Cost effectiveness and programmatic differences in early intervention services delivered in natural environments

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COST EFFECTIVENESS AND PROGRAMMATIC DIFFERENCES IN EARLY INTERVENTION SERVICES DELIVERED IN NATURAL ENVIRONMENTS

by
Jacque L. Jones

A Thesis
Submitted in partial fulfillment of the requirements of the Master of Arts Degree of The Graduate School at Rowan University May 9, 2000

Approved by _________________________ Professor

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ABSTRACT

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Cost Effectiveness and Programmatic Differences in Early Intervention Services Delivered in Natural Environments
2000
Dr. Roberta Dihoff, Advisor
School Psychology

Federal re-authorization of IDEA stresses the importance of serving disabled infants and toddlers in natural environments. For most infants, this is their home or daycare setting. Thirteen state funded early intervention programs in Southern New Jersey collected daily logs of direct and indirect services provided to over 1,000 children on a daily basis. Logs were summarized for two one-month periods. Results were tabulated for each program to indicate the percentage of staff time spent in direct activity with the family; the percentage of missed appointments; and time spent in traveling.
MINI-ABSTRACT

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Dr. Roberta Dihoff, Advisor

School Psychology

Federal re-authorization of IDEA stresses the importance of early intervention programs (EIPs) serving disabled infants and toddlers in natural environments. Results were tabulated for thirteen EIPs to indicate the percentage of staff time spent in direct activity with the family, the percentage of missed appointments; and time spent in traveling.
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Chapter One

Need

Early intervention services have been mandated by law to ensure that eligible children with special needs ages birth to three are provided with the necessary and appropriate services to address those needs. These Early Intervention Programs (EIPs) are often used to help recognize special concerns involving the proper diagnosis, treatment, and education of children who are physically, emotionally, or psychologically impaired. EIPs also address the child’s physical, sensory, communication, cognitive and social-emotional needs within the framework of the family. The goal of early intervention is to enhance the child’s development and the capacity of the family to meet the special needs of the child. These needs can be met through a center based program, a home based program, a center-home combination program, an alternative setting, family services and/or individual therapy.

In conjunction with the family, a multidisciplinary team is formed to work with the family in order to implement an Individualized Family Service Plan (IFSP). This team consists of the family, a Special Education Teacher, a Speech Therapist, a Physical Therapist, an Occupational Therapist, a Social Worker, and any other professionals who may be needed to serve the child. This team works together to develop and implement the IFSP according to the special needs of the child. The IFSP outlines the early intervention
services and settings (either home or center-based) that are required in order to meet the
needs of both the family and the child.

With the implementation of Public Law 105-117 Part C, it is now required that the
child receive services in the "least restrictive environment" or natural environment. This
least restrictive environment is presumed to assure the child the best possible opportunity
to participate in the mainstream. Considering a natural setting is not one that is center-
based, travel time to and from the designated location (i.e. the family's home, a daycare
center, etc.) by the professionals involved with the child can be costly, especially since
there are often a number of professionals providing these services. There is a need for
research pertaining to the cost effectiveness of: the models of services provided, the
average travel time per program, the number of therapists on average who see each child,
and no show rates. This research seeks to provide a basis for future research concerning
the controversy surrounding this cost effectiveness issue.

Purpose

The purpose of this study is to address the controversy surrounding the cost
effectiveness of early intervention by looking at the models of services provided, the
number of therapists on average who see each child, the average travel time per program,
as well as client no show rates.

Hypothesis

The hypothesis for this study states that cost effectiveness of early intervention
programs is influenced by the amount staff time spent in direct activity with the family, the travel time per program, as well as program absence rates.

**Background Information**

The special needs of children have been of concern for some time now. In 1965 the first legislation passed, known as Head Start, targeted disadvantaged or underprivileged children. At this point in time, there was no mention of services for children with disabilities. In 1968, due to the urgings of parents and professionals of children with disabilities, the Handicapped Children’s Early Education Assistance Act (Public Law 90-538) was passed. PL 90-538 states that services must be provided to infants and preschoolers with disabilities and their families. Subsequently, in 1975 congress passed the Education of the Handicapped Act to ensure a “Free Appropriate Public Education.” The EHA mandated that no child be excluded from a public education because of a disability.

