore the importance of establishing common goals and visions, and of sharing responsibility for the systematic implementation of team goals.

*Consensus.* Consensus decision making was reported to be a variable supporting collaboration in 10 (53%) of the studies. This practice characteristic underscores the importance of developing a common set of goals and priorities for providing better services to children and families.

*Family-centeredness.* Nine (50%) of the studies included evidence that supporting the principle of family empowerment and implementing family-centered approaches promoted genuine partnership between professionals and family members, thus increasing the likelihood of successful collaborative teamwork.

*Leadership.* Five (28%) of the studies included commitment of and support from key decision makers as a variable of importance for successful collaboration at both the individual and structural levels. A key person to coordinate care and bring the stakeholders together enhanced the quality of services.

*Time allocation.* Sufficient time for scheduling and training was included in 6 (32%) of the studies as a component conducive to effective and efficient team collaboration. This included actual time spent working with children and flexibility of service delivery options for families.

*Knowledge of other agencies.* Five (26%) of the studies reported evidence that knowing the staff, and understanding the organizational culture of collaborating agencies (i.e., language, structure, rules, values, and communication patterns) as well as the services provided by them facilitated interagency collaboration and cooperation and contributed to maximizing available resources.

*Training.* This practice characteristic was included in 21% of the studies. Training on team building included activities focused on developing effective communication and decision making skills, and on facilitating the acquisition of knowledge and skills about the characteristics

of effective teams. Training was found to be an important part of the team process in only four of the studies despite the importance placed on training in teamwork and family-centered practices in position papers (Bailey, 1996; McCollum & Yates, 1994; Bruder & Nikitas, 1992; Bailey, McWilliams & Winton, 1992).

*Systematic, integrated process.* Four studies (21%) cited systematic, integrated process for decision making as a component facilitating collaborative efforts. Integrated services included structured interviews and assessment within a set time frame, designated meetings, site visits and system for providing information to families.

*Administrative support.* This practice characteristic was regarded as an essential factor to providing resources and support (i.e., policy at the program, state and federal level, skilled staff, funding and ample resources) for early intervention programs in 5 (26%) of the studies.

Fifty eight percent of the individual practice characteristics were cited in the ten studies whose focus was Interagency/interdisciplinary collaboration and cooperation. Twenty four percent were found in five studies in which Process and Functional characteristics were the focus. Eighteen percent of the characteristics were included in the four studies which comprised Family and professional collaboration.

### Conclusion

Communication was the factor cited most often in the studies as facilitating teamwork. Briggs (1997) writes extensively about the importance of communication and states that “Members of the group must be able to suspend their assumptions and enter into a genuine thinking together, a commitment to thoughtful deliberation and to learning collectively” (p.214).

Several studies identified features of teamwork based on data collected from parents and professionals (surveys, interviews, journal entries etc.) as evidence of factors which were integral to collaborative teamwork. Various combinations of interpersonal and structural factors emerged from the data. This “evidence” was often based on stakeholders’ views, opinions, and experiences with early intervention. Interaction between the variables was a recurring theme, discussed in 38% of the studies.

Although the concept of improved outcomes for children and families appears to be inherent in some of the studies, only five studies (26%) stated that teamwork impacted child outcomes. This appeared to be the case because child progress was not the focus of the research. Two studies included measures of child outcomes, most notably Bagnato & Neisworth (1985) in which the diagnostic battery gauging child progress was used as a measure of team efficacy. Hunt, Soto, Maier, Liboiron, & Bae (2004) cited child outcomes in the form of increased engagement and interaction of the subjects of the study with their peers and teachers when a collaborative team model was utilized in an inclusive preschool.

Parental satisfaction was an outcome measure in 21% of the studies. Professional growth through the collaborative process was reported as an outcome in 11% of the studies. Another finding in the studies was that successful collaboration between teams and team members was developmental in nature (Johnson, Zorn, Tam, & Lamontagne, 2003, Pena & Quinn, 2003; Kaczmarek, Pennington, & Goldsmith, 2000). The process evolved through various stages and was dynamic and ongoing. This finding is consistent with other research on team functioning (Friend & Cook, 2000; Lowe & Herranen, 1982; Tuckman & Jensen, 1977).

