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# Comparison of test scores of toddlers in inclusive and segregated settings

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**COMPARISON OF TEST SCORES OF TODDLERS IN INCLUSIVE AND  
SEGREGATED SETTINGS**

**A Thesis**

**Presented to**

**The Faculty of the Department of Special Education**

**San Jose State University**

**In Partial Fulfillment**

**of the Requirements for the Degree**

**Masters of Arts**

**by**

**Julie Chung Riddleberger**

**August 2001**

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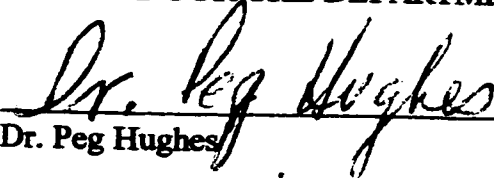
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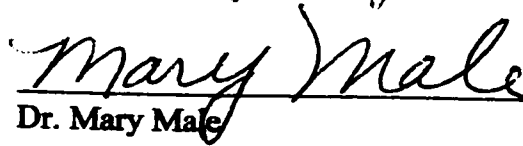
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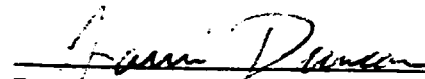
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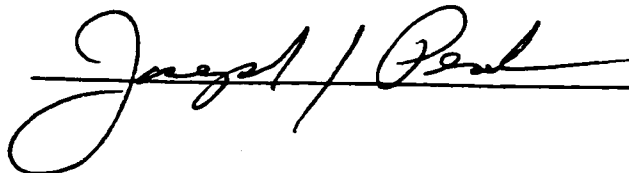
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## **ABSTRACT**

### **COMPARISON OF TEST SCORES OF TODDLERS IN INCLUSIVE AND SEGREGATED SETTINGS**

**by Julie Chung Riddleberger**

**This study includes an overview of inclusion in the field of early childhood intervention programs. The primary purpose of this thesis attempts to provide a quantitative analysis by comparing the developmental outcomes as measured by standardized test scores in toddlers with Down syndrome who received at least 1 year of early intervention in either inclusive or segregated settings. A comparison of age equivalents was conducted to compare communication, daily living skills, social, and motor skills as measured by the Vineland Adaptive Behavioral Scales administered to a total of 50 toddlers, at or near 36 months of age from each of the settings. The results of this study found no statistical significance comparing developmental outcomes in inclusive and segregated settings.**



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## CHAPTER I

### Introduction

Since the inception of Part H of the Individuals with Disabilities Education Act (IDEA) in 1990 and what is now known as Part C since 1997 in the Amendments to IDEA, the concept and application of inclusion for infants and toddlers with special needs has presented ongoing challenges in early intervention. Over the years, with the advocacy of inclusion, “natural environments” or appropriate settings in which infants and toddlers without disabilities participate have also been mandated under IDEA. Natural environments include groups such as childcare centers, play groups, or other community based groups such as parent education centers. The family’s home is also a natural environment.

The American with Disabilities Act (ADA) of 1990 (PL 101-336) also mandates persons with disabilities including infants and toddlers and their families to have access to community programs. Inclusion is also formally supported by professional organizations such as the National Association for the Education of Young Children (NAEYC) and the Division of Early Childhood (DEC) of the Council for Exceptional Children (CEC) (McDonnell & Brownell, 1997). As the practice of early intervention in inclusive settings expands, so has researching its effectiveness compared to services provided in segregated settings such as special day classes or rehabilitation centers.

#### Statement of the Problem

Although the drive for expansion of inclusion in early childhood special education continues to endure through legislation, research and public support; research has shown mixed evidence that inclusion benefits all children, particularly infants and toddlers, with severe special needs. Holahan and Costenbader (2000) report that there is little known about the benefits of toddler-age children with special needs receiving early intervention in inclusionary programs as compared to segregated programs with regards to developmental

and educational achievement.

A study of inclusive settings conducted by Cole, Dale, Mills, and Jenkins (1993) found children ages three to seven years old with mild disabilities benefited more from inclusion compared to children with severe disabilities. Their study demonstrated developmental gains in cognitive and communication skills in children with mild disabilities. However, children with severe disabilities benefited more when placed in segregated settings. Additional studies by Bruder and Staff (1998) and Buysse and Bailey (1993) have shown no significant differences in young children's developmental outcomes related to inclusive or integrated versus segregated classroom settings.