Prior to 1986, many states were providing early intervention services to some groups of infants and toddlers. After the passing of Public Law 99-457, which reauthorized EHA, all states are now required to provide these services to all eligible preschool children. Part H of EHA gave states the option of receiving funding for early intervention services for eligible children from birth to three years. In 1991, with the passage of Public Law 102-119, the name of EHA was changed to the Individuals with Disabilities Education Act (IDEA). IDEA regulates early intervention services for infants and toddlers from birth to three, as well as special education services for children and adults ages three to twenty-one. In 1998 early intervention services were moved to Part C
with the passing of Public Law 105-117. PL 105-117 now requires that services be provided in natural environments whenever possible.

Definitions

Center-based Programs involve the child being brought to the program site for services. Children can be serviced individually or as a group in the center-based programs.

Developmental delay is a term used when a child demonstrates a 33% delay in one developmental area or a 25% delay in two or more developmental areas. A child must meet this criteria in order to be eligible for early intervention services.

Early Intervention Programs (EIPs) provide services to children ages birth to three years old who show significant developmental delays in areas such as receptive-expressive language, fine/gross motor, cognitive, and/or social-emotional.

In a Family-Centered approach, the family is recognized as the central role in the development of the child and the IFSP process. The family has the final say in the child’s services, as well as the family’s participation in these services. The goal is to strengthen the family’s supports and abilities.

Home-based Programs involve the therapist going into the home to provide instruction and services to the child. The therapist often brings special toys and other educational materials to the child’s home. Parents are often encouraged to participate in home-based services so they can learn how to facilitate learning at home without the therapist.
An **Individualized Family Service Plan (IFSP)** is a written plan describing the services needed for the child and family. The family’s concerns, priorities and goals drive the process.

**Natural Setting** refers to a setting outside the early intervention facility. This can be in the home, at a daycare center, or any other approved setting where children without special needs may also be present and involved.

**No Show** refers to either the family’s missing or canceling of a scheduled appointment.

**Assumptions**

1. This study assumes that all agencies use the same procedures for coding and recording data.

2. It is assumed that the collection of data has been consistent across agencies and over time.

3. This study assumes that services provided has been accurately recorded for all participants.

**Limitations**

1. This study admits that the participants are not from a random sample.

2. This study acknowledges that the number of people from the participating agencies who did the data recording could also be a limitation.
3. The results of this study reflect only data available from seven South Jersey early intervention programs and cannot necessarily be generalized to other early intervention providers.

Overview

In Chapter 2, previous research on early intervention and models of services will be discussed. A detailed methodology will be presented in Chapter 3. The results of the present study will be presented and analyzed in Chapter 4. A discussion of this study’s results, conclusions, and implications for future research will be provided in Chapter 5.
Chapter Two

The goal of early intervention is to enhance the child's development and the capacity of the family to meet the special needs of the child. With the implementation of PL 105-117 Part C, early intervention services are now required to be provided in natural environments whenever possible. Considering a natural setting is not one that is center-based, travel time to and from the designated location by the numerous professionals involved with the child can be costly. This chapter outlines: the suggested training of those working in early intervention; the effectiveness of early intervention; program evaluation; the family-centered model; settings used for service delivery; and the cost-effectiveness of early intervention.

Training of Early Intervention Professionals

Working on an interdisciplinary team can be intimidating if roles and expectations are not clear from the beginning. Interdisciplinary collaboration is not meant to be a power struggle or a guessing game as to whose job it is to get certain things done (Garrett, Thorp, & Behrmann, 1998). Professionals working in collaborative situations first need to be trained in team approaches, family-centered approaches, and diverse populations (Surbeck, 1998). Roberts-DeGennaro (1996) offers an interdisciplinary training model for students interested in working on interdisciplinary teams. Trivette (1998), in response to the study discussed later in this chapter by Romer and Umbreit
(1998), contends that participation in one workshop or training session will probably not be enough to modify the professionals' behavior and practices. Trivette (1998) maintains follow-up training is important in order to enact change. Surbeck (1998) offers suggestions to teachers on how to prepare to work in early childhood collaborative settings. According to Surbeck, teachers should continue education by taking advantage of distance learning opportunities, using Internet resources, attending workshops and conferences, and utilizing other opportunities that may educate individuals working in cooperative collaborative situations.