### Implications

Despite a wealth of position papers, limited empirical evidence exists on teamwork and team assessment practices when determining children eligible for early intervention.

Investigation into the impact and outcomes associated with teaming for assessment, planning, and service delivery would inform programs and benefit the children and families in need of supports.

The finding that communication was the factor cited most often in the studies as facilitating teamwork is not surprising, given that the exchange of information to enable parents to help their children reach their full potential is the basis of early intervention. Communication requires skill, and education in teamwork is a necessary component of preservice and inservice training (Miller & Stayton, 1998; Miller, Mutton, & Williams, 1993; Bailey, Simeonsson, David, & Huntington, 1990). Models that specifically address the complexities of early intervention programs and emphasize team collaboration as integral to quality service delivery have been developed (Hussey-Gardner, McNich, Anastasi, & Miller, 2002; Kaczmarek, Pennington, & Goldstein, 2000; McClain & Handmaker, 1993; Miller, Mutton, & Williams, 1993). Training in, and implementation and field validation of practices that emphasize a team approach are needed.

The *Division of Early Childhood (DEC) Recommended Practices* (Sandall, McLean, & Smith, 2005), which summarizes the knowledge base of best practices in early intervention and early childhood education, stresses the importance of teaming. This document contains seven strands, one of which focuses on interdisciplinary practices related to teamwork. This strand has the smallest literature base, supported by the least number of research based articles (Rapport, McWilliam, and Smith, 2004). In their article investigating the research base of interdisciplinary

practices, the authors stress the importance of implementing these practices while expanding the research base of best practices in the field.

Ultimately, in order for multiagency, transdisciplinary collaboration to be possible, the practice must be supported by policy at the federal, state and local level. The word “team” appears frequently in new proposals to the federal law regulating early intervention services. Upon closer inspection, however, the frequent use of the word is deceiving, given the limited scope and explanation of the process. Proposed §303.24 to Part C of IDEA seeks to clarify that the term multidisciplinary means “the involvement of two or more individuals from separate disciplines or professions, or one individual who is qualified in more than one discipline or profession”. Although consistent with the definition of multidisciplinary working, this reference and clarification falls short of the ideal of transdisciplinary or interdisciplinary assessment and service integration advocated by researchers, including the DEC Recommended Practices, to be most beneficial to children and families. According to Bagnato (2007), it is not accurate to refer to the multidisciplinary approach as a team model since the professionals involved do not in fact, operate as a team, but as individuals.

Researchers agree that the nature of early intervention requires collaboration among parents and individuals from various disciplines. Consideration of the ten practice characteristics may help to advance the state of team collaboration in early intervention/early childhood special education. Documentation of positive outcomes for children and families will provide justification for costly team assessments and services. In order for teamwork to be effective, all stakeholders must be as committed to the importance of teamwork as they are committed to the children in their care.

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Table 1

*Background Characteristics of the Study Participants*

Study	Sample Size		Child's Age in months or years	Setting	
	Professionals	Parents			
		Positions			
Appleton, Boll, Everett, Kelly, Meredith, & Payne (1997)	12	care coordinators School psychologist, ECSE, therapists (OT, PT, speech, recreation), psychiatrist, nurse	20	2.5 to 3.5 8 months- 5.7 yrs	EI program Inpatient rehabilitation program
Bagnato, & Neisworth (1985)	8				
Bailey, Buysse, Edmondson & Smith (1992)	180	(75% direct service providers; 25% program administrators)	NR	birth to 3	EI programs
Blue-Banning, Summers, Frankland, Nelson & Beegle (2004)	53	17 (32%) administrators and 36 (70%) direct service providers) (nurses, therapists, social workers, teachers, support staff, psychologists, pediatricians)	137	NR*	EI programs
Cigno & Gore (1999)	51		84	M=3	EI Children's center
Dinnebeil, Hale, & Rule (1999)	226	service coordinators	397	birth to 3	EI programs
Harrison, Lynch, Rosander, & Borton (1990)	49	(state, local and community agencies, teachers)	NR	birth to 3	
Hunt, Soto, Maier, Liboiron & Bae (2004)	12	special/regular education teachers, assistants and speech language pathologist	7	3 to 4	EI program preschool
Johnson, Zorn, Tam, Lamontagne, & Johnson (2003)	33	(bureau chiefs, division directors, deputy directors, consultants, program coordinators, training specialists)	NR	birth to 5	9 state departments, 3 private social services agencies
Kaczmarek, Pennington, & Goldstein, (2000)	18	(teachers, assistants, speech language pathologist, hospital coordinator, principal, therapists, school personnel)	NR	3 to 5	EI program 2 preschool self-contained classrooms centre-based community infant/toddler, preschool programs; hospital settings
Malone, & McPherson (2004)	60	(community and hospital-based EI team members)	NR	NR*	