Barriers and recommendations for implementing early childhood special education in an inclusive setting have been presented in studies by Dinnebeil and McInerney (1998), McWilliam, Young, and Harville (1996), and Odom and McEvoy (1990). Common barriers shared in these studies included access to community-based early education, lack of skilled personnel, and decrease in quality and intensity of specialized instruction. Recommendations for successful inclusion included a collaborative approach to training, resources, attitude change, and curriculum development for all service providers.

#### Purpose of the Study

The purpose of this study is to compare the developmental outcomes as measured by standardized test scores of toddler-age children with Down syndrome who received early intervention in both inclusive and segregated service delivery models. Segregated settings included classrooms designated for toddler-age children with special needs only. Inclusive settings were classrooms or childcare centers having no more than five toddlers with special needs and up to fifteen typically developing toddlers. Significance for this study is based on the effectiveness of toddler-age children with Down syndrome attending inclusive versus segregated programs, extension of previous research, and gaining insight into the effectiveness of inclusive service delivery models.

### **Research Question**

Are there statistical differences between the standardized scores of toddler-age children with Down syndrome as measured by the Vineland Adaptive Behavior Scales when early intervention is provided in inclusive versus segregated settings?

### **Hypothesis**

Based on related past studies, it is hypothesized that there will be no statistically significant differences between the standardized scores between toddler-age children with Down syndrome provided with early intervention services in either inclusive or segregated settings as measured by the Vineland Adaptive Behavior Scales.

### **Definitions**

**Americans with Disabilities Act (ADA)** - Public Law 101-336, a law that took effect in 1990, which defines “disability” as a substantially limiting physical or mental impairment which affects basic life activities such as hearing, seeing, speaking, walking, caring for oneself, learning, or working and prohibits discrimination by employers, by “public accommodations” and by state and local public agencies that provide such services as transportation. Persons with disabilities include infants and toddlers and their families having access to community programs.

**Down syndrome** - a genetic disorder caused by a chromosomal abnormality as a result of an extra chromosome, or extra part of chromosome 21 in the body’s cells. Down syndrome is one of the more common causes of mental retardation.

**Individuals with Disabilities Education Act** - Public Law 101-476, a federal law passed in 1991 that reauthorizes and amends the Education of the Handicapped Act (EHA), Public Law 94-142. IDEA mandates early intervention services to be provided in natural environments to the maximum extent appropriate to the needs of the child.

**Inclusion** - an approach in which children with disabilities are placed in settings and receive services with children who have no disabilities.

**Natural environment**-settings such as the home, daycare centers, play groups, or other community groups that are natural or normal for peers who have no apparent disability.

**Segregated Programs** - programs in which children with disabilities receive special education and related services in classrooms with other children with disabilities.

**Toddler-Age** - For the purpose of this study, toddler-age refers to ages 33-36 months of age.

## CHAPTER II

### Review of Literature

#### Introduction

Investigations and reviews of research over the years have yielded mixed results regarding the effectiveness of inclusive programs as a means of providing appropriate educational settings for individuals with disabilities. At this time, research on the effectiveness of inclusion in education appears to fall more into the category of qualitative research as compared to quantitative research. A relatively large body of literature comparing the behavior and developmental progress of children with disabilities enrolled in inclusive programs to their typically developing peers has been published (Holahan & Costenbader, 2000). However, Holahan and Costenbader report fewer studies have compared the developmental and educational achievement of children with disabilities in inclusive versus specialized or segregated settings.

#### Inclusion: Attitudes and Perceptions

As inclusive programs continue to expand, the effects of early intervention legislation continue to be studied. Garrett and Thorpe (1998) interviewed 28 local interagency coordinating council (LICC) coordinators from one state. The purpose of this study was to examine local perceptions of the impact of implementing early intervention legislation. The findings of this study included facilitation of family-centered services, increased awareness of early intervention services, improved child find and referral for services, additional funds for early intervention, improved developmental outcomes for children, and increased community networking. The negative effects found in this study included difficulty understanding and negotiating unfamiliar bureaucracies during collaborative service provision, such as time consuming council meetings and service coordination. Additional negative effects included an increase in paperwork largely due to

accessing funding resources and meeting state accountability requirements. Increased financial responsibilities for families such as insurance billing or personal payment and budget impacts from nonreimbursable services were additional negative effects.