Effectiveness of Early Intervention

An intensive early intervention program can be successful in sustaining the development of those children receiving services (Fewell & Glick, 1996). Contrary to what was expected, however, the program fostered the children's progress according to typical child development, rather than by expediting progress. The degree of impairment also contributed to the degree of progress. Children with minor impairments in the areas of cognition, fine-motor and/or gross-motor made minor advancements when compared to children with more severe impairments in those areas (Fewell & Glick, 1996).

Parents are essential to the early intervention process. One of the goals of early intervention is to teach the parents how to work with their children in the home. The few times a week or a month that early intervention professionals are able to work with the children is not enough. Parents should be participants in the sessions, not observers (Calderon, Bargones, & Sidman, 1998). The parents must be prepared to take part in the sessions and to run their own without the therapists. The therapists, however, must
consider family culture, routines and rituals when advising the family on the implementation of therapy into their daily routines (Baird & Peterson, 1997; Mahoney & Wheeden, 1997; Schuck & Bucy, 1997). The parents should be able to conveniently work with the child at home without disrupting family routines and/or rituals. The early intervention process will only work effectively if the child receives the therapy or instruction by the early intervention professionals and by the parents.

For example, an individualized, home-based, handicap-specific early intervention using different types of parent involvement (cotherapist, parent counseling) is effective (Beelmann & Brambring, 1998). Baird and Peterson (1997) found that the effectiveness of early intervention is essentially dependent upon parent-child interactions. Direct or indirect support and encouragement to parents to initiate interaction with their children was found to be directly related to the impact of interventions on the children’s development (Baird & Peterson, 1997).

Program Evaluation

According to the directors of community-based early intervention programs surveyed, programs should be evaluated primarily on the basis of program improvement with a lesser emphasis placed on the assessment of program quality and/or program outcomes (Jephson, 1992). The evaluation of program goals and child progress were said to be the most practical approaches to assess program effectiveness. The use of family progress as a means to evaluate program effectiveness, however, was viewed as a limitation by many participants. Many of those surveyed contend that families can be resistant to frequent observation and inquiry. Issues of privacy and confidentiality could
be of concern to the families. Therefore, the directors suspect that families may not be totally accurate when completing questionnaires regarding services (Jephson, 1992).

In a study by Able-Boone, Goodwin, Sandall, Gordon, and Martin (1992), parents and early intervention professionals were surveyed on their opinions about the early intervention and IFSP processes. Not surprisingly, professionals had more favorable things to say about service coordination than did parents. Surprisingly, however, parents seemed to be more satisfied with the obtainment of services and more concerned with the IFSP process than were professionals. The professionals, on the other hand, often felt that the whole early intervention process should be easier and more family friendly. Overall, a major family goal in the early intervention process is the ability to create a successful family plan whereby the family feels competent as caregivers and in meeting the special needs of the child (Bailey, McWilliam, & Darkes, 1998).

Bruder, Staff, and McMurrer-Kaminer (1997), in a study evaluating service delivery, found that income level, degree of developmental delay, and family dynamics (i.e. single versus two-parent households) were found to be contributing factors in the receipt of early intervention services. Family income levels were found to be related to the age of referral for early intervention services. The higher the family’s income level, the earlier the age of referral for services. Children who had greater levels of developmental delays, who were raised in two parent households, and/or who were raised in households with higher income levels were found to be receiving more services (Bruder et al., 1997).
The Family-Centered Model