Study	Sample Size		Child's Age in months or years	Setting
	Professionals	Parents		
	Positions			
McConachie, Salt, Chadury, McLachlan & Logan (1999)	242	direct service providers	NR	NR* EI center-based Child Development Unit
McDowel & Klepper (2000)	0	22 direct service providers; 7 administrators	42	NR*
Minke & Scott (1993)	28	teaching and medical personnel	20	NR* EI programs home, center and hospital based services
O'Connor (1995)	18	4 teachers, 2 student clinicians, 1 special needs coordinator, 1 psychologist)	1	birth to 3
Pena, & Quinn (2003)	8	nurses, psychologists, school personnel, social workers, hospitals, referral agencies, preschool staff	NR	2 to 4 EI-Head Start classrooms
Polivka, Dresbach, Heimlich & Elliott (2001)	49	direct service providers	NR	NR rural EI programs
Stegelin & Jones (1991)	300	17 direct service workers, 10 program directors	NR	3 to 5 EI in preschool and daycare centers EI Center and home-based Early Head Start programs
Zhang, Schwartz & Lee (2006)	27		600	3 to 5
	1374		1325	

NR Not Reported

\* Although specific ages were not reported, all research included in the synthesis involved early intervention and services for young children.

Table 2

*Characteristics of the Study Types and Methodology*

Study	Type of Study	Data Collection Technique	Instrument	Methodology
Appleton, Boll, Everett, Kelly, Meredith, & Payne (1997)	Qualitative (cohort)	interview	Developed by researchers	Content analysis
Bagnato, & Neisworth (1985)	Quasi-experimental	Performance rating scales	BSID/GDS; EIDP; CRIB	Analysis of Variance
Bailey, Buysse, Edmondson & Smith (1992)	Qualitative	rating scales	Developed by researchers	Content analysis
Blue-Banning, Summers, Frankland, Nelson & Beegle (2004)	Qualitative	focus groups and individual interviews	Developed by researchers	Grounded theory
Cigno & Gore (1999)	Triangulated	Observation, interview, focus groups	Developed by researchers	Content analysis
Dinnebeil, Hale, & Rule (1999)	Qualitative (comparative)	questionnaire	Developed by researchers	Content analysis
Harrison, Lynch, Rosander, & Borton (1990)		Interview	Developed by researchers	Critical incident technique
Hunt, Soto, Maier, Liboiron & Bae (2004)	Qualitative (case study)	Interview	Interactive and Engagement Scale (IES)	Content analysis
Johnson, Zorn, Tam, Lamontagne, & Johnson, (2003)	Qualitative (survey)	interview	Developed by researchers	Content analysis
Kaczmarek, Pennington & Goldstein (2000)	Qualitative (case study)	interview	Developed by researchers	Content analysis
Malone, & McPherson (2004)	Qualitative (comparative)	questionnaire	Attitudes about Teamwork Survey	Content analysis
McConachie, Salt, Chadury, McLachlan & Logan (1999)	Qualitative (survey)	questionnaire	Developed by researchers	Content analysis
McDowel & Klepper (2000)	Qualitative (survey)	questionnaire	Developed by researchers	NR*
Minke & Scott (1993)	Qualitative	videotaped meetings and interviews	Developed by researchers	Grounded theory