The findings of McWilliam, Young, and Harville (1996) determined that despite efforts to facilitate inclusion, the intentions of early intervention can be hindered by perceptions of professionals and families. For example, they perceived that policy or administrative constraints and a shortage of pediatric therapists caused services to be of lower quality than desired. Odom and McEvoy (1990) report philosophical and theoretical differences between early childhood education and early childhood special education, differences in personnel preparation, staff attitudes, issues related to current state regulations and monitoring, and provision of related services contribute to professional and bureaucratic barriers to the implementation of mainstreaming.

Dinnebeil, McInerney, Fox, and Juchartz-Pendry (1998) surveyed early childhood personnel in northwestern Ohio with regards to their attitudes towards inclusion of young children with disabilities in community-based programs. Even though most of the respondents were interested in providing care, barriers included lack of knowledge of disabilities and lack of confidence in providing care for children with disabilities. On the other hand, another study by Gallagher (1997) investigated the views of the changing needs and responsibilities of preschool special educators and found that the teachers surveyed with regards to their first year as a community-based consulting teacher became more specific in expressing their roles and needs as they gained experience. Gallagher reports that one barrier to effective implementation of inclusion through consulting teachers is the lack of training in consultation and collaboration especially with classroom-based special education teachers who have worked for many years in the same setting.



In another study, Buell, Gamel-McCormick, and Hallman (1999) childcare surveyed providers' attitudes and experiences about their willingness to care for a child with a disability. This study found that their willingness was influenced by previous experience. Childcare providers who had cared for children with disabilities were more likely to support inclusion, however, a significant number of these childcare providers were reluctant to actually provide future care. Major reasons included lack of information about disabilities and their effects on development and lack of resources, especially funding for special equipment. This study warranted continued research on the effects of training, education, and experience in order to determine salient features for encouraging childcare providers to include children with disabilities.

An article by Odom (2000) offers reflections on major emerging and ongoing issues surrounding preschool inclusion. The first issue is Odom's clarification and emphasis of the definition of inclusion as children with disabilities attending the same class as typically developing children. Another issue Odom reports is the quality of preschool inclusion. Inclusive preschool centers should have ongoing, high-quality assessments by both program staff and parents. The appropriateness of the setting for the child with disabilities should not only include the level of the child's engagement in the classroom activities and routines, but should also reflect the program philosophy, administrative support, resources, collaboration among professionals, opportunities for family choice, and interactions between the teachers and the child with disabilities. Odom considers these characteristics as a reflection of the extent to which inclusion is occurring and supported in the preschool program. Odom proposes that assessments of outcomes for children should expand and include children's membership, such as their participation as a full member, and the children's relationships, such as reflected by their interaction with peers and adults. These outcomes, according to Odom, look at more meaningful and important capacities of children. Social acceptance or rejection of a child with disabilities

is another issue Odom reports that measures social integration of children with disabilities in an inclusive setting. Cost and function, especially the cost of inclusion and the processing of using available funds to support inclusive services is also an ongoing issue affecting attitudes surrounding inclusion.

Research by Buysse, Wesley, Bryant, and Gardner (1999) focused on the perception of quality of service in inclusive and noninclusive settings. The authors used the Early Childhood Environment Rating Scale (ECERS) to assess the quality of childcare centers in determining whether programs enrolling children with disabilities were of higher or lower global quality compared to programs that enrolled only typically developing children. Their study also included whether teacher characteristics predicted program quality. Their study found that inclusive programs, programs with teachers who had college degrees or child care credentials, and programs with knowledge and skilled teachers scored higher on the ECERS. The authors further noted that the higher ECERS scores may be influenced by parents and professionals seeking out programs with higher standards such as lower child-staff ratios and better staff qualifications. The authors also noted that caregiver experience or education is not a sole predictor of child care quality.

In the report of Dinnebeil and Hale (1999), collaboration is another component of delivering quality services in early intervention including program philosophy and climate, service delivery and options, teaming approaches, administrative policies and practices, and community context. More specifically, a family-centered philosophy was surveyed to be more accepting of different lifestyles and needs. Consequently, these ideals were reflected in the IFSP. The model type of service delivery included continuity of staffing, scheduling flexibility, and open communication between all team members including the family. Furthermore, effective collaboration and inclusion is facilitated by key questions in the article of Idol (1997). Some key ideas included facilitating the development of the school district's philosophical position on inclusion, surveying attitudes and beliefs of the

teachers and parents towards inclusion, creating financial planning ideas for program development, individualized job descriptions, ongoing staff development training, and a continuum of monitoring and evaluation of student, teacher and system changes.