Family-centeredness has been cited as a benefit of the implementation of Part C of IDEA (Garrett et al, 1998). Furthermore, parents and service coordinators emphasize the importance of a belief in family-centeredness when working in effective collaborative situations (Dinnebeil, Hale, & Rule, 1996). This family-centeredness should not be overwhelming to the family, however. Families should be aware of their rights to services and that they are essential to the early intervention process (Baird & Peterson, 1997; Beverly & Thomas, 1999; Hammond, 1999; Mahoney & Wheeden, 1997). The family should have the final say as to who will be involved with the child, as well as both the family's and the professionals' level of involvement services (Baird & Peterson, 1997; Beverly & Thomas, 1999; Mahoney & Wheeden, 1997). Unfortunately, some agencies are still having trouble implementing this family-centered approach into their practices. For example, even though IFSPs are supposed to be written to address the needs, concerns, and priorities of the family, not just the child, it seems that professionals are still producing child-focused, as opposed to family-centered, IFSP goals and family concerns (McWilliam, Ferguson, & Harbin, 1998). Families need a sense of personal control in order to legitimize the family-centered approach (Judge, 1997). One should consider the family’s needs, whether the family really wants the services being offered, and whether the services are actually helping the family achieve their goals (Bailey et al., 1998; Baird & Peterson, 1997).

Mahoney and Bella (1998) found that almost 50% of the 47 families in their sample believed that they were receiving the type and intensity of services that the families believed were important for the family and the child. However, another considerable
portion of the sample was found to be receiving inadequate levels of family-centered services. Some of these families reported limited services. Others reported services discordant to the needs of the family and the child. Mahoney and Bella (1998) also found that the children in the study were making significant developmental improvements consistent to, but not greater than, the rates of development prior to the study.

The degree of implementation of the family-centered model by service coordinators has been found to have a significant impact on family satisfaction and dissatisfaction ratings (Romer & Umbreit, 1998). When the family-centered model is implemented by service coordinators, families reported higher degrees of satisfaction and lower degrees of dissatisfaction. When service coordinators did not implement the family-centered model, minimal satisfaction levels and high levels of dissatisfaction were reported (Romer & Umbreit, 1998).

Even though all three service coordinators who had volunteered to participate in the study had been trained in the implementation of the family-service model, one of the coordinators rejected the proposed method of service delivery (Romer & Umbreit, 1998). Instead, she stayed with her own approach to individual families and service delivery (Romer & Umbreit, 1998).

**Setting of Service Delivery**

Mahoney and Filer (1996) examined the responsiveness of early intervention services to the needs of the family. It has been noted that there can be limitations in identifying community resources, such as transportation and availability of quality childcare options, for families (Wesley, Buysse, & Tyndall, 1997). Mahoney and Filer,
however, found that not only were the early intervention programs operating directly with the families in addressing children's needs, EIPs were also providing the families with such information on community resources and supports that may benefit the children after the early intervention process. Families considered home-based programs and center-based programs with home components to be more favorable than center-based only programs in providing instructional activities and information (Mahoney & Filer, 1996). Parents rated home-based early intervention services as more effective help-giving practices than center-based services (Judge, 1997). In another study, both parents and professionals participating in center-based programs were found to be less satisfied with services than those participating in home-based service delivery (Able-Boone et al., 1992). In a study by Roberts, Akers and Behl (1996), 92% of the early intervention agencies surveyed provided service coordination services in the home. At least 90% of the agencies were said to be providing parenting skills in the home (Roberts et al., 1996).

Not all families of children with special needs are willing to invite the early intervention service providers into their homes (i.e. speech-language pathologists, physical therapists, occupational therapists, psychologists, etc.). Furthermore, not all early intervention professionals have the schedule flexibility or availability to visit the number of daycare centers or other community settings that would constitute appropriate “natural settings” for infants and toddlers with disabilities to receive services. It is difficult, therefore, to find convenient and appropriate natural settings to deliver services.

According to Chen (1999), children with disabilities often benefit from small group settings with professionals who specialize in working with children with those special
needs. Many daycare providers, however, are not trained in providing the specialized services to children with disabilities, not to mention children with multiple disabilities. If early intervention services are required to be delivered only in natural settings such as the home, daycare, or other community settings, the children in need of such services may lose valuable opportunities for connections and interactions with other children of similar disabilities (Chen, 1999).