Study	Type of Study	Data Collection Technique	Instrument	Methodology
O'Connor (1995)	qualitative	observation, audio, videotapes, file review interviews	Developed by researchers	Grounded theory
Pena, & Quinn (2003)	qualitative (case study)	journal entries	Developed by researchers	Content analysis
Polivka, Dresbach, Heimlich & Elliott (2001)	qualitative (survey)	Survey	ICAT (Interagency Collaboration Assessment Tool)	Path Analysis
Stegelin & Jones (1991)	qualitative (survey)	structured group and individual interviews	Developed by researchers	Content analysis
Zhang, Schwartz & Lee (2006)	qualitative (survey)	questionnaires, interviews	Developed by researchers	Content analysis

\*NR: Not reported, could not be deciphered

Table 3

*Focus of the Research and Model of Teamwork Used in the Study*

Study	Study focus	Model
Appleton, Boll, Everett, Kelly, Meredith, & Payne (1997)	Interagency/Interdisciplinary Collaboration and Cooperation	multidisciplinary
Bagnato, & Neisworth (1985)	Interagency/Interdisciplinary Collaboration and Cooperation	interdisciplinary
Bailey, Buysse, Edmondson & Smith (1992)	Family and Professional Collaboration	NR
Blue-Banning, Summers, Frankland, Nelson & Beegle (2004)	Family and Professional Collaboration	NR
Cigno & Gore (1999)	Interagency/Interdisciplinary Collaboration and Cooperation	multidisciplinary
Dinnebeil, Hale, & Rule (1999)	Family and Professional Collaboration	NR
Harrison, Lynch, Rosander, & Borton (1990)	Interagency/Interdisciplinary Collaboration and Cooperation	NR
Hunt, Soto, Maier, Liboiron & Bae (2004)	Interagency/Interdisciplinary Collaboration and Cooperation	interdisciplinary
Johnson, Zorn, Tam, Lamontagne, & Johnson (2003)	Interagency/Interdisciplinary Collaboration and Cooperation	NR
Kaczmarek, Pennington & Goldstein (2000)	Process and Functional Characteristics	transdisciplinary
Malone, & McPherson (2004)	Process and Functional Characteristics	NR
McConachie, Salt, Chadury, McLachlan & Logan (1999)	Process and Functional Characteristics	multidisciplinary
McDowel & Klepper (2000)	Process and Functional Characteristics	multidisciplinary
Minke & Scott (1993)	Family and Professional Collaboration	multidisciplinary
O'Connor (1995)	Interagency/Interdisciplinary Collaboration and Cooperation	multidisciplinary
Pena, & Quinn (2003)	Process and Functional Characteristics	interdisciplinary
Polivka, Dresbach, Heimlich & Elliott (2001)	Interagency/Interdisciplinary Collaboration and Cooperation	interdisciplinary
Stegelin & Jones (1991)	Interagency/Interdisciplinary Collaboration and Cooperation	Interagency*
Zhang, Schwartz & Lee (2006)	Interagency/Interdisciplinary Collaboration and Cooperation	Interagency*

NR = Not reported.

\*Article cited "interagency". Researchers could not presume a multidisciplinary or interdisciplinary approach was used.

Table 4  
*Practice Characteristics Identified in the Studies*

Study	Practice Characteristics									
	Communication	Cooperation/ Commitment	Family centeredness	Leadership	Time allocation	Knowledge of other agencies	Consensus	Training	Systematic, integrated process	Administrative Support
Stegelin & Jones (1991)	x	x			x	x	x			
Johnson, Zorn, Tam, Lamontagne, & Johnson (2003)	x	x		x		x				x
Malone & McPherson (2004)	x	x					z	x		
Bailey, Buysse, Edmondson & Smith (1992)			x				x		x	x
Pena & Quinn (2003)	x	x			x	x	x			
Kaczmarek, Pennington, & Goldstein, (2000)	x				x		x			
McConachie, Salt, Chadury, McLachlan & Logan (1999)			x	x			x			x
McDowell & Klepper Harrison, Lynch, Rosander, & Borton (1990)	x	x	x						x	
Dinnebeil & Rule (1999)	x		x					x		
Appleton et al.. (1997)			x	x				x	x	