### Survey of Inclusionary Practices and Recommendations

Hemmeter (2000) contrasted past and present observations regarding classroom-based interventions. Traditionally, children with disabilities were placed in one classroom where the children moved systematically from one developmental activity to the next. These activities were frequently neither functional nor developmentally appropriate. The children had free time and outdoor play. Data was collected on the skills of each child. Now, in inclusive settings, Hemmeter summarizes that children spend most of the day in learning centers or outdoor play with no structured times for teaching specific skills or data collection. However, in these settings, teaching occurred within the context of the classroom activities and routines. With the shift from a segregated service delivery model to an inclusive model, Hemmeter notes a trend with regards to the perspective in learning environments and strategies. Hemmeter reports that in order to promote learning in an inclusive setting, children must be involved with their peers in ongoing classroom activities and routines. Children must also be given opportunities for learning new skills within the context of those activities and routines. The goals and objectives must be functional and developmentally appropriate. Hemmeter further summarizes that even though there are many effective instructional strategies, there is no conclusive evidence to show that activity-based approaches is more effective or efficient than traditional didactic approaches.

A survey of 43 local education agencies (LEAs) in California by Cavallaro and Ballard-Rosa (1998) found that the nature of the programs for infants tended to be home-based, while preschoolers with mild disabilities were often fully included. Preschoolers with severe disabilities and low-incidence disabilities were more often

partially included or placed in special day classes. This survey also found that the size of the program may affect the provision of inclusive options. Larger programs with 151-300 children reported up to 75% of children as being included, while smaller programs reported up to 25% of children being partially included. Although the findings of this survey may be limited due to the low response rate, it was found that 6 out of 25 preschool programs and 5 out of 12 infant programs did not provide any services in inclusive settings.

Kontos, Moore, and Giorgetti (1998) studied 40 children at age 4 with disabilities and examined their activities, adult involvement, and the social context of their activities within inclusive early childhood programs. The authors observed that the children with disabilities were involved in play with manipulatives or in nonplay with a group of peers and or a teacher. On the other hand, children without disabilities were most often involved in dramatic play alone with a teacher or peer. With regards to social context, the study found that children with disabilities who engaged in more competent peer play while playing with objects were playing with one or more children, rather than with a teacher or with a group and teacher. Additional observations noted in this study included less teacher interaction with a child with disabilities when the child was in a group setting even though the teacher was in close proximity, compared to a child alone with a teacher. The findings of this study strongly suggest continued research of inclusive play groups in order to maximize the validity of play.

Kellgrew and Allen (1996) present a historic review of the movement toward integrated classroom placements as well as the characteristics of inclusive classrooms relevant to occupational therapy school-based practice. An inclusion model adopted by 3 elementary schools within the Moorpark Unified School District is described which included occupational therapy as an integral component. Students with mild to severe disabilities were successfully included primarily due to age and grade appropriate

placement, collaborating team, general disability training for staff, students and parents, appropriately trained specialists, and proper training of paraprofessionals.

Hanft and Pilkington (2000) report similar trends amongst rehabilitation specialists providing services in the family's home as a natural environment. In this study, physical and occupational therapists and speech-language pathologists compare and contrast therapy provided in clinic versus home settings. According to this report, the benefits of providing effective therapy in natural environments, such as the home, enhances relationships within the family as well as between the therapist and family. Natural environments, such as the home, also provides modeling and support to assist caregivers' efforts to improve the child's performance. Services provided in this environment also enhances the capacity to assess the child's strengths and select practical outcomes. Hanft and Pilkington also summarize challenges to providing therapy in natural environments including conflicts between local program practices and legislative mandates such as physicians recommending more therapy than families can access or early intervention programs can accommodate. Medically trained or new therapists may have limited experience working in the family's home environment. In addition, fiscal and logistical issues and staffing shortages add to the challenges of providing services in the natural environment. For example, there may be limited payment sources for community or home-based services. The authors reiterate the importance of collaboration between state and local levels, third party payors, early intervention providers, and families.