On the other hand, research has shown that the type of classroom (i.e. inclusive or segregated) and service characteristics have no effect on the development of toddlers with moderate to severe disabilities (Bruder & Staff, 1998). The inclusive classrooms consisted of toddlers with and without disabilities; the segregated classrooms consisted of only toddlers with disabilities (Bruder & Staff, 1998). Children in both classroom settings received necessary early intervention services. The amount of specialized services and classroom time varied by classroom. More children in the segregated classrooms received services than in the inclusion classrooms (Bruder & Staff, 1998). The children in the segregated classrooms received twice as much speech therapy and other therapies than did the children in the inclusion classrooms (Bruder & Staff, 1998). The children in the segregated classrooms received direct instruction from professionals, whereas the children in the inclusion classrooms received more consultative therapy (Bruder & Staff, 1998). The children in the inclusion classrooms, however, received more overall classroom time than the children in segregated classrooms (Bruder & Staff, 1998). This could be due to the fact that more time is spent in meal time and caretaking activities in the inclusion classrooms (Bruder & Staff, 1998). Even though there were notable differences in
instruction in both types of classrooms, the rate of development in the children attending these classrooms was not affected.

In a study by McBride and Peterson (1997), early intervention professionals engaged in home-based visits spent the majority of their time interacting with the child. Forty-five percent of the time involved joint interactions with the parent or another professional and the child. Parents and professionals were found to interact only 21% of the time. Surprisingly, parents interacted with their child, but without the professional, only 3% of the time. Interactions on home-based visits primarily involved a focus on the child’s development or care taking (89%). Direct instruction with the child utilized more than half of the time. The family was rarely the focus of conversation. Family issues were dealt with more often if the family had limited resources; the child’s development was dealt with more if the family had adequate resources (McBride & Peterson, 1997).

Cost-Effectiveness of Early Intervention

The implementation of Part C of IDEA has left some early intervention providers with budgetary issues. Many early intervention staff members are now spending hours of their time in council meetings, service coordination, etc. Such activities are not always reimbursable by the states (Garrett et al., 1998). Therefore, providing these services or engaging in these activities can be costing the agencies money that not all of them have to spend.

Escobar, Barnett and Goetze (1994) examined the cost of early intervention services for children birth to five years old. The researchers used the method of cost analysis to identify the value of all resources used in the provision of early intervention
services that contribute to the total cost of intervention (Escobar et al., 1994). These resources include personnel, capital assets, transportation, materials and supplies, and miscellaneous (Escobar et al., 1994). The data came from 11 early intervention programs from seven different states (Escobar et al., 1994). The programs were, then, categorized as home-based or center-based dependent upon where the majority of their services were provided (Escobar et al., 1994). Descriptions of each program are discussed.

Cost per child was found to vary across agencies (Escobar et al., 1994). Home-based programs ranged from $3,617 to $7,693 a year per child (Escobar et al., 1994). Center-based programs ranged from $3,228 to $14,123 a year per child (Escobar et al., 1994). Home-based programs spent the highest percentage of their resources on direct service, ranging from 59% to 81% (Escobar et al., 1994). Center-based programs ranged from 53% to 72% (Escobar et al., 1994). Center-based programs providing a high number of service hours were the least expensive programs (Escobar et al., 1994). Home-based programs servicing low numbers of children had the highest costs per hour (Escobar et al., 1994). Programs that provided most of their services in group settings had lower full-time equivalent cost per hour (Escobar et al., 1994). The number of children, amount of service provided, and staff-child ratio also contributed to the cost-effectiveness of the program (Escobar et al., 1994).

Warfield (1995) also looked at the cost-effectiveness of early intervention services in home-based and center-based programs. The children in this study had disabilities ranging from Down syndrome to motor impairments, etc. Data on the type, amount and estimated value of services were collected. One hour of home-based therapy costs $53.68 (Warfield, 1995). One hour of center-based therapy costs $21.52 (Warfield, 1995). One
hour of home-based therapy, therefore, costs $10.64 more than two hours of center-based therapy which costs $43.04 (Warfield, 1995). One could argue the cost-effectiveness of home-based versus center-based services either way given the small difference in cost per hour and the possible greater gains in mother-child interaction of home-based therapy (Warfield, 1995).

Summary

The basic premise of the family-centered approach is that the parents should be actively involved in all decision-making concerning their family and their child. The entire early intervention and IFSP processes are built around the needs and priorities of the family and the child. Parents and professionals need to work hand in hand in order to make this process work. Parents should be participants in the sessions, not just observers. Service delivery from professionals a few times a week/month is not enough to ensure proper instruction, learning and development. Parents should watch and learn how they can implement some of the therapies into their own daily routines. Moreover, services should be provided to the family because that is what the family feels is important, not because the professionals say that the family should or should not have them.