Study	Communication	Cooperation/ Commitment	Family centeredness	Leadership	Time allocation	Knowledge of other agencies	Consensus	Training	Systematic, integrated process	Administrative Support
Hunt, Soto, Maier, Liboiron & Bae (2004)	x		x		x					
Blue-Banning, Summers, Frankland, Nelson & Beegle. (2004)	x	x								
Minke & Scott (1993)	x	x	x					x		
Polivka, Dresbach, Heimlich & Elliott (2001)	x	x				x	x			x
Zhang, Schwartz & Lee (2006)	x	x			x		x			x
Cigno & Gore (1999)	x	x	x	x			x			
Bagnato & Neiswroth (1985)	x	x			x				x	
O'Connor (1995)	x	x	x	x		x	x			
Frequency	15	12	9	5	6	5	10	4	4	5
Percentage of studies	79	63	47	26	32	26	53	21	21	26

**Table 5**  
*Major Findings and Results Reported in Each of the Studies*

Study	Major Findings	Results
Appleton, Boll, Everett, Kelly, Meredith, & Payne (1997)	Interagency collaboration geared to meeting parental wishes led to flexible educational recommendations. 81% of families felt they were receiving sufficient care coordinator contact; 71% felt the care coordinator always listened to their concerns; 43% reported that the whole family was the focus of interest. Low parental awareness of assessment and care planning was reported. Care coordinators reported lack of time and importance of learning parent empowerment skills, planning and counseling skills.	Five features of team management were identified: 1) empowerment including listening to parental concerns about coordinated care and training of staff 2) systematic assessment and planning for defined populations 3) matching need to service 4) interagency collaboration and 5) named care coordinators
Bagnato, & Neisworth (1985)	Average child gain attributed to intervention for both the acquired and congenital subgroups was 86% and 54% respectively. Global rates of development for the children increase from .33 to .50 of the typical development rate. Analyses demonstrate that significant pretest-post differences are evident for both brain injury subgroups across each dimension. Intervention effects were the strongest in cognitive (66% - 69%) and social emotional (58%) areas.	Intensive interdisciplinary interventions had a significant impact on the developmental and behavioral progress of children as assessed by 3 types of multi source developmental scales over a 3.5 month time period. The multidimensional diagnostic team procedures not only were consistent in monitoring progress, but revealed results related to behavioral processes which could inform program planning.
Bailey, Buysse, Edmondson & Smith (1992)	Family barriers and system barriers collectively accounted for more than 70 % of the identified obstacles to teamwork. System barriers alone accounted for more than 50% for the provision of family services. The lack of skills or knowledge on the part of professionals accounted for 15 % of the barriers. Testing barriers accounted for a small proportion of the total barriers (.9%)	Lack of knowledge or skills to participate fully in EI planning and decision making as well as lack of interest in these roles were family limitations. Lack of administrative support, inadequate resources, unwillingness to change the status quo, or inconsistent philosophical perspectives between administrators and practitioners were system barriers. Inadequate preparation in working with families was cited as a professional limitation
Blue-Banning, Summers, Frankland, Nelson & Beegle (2004)	Transcripts were entered into Ethnograph and reviewed by researchers. Thirty-nine indicators were organized into 6 themes (see findings).	Study identified 6 themes of collaborative relationships: 1) communication 2) commitment 3) equality 4) skills 5) trust and 6) respect Quality partnerships are a prerequisite for successful family and child outcomes
Cigno & Gore (1999)	31% of parents reported preferring services "under one roof" and appreciated the key worker role. Some parents made reference to the process in which all professionals were involved in assessment and coming up with a holistic plan for the child	Parents were satisfied with the integration and centralization of services and multi-agency assessment procedure. Professionals demonstrated a strong commitment; appreciated the coordinator role to bring stakeholders together; felt that model enhanced communication. Some staff felt that a common purpose and cohesion was lacking, as well as a common database. They also felt that rural communities did not benefit from the center.