In a national mail survey of early childhood education professional organizations accredited by the National Association for the Education of Young Children (NAEYC) who have endorsed and adopted a position statement in support of inclusion in a variety of natural settings, McDonnell and Brownell (1997) analyzed questionnaires completed by preschool teachers. The purpose of this survey was to gain information from a sample of NAEYC accredited programs about the variables that may affect the quality of services

available to children with disabilities. Some of the findings of this survey, based on approximately 55% returned responses of 500 preschool teachers who were mailed questionnaires, included that the majority of the teachers were not certified in early childhood or early childhood special education. However, all the respondents had at least one college degree. This survey found that more than half of these teachers had a child with disabilities in their classes, yet, only 25% of these teachers worked with a special educator. In addition, it was found that nearly one third of the responding teachers had no experience teaching a child with disabilities. The implications of this survey support the need for ongoing staff development to expand skills and experience necessary to provide an effective and appropriate preschool setting for children with disabilities.

As the concept of inclusion becomes integrated into the field of early childhood education and special education, research has evolved to reveal similarities and differences with regards to inclusionary practices. In a study by McLean and Odom (1993), the Division for Early Childhood (DEC) Task Force on Recommended Practices are compared with practices endorsed by NAEYC. Both organizations were found to be very similar in their practices in the areas of family involvement, assessment, program planning, curriculum and intervention strategies, service delivery models, and transition processes. The study showed that both DEC and NAEYC endorsed developmentally and chronologically age appropriate practices. Family centeredness and family/child advocacy are also emphasized. Assessments are family friendly and the information is available in the language and level of understanding of the family. Family questions and concerns are included in the planning of assessment procedures and strategies. Curriculum and intervention strategies accommodate a wide range of needs and differences and focus on positive relationships with families as well as cultural diversity. These strategies were also promoted to be practical and functional, facilitate active learning, and support the physical needs of children. Transitioning children to other programs include maintaining

communication and cooperation between agencies and involving the parents in the process. Furthermore, both DEC and NAEYC include center-based, home childcare, or public school settings in their service delivery models.

Home visiting continues to be another vehicle for delivering a variety of comprehensive early intervention services needed by infants and toddlers with disabilities and their families. Roberts and Behl (1996) conducted a survey of 193 programs providing home visits. The survey found that most respondents also used home visiting to coordinate services and link families to other agencies. Participation in the IFSP and family level conferences were common strategies used to enhance service integration. Common perceived barriers to community-level service integration surveyed included: insufficient time available for coordination activities; large caseloads; differing philosophies for serving families; limited confidentiality policies that impede sharing client information; and duplication of services for the same family. This study emphasized the importance of family-centered systems integration as underscored in the mandates of Part C of the Individuals with Disabilities Education Act (IDEA).

Partnerships for Inclusion, a statewide project in Virginia providing technical assistance to communities as they develop and coordinate inclusive services for infants, toddlers, and preschoolers with disabilities and their families is described by Wesley and Buisse (1996). Wesley and Buisse report recommendations to support inclusion such as emphasizing interaction and communication skills, problem-solving skills, the ability to assess outcomes, and personal characteristics such as being self-directed, perceiving each other as co-equals, promoting local control of programs, and respecting the values, beliefs, and leverage potential of local stakeholders.

Inclusive services in underserved communities is another area worthy of research. Buisse and Wesley (1999) studied the impact of a project that used a community development framework to implement change in early care and early intervention services

in two culturally diverse and underserved communities in North Carolina, namely Haliwa-Saponi Indians and Latino immigrants. The framework's outcomes and recommendations included establishing relationships between parents and service providers, sharing ideas and experiences, and planning and implementing their reform efforts. Outcomes also included parents having a stronger voice and leadership roles related to childcare and early intervention, project-sponsored events expanding into additional community initiatives, and community members showing an increased awareness of community needs and resources related to childcare and early intervention. By implementing these outcomes, these communities did assist in change efforts that promoted an increase in awareness of needs for early intervention for children with and without disabilities.

#### Research on Effects of Inclusion on Developmental Outcomes

An article by Buysse and Bailey (1993) reviewed the literature comparing outcomes for young children with disabilities in inclusive and segregated settings across 22 studies. Despite reported problems of methodological weaknesses, such as the wide variations in research design and methodology, as well as variations in program related factors, such as preparation of children for inclusive settings, comparative studies suggested that inclusive environments facilitate social interactions for young children with disabilities. However, inclusive environments did not effect children's developmental outcomes over time. The authors report that inclusion during the preschool years minimizes the possibility of teasing and rejection and maximizes the possibility of social acceptance of peers with disabilities since young children have not formed negative stereotypes. Buysse and Bailey also concluded that early interactions with individuals with disabilities may increase chances of later acceptance of people with disabilities by their typically developing peers. Furthermore, they found that early placement of young children with disabilities in an inclusive setting creates the expectation among parents and



professionals that inclusion is the norm and prepares the child to function and succeed in typical environments.