Families considered home-based programs and center-based programs with home components to be more favorable than center-based only programs in providing instructional activities and information. Parents rated home-based early intervention services as more effective help-giving practices than center-based services. Some professionals participating in center-based programs have also been found to be less satisfied with services than those participating in home-based service delivery.
Home-based programs have been found to spend the highest percentage of their resources on direct service. Center-based programs providing a high number of service hours seem to be the least expensive programs. Home-based programs servicing low numbers of children have the highest costs per hour. The number of children, amount of service provided, and staff-child ratio also contribute to the cost-effectiveness of programs.
Chapter Three

Subjects

Over 1,000 children participated in this study. The sample included both male and female children whose ages ranged from birth to three years old. The children were receiving early intervention services from thirteen Early Intervention Programs from seven counties in Southern New Jersey. In order to be eligible for early intervention services, the child must have displayed a 33% delay in one developmental area, or a 25% delay in two or more developmental areas. All of the children who participated in this study had been deemed eligible for early intervention services by meeting the requirements set forth by the State of New Jersey. The children’s services included speech-language therapy, occupational therapy, physical therapy, special instruction, social services, neurological services, and/or psychological services.

Method

Staff from thirteen Early Intervention Programs from seven counties in Southern New Jersey have been collecting daily logs (see Appendix) of direct and indirect services provided on a daily basis to over 1,000 children ages birth to three years old. These logs were, then, summarized for two one-month periods. Data on each child included type(s) of service(s) provided (i.e. speech therapy, physical therapy, etc.), length and frequency of
services, attendance, setting of service (i.e. home-based or center-based), as well as staff travel time.

Design

The study was descriptive in nature. Data logs were summarized for two one-month periods. Results were tabulated for each program to indicate the percentage of staff time spent in direct activity with the family; the percentage of missed appointments; and time spent traveling.
Chapter Four

Restatement of Hypothesis

The hypothesis for this study was as follows: cost effectiveness of early intervention programs is influenced by the amount staff time spent in direct activity with the family, the travel time per program, as well as program absence rates.

Interpretation of Results

Government funding for Early Intervention Programs allows for a percentage of funded hours to be spent in direct service (80%), as well as a certain percentage of funded hours to be spent in the documentation, planning, and other areas not specifically involved in direct service (20%). Figure 4.1 shows how the total funded time, total time, and total direct service time logged for each Early Intervention Program differed. Funded time can be defined as the total number of hours each program is funded by government grants. Total time is the number of funded hours each program is utilizing/working. The total direct service time logged is the actual time each program is spending in direct service with the children receiving early intervention services.

Not every program provided data for each of these categories, however. Only Programs 2, 3, 4, 5, and 8 provided all necessary information. Program 5 spent 473.16 hours (or approximately 96%) of their total hours (494) in direct service. Approximately 94% of Program 5’s funded hours (503.13) was also found to be spent in direct service.
Moreover, Program 8 spent 60.13 hours (or approximately 78%) of their 76.9 funded hours. Program 2 was funded 112 hours by government grants. Out of Program 2’s 83.13 total hours, 67.69 hours (or approximately 81%) were spent in direct service. This is only approximately 60% of the funded hours being spent in direct service, however. Program 3, on the other hand, was funded for a total of 354.75 hours. The average of actual hours they worked was 322.6 hours, yet the total time they spent in direct service was only 192.5 hours (or approximately 60%). This direct service time was only about 54% of their funded hours. Program 4 was closer to projected funded hours, yet still not as close to target as Programs 5 and 8. Government funded hours for Program 4 were 241 hours. Program 4 worked 188.6 total hours, out of which 165.06 hours (or approximately 88%) was spent on direct service. The direct service hours used were only about 68% of their funded hours, however.

Figure 4.1
Total EIP Funded Time,
Total Time, and Total Direct Service Time Logged

![Bar chart showing funded, total, and direct service hours for different programs.](image)
Each Early Intervention Program also provided direct service data by both discipline and by type of service. Figure 4.2, illustrates the number of hours each discipline of the early intervention programs' multidisciplinary staffs spend in direct service with families. Speech therapists are seen to be spending the most time in direct service with families (664.90 hours per week), with Teachers of the Handicapped next at 514.53 hours per week. Audiologists and Registered Nurses are spending the least time in direct service, 1.13 and 0.75 hours per week respectively.