Study	Major Findings	Results
Dinnebeil, Hale, & Rule (1999)	According to both parent (65%) and service coordinator responses (56%), service delivery issues enhanced collaboration. Issues related to community context and administrative policies were cited least, at 2% by both parents and professionals.	Study describes 5 interactive variables affecting successful collaborative relationships within an EI program: 1) program climate and philosophy; 2) management and delivery of services, including the variety of options made available to and developed with families; 3) teaming approaches (communication, collaboration; 4) administrative and policies practices employed by the program, including the qualities of the program personnel as well as the degree of flexibility with regard to service delivery options and staff scheduling; and 5) community context
Harrison, Lynch, Rosander, & Borton (1990)	Out of 111 enhancing incidents reported, 42 related to activities that facilitated the community's efforts to provide services to at-risk or disabled young children and their families; 23 incidents related to communicating; 29 incidents related to activities that provided increased opportunities for awareness, networking, and professional support; 8 incidents related to overall responsiveness to people and the community; and 9 incidents related to neutralizing issues of territory.	Study identifies 5 dimensions of effective interagency coordination and collaboration: 1) developing new ways to meet community needs, 2) communicating, 3) networking and increasing awareness, 4) being responsive, and 5) neutralizing territory issues.
Hunt, Soto, Maier, Liboiron & Bae (2004)	Contributions of team collaboration to child progress: regularly scheduled team meetings, share expertise and perspective, gave parents opportunity to provide input, all members are equal, relate assessment to curriculum	The study had 3 components: child outcomes, intervention fidelity and ecological validity. For the purposes of this synthesis, the ecological validity section was reviewed. A team interview was conducted which provided team members with perspectives on the practicality and usefulness of the collaboration model and the role of each member. Collaborative, consistent implementation of support items contributed to the progress of each child and to the professional growth and effectiveness the team but resources, incentives and training on collaboration are needed.
Johnson, Zorn, Tam, Lamontagne, & Johnson, (2003)	Stakeholders contributing factors to successful collaboration: 60.6% of stakeholders cited willingness to work together; 57.58% cited strong leadership; 48.48% cited shared vision	Study found 7 interrelated factors contributing to successful interagency collaboration: 1) commitment, 2) communication, 3) strong leadership from key decision makers, 4) understanding the culture of collaborating agencies, 5) engaging in serious preplanning, 6) providing adequate resources, and 7) minimizing turf issues.
Kaczmarek, Pennington, & Goldstein (2000)	Participants perceived a positive impact of the model on both their personal growth as a team member and in their professional practice. The acquisition of important team behavior and skills was the major contribution at the level of personal growth.	Positive impacts of the model included factors such as improved communication and collaboration, as well as increased awareness of the need for teamwork and consistency in the children's programming. Better child outcomes resulted from the systematic implementation of the shared functional goals of the children in the classroom. Barriers mentioned by team members were: time to implement transdisciplinary consultation, an imbalance in team member participation, and the need for better communication and for more information.