Bella and Mahoney (1998) presented a study assessing the effect of family-centered early intervention services on 47 infants and toddlers with disabilities from birth to three years old and their families during a 12-month period. More than 40% of these families received services in the home, 21% received center-based services, and 38% received a combination of home and center-based services. During family-centered intervention, the children's developmental gains were equivalent to their rate of development prior to intervention. The results of this study indicated no significant changes in maternal stress, family environment, and maternal interactive style. Also in the study, although changes in children's developmental age scores were highly significant, the relative rate of gain that children achieved during the course of this study as calculated with the Proportional Change Index (Wolery, 1983) was generally equivalent to their rate of gain prior to this study.

Similar findings were also described in another study by Bruder and Staff (1998) which analyzed 37 toddler-aged children in which 18 of the children attended inclusive programs and 19 children attended segregated classrooms serving only children with disabilities. The statistical analysis of this study suggested no significant differences between comparing background variables of the 2 groups, comparing reason for early intervention referral, or comparing the children in inclusive and segregated settings on age-equivalent developmental scores.

Bruder, Staff, and McMurrer-Kaminer (1997) analyzed early intervention services provided to 68 toddler-age children between the ages of 27 and 36 months. The purpose of this study was to provide a description of the implementation of Part H early intervention services in childcare centers in the state of Connecticut. Eligibility was determined by established condition, clinical opinion, or documented developmental delay

of 2 standard deviations in two or more areas. Data collected included family background, child status, and service characteristics. The IFSP delineated specialized services including speech, physical and occupational therapy, and nursing. Some of the major findings in this study noted that the greater the developmental delay, the earlier age of referral to early intervention. The study also found that families with reported higher incomes had children referred at earlier ages. Also, children from two-parent households were referred to early intervention at earlier ages. Although the study did conclude children were receiving early intervention services within childcare centers, the aforementioned findings led to the need to explore more aggressive methods of identifying children in need of early intervention. These methods included developmental questionnaires completed by parents and surveillance models within the education and medical communities.

Another study by Bruder (1997) examined the effect of two early intervention settings on the social behaviors and development of 42 toddler-age children, ages 24 to 36 months old with disabilities. Nineteen toddlers were followed in inclusive settings such as day care centers. Twenty-three toddlers were followed in segregated, center-based settings. Bruder's study included all levels and types of disabilities. Developmental changes in the areas of language, motor, cognitive, and adaptive domains were analyzed and compared at 24, 30, and 36 months of age. The results of this study showed no significant effects of setting on developmental progress. As the implementation of inclusion with regards to specialized instruction in early intervention expands, the need for quantified research should continue to be warranted in order to support the wide range of services provided to meet the families' individual special needs.

In a similar study by Bruder and Staff (1998), 27-36 month old toddlers with moderate to severe disabilities were followed for 12 months in inclusive and segregated classroom settings. As some toddlers received specialized instruction including speech,

occupational and physical therapy in inclusive childcare centers, concerns were raised with regards to the developmental appropriateness in some segregated childcare settings, particularly with regards to the variations in the quality of childcare and the lack of specialized intervention staff. Additional points of significance sited in this study showed that the quality of staff training and supervision within the childcare centers also raised concerns in cases where a greater percentage of time in inclusive classrooms was spent on play and caretaking activities. In contrast, children in segregated classrooms reportedly received double the amount of total therapies. According to this study of 37 toddlers, the differences in service characteristics did not affect the developmental outcomes in this sample of toddlers with moderate to severe disabilities. In retrospect, these findings, although derived from a small sample, should validate the importance of further research comparing the effect of service characteristics within inclusive and segregated classroom settings on developmental outcomes.

Findings in a study by Holahan and Constenbader (2000) concluded that preschool children with disabilities functioning at a lower level of social and emotional function performed the same in either inclusive, segregated or specialized settings. On the other hand, children with a higher level of social and emotional skills demonstrated more progress in inclusive settings compared to segregated or specialized settings. However, in the areas of self-help skills, general knowledge and comprehension, the type of setting did not have a significant effect on the scores or the rate of progress for either higher or lower developmental levels. An additional component of their study found that children with greater developmental delays in full-day classrooms (5 hours per day) demonstrated higher rates of progress in all areas of development compared to their peers enrolled in half-day classroom (3 hours per day).