Figure 4.2

Total Direct Service Time By Discipline

Discipline

Direct service data according to the types of services provided by the programs is depicted in Figure 4.3. The area of direct service is an umbrella that encompasses a number of different services provided to families by early intervention providers. Figure
4.3 shows how much time is spent in each of these services. According to the data, 434.72 hours a week are spent in Special Instruction, 397.10 hours are spent in Speech Language, 287.81 hours are spent in Physical Therapy, and so on. Apparently, the least amount of hours spent in direct service is in the area of Assistant Technology (1.50 hours).

Figure 4.3

Total Direct Service Time By Service

The cost effectiveness of early intervention can also be evaluated by the number of hours early intervention providers are spending in travel. Figure 4.4 shows the total travel time of each program in hours per week. Five out of the thirteen programs are spending over fifty hours per week on travel. Program 5 is spending the most time in travel, 101.91 hours per week. Program 9 is the closest program in travel hours to Program 5 with 87 hours per week.
hours spent in travel per week. Only three programs are spending under twenty hours per week traveling. Program 12 is spending the least amount of time in travel with only 13.94 hours per week.

**Figure 4.4**

**Total Travel Time Per Program**

Early intervention professionals have also seen absences as factors in cost effectiveness. This area was broken down by program in hours per week in Figure 4.5. Five programs are averaging over seven hours in absences per week. Program 6 has the highest absence rate of 8.31 hours per week. Two programs, Programs 12 and 13, are averaging less than one hour of absences per week, 0.88 and 0.38 hours respectively. Absences were broken down even further in Figure 4.6. Figure 4.6 illustrates absences according to client no show rates in hours per week. Programs 10 and 6 have the highest no show rates at 2.25 and 2.14 hours per week respectively.
Figure 4.5

Total Absences Per Program

![Bar chart showing total absences per program]

Early Intervention Program

Figure 4.6

Total Absences in No Shows Per Week

![Bar chart showing total absences in no shows per week]

Early Intervention Program
Summary

Staff time spent in direct activity with the family, travel time, and client no show rates can all influence cost effectiveness of early intervention services. Of the programs that provided their funded, total, and direct service times, only two of the programs’ direct service hours actually came close to their government grant funded hours, yet still approximately between sixteen and thirty hours under funding. Direct service hours also varied across disciplines and across services with specific areas using more direct service hours than others. The same can be said about program travel times. Program travel hours per week ranged from 101.91 hours to 13.94 hours per week spent in traveling. The biggest surprise in results was in absence rates. Each program had less than ten hours per week in absences of which less than two hours were client no shows.
Chapter Five

Summary

Early intervention services have been mandated by law to ensure that eligible children with special needs ages birth to three are provided with the necessary and appropriate services to address those needs. The goal of early intervention is to enhance the child’s development and the capacity of the family to meet the special needs of the child. With the implementation of Public Law 105-117 Part C, it is required that the child receive services in the “least restrictive environment” or natural environment. This least restrictive environment is presumed to ensure the child the best possible opportunity to participate in the mainstream. Considering a natural setting is not one that is center-based, travel time to and from the designated location (i.e. the family’s home, a daycare center, etc.) by the professionals involved with the child can be costly, especially since there are often a number of professionals providing these services.

Previous research has shown that both families and early intervention professionals consider services delivered in either home-based or center-home combinations to be more beneficial. Families have been found to consider home-based programs and center-based programs with home components to be more favorable than center-based only programs in providing instructional activities and information. Parents have rated home-based early intervention services as more effective help-giving practices than center-based services.
Some professionals participating in center-based programs have also been found to be less satisfied with services than those participating in home-based service delivery.

Previous research has also shown that home-based programs are spending the highest percentage of their resources on direct service. Center-based programs providing a high number of service hours seem to be the least expensive programs. Home-based programs servicing low numbers of children have the highest costs per hour. The research has also shown that the number of children, amount of service provided, and staff-child ratio can also be contributors to the cost-effectiveness of programs.