Study	Major Findings	Results
Malone, & McPherson (2004)	<p>Study found 75% in each group reported their individual philosophy/contributions were most influenced by the team environment. 88% agreement overlap on topical categories identified by both groups, but the percentage sorted into each category differed. Hospital-based teams cited conflicting schedules and time consuming team meetings. A greater percentage of community based teams identified time management as a recommendation for improving team process.</p>	<p>Community-based team members had an overall higher regard for teamwork than hospital-based team members. Community-based team members rated variables such as support for child-family involvement as team members, the development of goals within the team meetings, and the ability to work within a team environment higher than hospital-based team members. Hospital-based team members rated both the internal support of the team and the extent to which they value their own efforts contributing to the team higher than community-based team members. Both groups had a high regard for the team process and a positive view of the performance of the teams in which they served.</p>
McConachie, Salt, Chadury, McLachlan & Logan (1999)	<p>Half of the teams appeared to have a coordinated assessment process. Most teams (91%) had a conference at the conclusion of assessment but only 74% reported to always include parents, and only 70% regularly sent their reports to parents. 87.6% of teams reported that there was a team leader. Assessment where several team members worked jointly were more likely to take place when teams were center based, but combined reports integrating assessments were not more likely.</p>	<p>Team organization varied, ranging from groups with an organizational structure to groups of professionals having a great deal of autonomy. 28.5% of teams had health staff only; 37.2% had health, education, and social services staff. 96% held regular clinical meetings to coordinate referrals and discuss management of children. Management practice was weak; only 46.2% of teams had a written policy or contract for the team's work.</p>
McDowel & Klepper (2000)	<p>Strategies to achieve integrated services, family empowerment and collaborative liaisons included clear assessment questions, dedicated sessions for team discussion; reports in plain English; professional assessments conducted within a fixed time frame; results pooled at team discussions and; school visits by health staff for each child assessed.</p>	<p>A service model of a health team for children who have several developmental problems is likely to decrease children's risk of adverse long-term outcomes if it incorporates the principles of team collaboration, resiliency, and family empowerment.</p>
Minke & Scott (1993)	<p>10 staff members felt strategies to achieve goals was their own prerogative. Staff controlled many decisions and a standard procedure of assessment was used in all 3 programs</p>	<p>Consistent with a family focused model, the IFSP should consist of: collaborative goal setting, parent participation in assessment, information sharing, collaboration and negotiation. Training in interviewing techniques my facilitate negotiation.</p>
O'Connor (1995)	<p>Barriers to collaboration between agencies were found to be the following: 1) discontinuity in interagency communication; 2) lack of stability in team membership; 3) time constraints; 4) professional and agency boundaries; 5) inadequate level of integration between therapeutic and educational programs; 6) lack of clear, common goals for collaboration.</p>	<p>Closer links among professionals was enhanced by the advocacy effort of a parent. A genuine partnership with the parent was consciously developed by professionals. Interagency cooperation was positively affected by flexible management procedures. Understanding of complementary efforts was increased by interagency visits. Nevertheless, the goal of a close, consistent, and genuinely collaborative relationship was not achieved.</p>

Study	Major Findings	Results
Pena, & Quinn (2003)	Collaborative team based services and consultation by Speech-Language pathologists is a dynamic process requiring the following: 1) shared goals and understanding of the model and process; 2) collaborative planning and training on giving and receiving constructive feedback; 3) Support from administrators, meaningful incentives and time allocation for the process; 4) Familiarity with the "culture of the classroom" and voluntary team participation; 5) Emphasis on evolutionary process and difference of individual teams	Journal entries provided evidence of team development and illustrated aspects of team development that were important to the process (consistent with Lowe and Herranen's model of team development). Factors emerged that are integral to team functioning.
Polivka, Dresbach, Heimlich & Elliott (2001)	Interagency processes had the largest effect on outcomes (0.77), situational factors, such as knowing the staff and agreeing on goals was also important (0.64). Task characteristics (i.e. needing diverse specialties and anticipating outcomes) and environmental factors (i.e. state policies, advocacy and funding) were not significant.	Situational factors consisting of knowing the staff and understanding the services of other agencies, agencies helping accomplish goals and agreeing on needs were crucial to interagency processes and outcomes.
Stegelin & Jones (1991)	Of 60% of providers that responded to item, the one factor most helpful to interagency collaboration was networking (12.7%); a common goal and family focus (9.7%).	The most frequently reported factors in interagency collaboration were: need for knowledge of service providers, identification of needs and problems of children; involvement of key community personnel; creating a network for communication and developing shared child focused goals
Zhang, Schwartz & Lee (2006)	Interpersonal factors affecting collaboration between EI and EHS included: frequent communication; insufficient time for EI to train and model goals to EHS staff. Organizational factors included: relationship and rapport between programs; exchange of paperwork between programs. Barriers to collaboration cited were difficulty scheduling meetings; lack of facility and skilled (and bilingual) staff; insufficient time due to large caseloads.	Both EI and Early Head Start (EHS) have mandates to work . Challenges identified by EHS providers included the following: setting appointments at time convenient for all parties; setting shared goals; making information family friendly. Strategies included: planning and preparing parents; more communication between EI and EHS providers; streamlining multiple sets of paperwork.