Conclusions

Staff time spent in direct activity with the family, travel time, and client no show rates can all influence cost effectiveness of early intervention services. Unfortunately, not all of the information required was provided on all of the early intervention programs analyzed in this study. For example, funded, total, and direct service hours were not available for all of the programs. However, from the information provided, it was evident that direct service hours varied across disciplines and across services with specific areas using more direct service hours than others. The same can be said about program travel times. Program travel hours per week ranged from 101.91 hours to 13.94 hours per week spent in traveling. The biggest surprise in results was in absence rates. Each program had less than ten hours per week in absences of which less than two hours were client no shows.
Limitations

This study assumed that all agencies used the same procedures for coding and recording data. This was not the case, however. For example, many of the agencies/therapists did not code “no shows” in the same fashion. Therapists were supposed to indicate the no show time as the amount of time that the therapist would have seen the child had the child been present. Some therapists, however, did not report any time with no shows; some only reported the amount of time they waited at the homes for someone to answer the doors; whereas others reported the entire time allotted for the therapy session, as they were supposed to report them. The discrepancy in coding is primarily due to the fact that the agencies were not instructed as to how to fill out the logs properly. It was assumed that all agencies would answer in the same fashion.

The large number of people from the participating agencies who recorded the data could also be a limitation. This includes the therapists who filled out the daily logs (as seen in the Appendix), as well as the people who transcribed that information to computers. Not everyone filling out the logs coded the data in the same way, as described above for example. Moreover, it was difficult in many instances to decipher the handwritings of those therapists who had completed the logs. Therefore, it is possible that there are transcribing errors that may have contributed to the results of this study.

Implications for Future Research

In future studies, one could ensure that data collection is done consistently by providing detailed instructions as to how to fill out the logs properly. One can no longer assume that each individual filling out the logs will answer the same questions in the same
manner. One could also make sure that each person completing the logs prints each piece of information legibly. The child’s name, for example, could be replaced on the form by their social security number. This would make deciphering the forms easier to those transcribing them to computers.

Another suggestion for future research is to compare the absentee rates of children who receive multiple services to those who receive only one. Perhaps there would be a difference in the perception of families as to which services are considered to be more beneficial to their child. It would also be interesting to see the families feedback as to why they think that there are so many absences and no shows.
References


Appendix
### SNREIC DAILY DIRECT SERVICE PARTICIPATION AND ABSENCE LOGS

**EI Provider Code**

**Staff Member Name:**

<table>
<thead>
<tr>
<th>Discipline:</th>
<th>Date:</th>
<th>Actual Hours Worked:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Code</strong></td>
<td><strong>Time (15 min units)</strong></td>
<td><strong>Setting Code</strong></td>
</tr>
</tbody>
</table>

#### Service Key
- **1** = Assistive Technology
- **2** = Audiology
- **3** = Family Training, Counseling
- **4** = Nursing Services
- **5** = Nutrition Services
- **6** = Occupational Therapy
- **7** = Physical Therapy
- **8** = Psychological Services
- **9** = Social Work Svcs
- **10** = Speech Language

#### Setting Key
- C = Center
- H = Home
- F = Family Childcare
- I = Inpatient Hospital
- M = Medical Daycare
- O = Outpatient
- N = Nursery School/Child Care Ctr
- R = Residential
- S = Other Community Setting

#### Method Key
- I = Individual
- G = Group
- N = Integrated
- P = Pull out
- C = Consult
- T = Telephone
- M = Team Mtg
- A = Agency cancellation (other than approved on grant calendar)
- R = Regular 8-4, M-F
- A = After 4 pm
- B = Before 8 am
- W = Weekend

#### Absence Code
- F = Family illness, hospitalization
- S = Family cancellation other than illness
- A = Agency cancellation (other than approved on grant calendar)
- N = No show, family, didn't call, not at home
- O = Other

#### Hours Key
- Closest # of 15 minute units in any of the following activities:
  - Intergency meeting
  - Translation
  - Record keeping

*Must enter ID# (county 2 digit #-dob-00record number)*

**Note:** Indicate if interim, initial, periodic, annual or other in comments.