### **Summary**

Despite efforts to promote inclusion within the educational system, the current review of literature indicates a multitude of factors that may contribute to the effectiveness of inclusion including perceptions and attitudes toward inclusion (Gallagher, 1997; Dinnebeil & McInerney, 1998), effective strategies (Wesley & Buysse, 1996; and Dinnebeil & Hale, 1999), as well as statistical analysis regarding the effectiveness of inclusion (Bella & Mahoney, 1998; Bruder & Staff, 1998; Bruder, Staff, & McMurrer-Kaminer, 1997; and Bruder, 1999). As the trend towards inclusion expands, further research is recommended in analyzing conclusive evidence to support whether inclusion is more effective or efficient than other didactic approaches.

In addition, inclusion, according to Bricker (2000), still has its challenges and barriers. Challenges and barriers include less than optimal quality of instruction and social interactions, compromised specialized instruction, and/or isolation or difference in treatment of special education staff and children. Bricker advocates refocusing and refining the intended goals and specific child-based outcomes for all children who participate in inclusion in order to solidify best practice.

## CHAPTER III

### Method

#### Participants

A total of 50 student files were researched in this study. Twenty-five students each were designated to either inclusive or segregated groups. Each child had a confirmed diagnosis of Down syndrome. The enrollment of each student in either of these settings was confirmed by designated instructional settings described in the Individualized Family Service Plan (IFSP). The inclusive group included 11 males and 14 females (n=25). The segregated group included 13 males and 12 females (n=25). Each student was tested at or near 36 months of age (range = 33-36 months).

Prior to 1995, the early intervention program used for this study only offered classes in segregated settings in classroom settings serving only toddlers with special needs. Beginning in 1995, this SELPA offered inclusive settings that included classroom or childcare centers with special needs and typically developing toddlers together. Initially, inclusive settings were provided in a parent education center for infants and toddlers 24-36 months old. In 1996, inclusive settings were expanded and offered for infants and toddlers from birth to 36 months of age. Staffing included an infant specialist from special education, a bilingual instructional assistant and a parent educator from regular education. Parents were included in the programs. In the older toddler classes, for ages 30 to 36 months of age, parents were given a choice of dropping off their child or remaining in the class.

#### Description of Instrumentation

The Vineland Adaptive Behavior Scales (VABS) is a norm-referenced assessment with subtests covering four domestic domains which include communication, daily living skills, socialization, and motor skills for ages birth to 18 years of age (Sparrow, Balla, & Cicchetti, 1984). There are three versions: the *Interview Edition*, *Survey Form*; the

*Interview Edition, Expanded Form;* and the *Classroom Edition*. Each version measures adaptive behavior in each of the four domestic domains mentioned above. The communication domain includes receptive and expressive skills. The daily living skills domain includes personal, domestic, and community skills. The socialization domain includes play and leisure time and coping skills. The motor skills domain includes gross and fine motor skills. Each version of the assessment varies in the number of items and materials, and the method of administration. The VABS does not require the direct administration of tasks to an individual, but instead is completed during interviews with a parent or other informed adult. Each subtest or domain can be scored to standard scores, percentile ranks, stanines, and age equivalents. The data for this study uses the age equivalents or developmental ages.

#### Research Procedures

Permission to access a data base at a Special Education Local Plan Area (SELPA) located in the Central California area was granted to examine and compare any differences in the effectiveness of early intervention services with regards to developmental gains in communication, self-care, socialization and motor domains provided to toddler-age children with Down syndrome in two primary types of service delivery settings. Scores from a standardized test, the *Vineland Adaptive Behavioral Scales (VABS), Survey Form* administered at or near 36 months of age were compiled and compared.

A research of data accessed from a data base located at the SELPA provided the information to identify and locate files of students used for this study. Through the use of selected data based information, a list of toddlers categorized as mentally retarded and whose birthday occurred between August 30, 1992 and August 30, 1999 was compiled to determine those children who had turned three years old by August 1995 and would be eligible for enrollment in the inclusive classroom setting. Another list of students categorized and coded as mentally retarded with birthdays between January 1, 1989 and

August 30, 1992 was requested to determine children eligible for only segregated classroom settings available prior to 1995. Both lists were printed alphabetically. The IFSP or Individualized Education Plan (IEP) of each student listed was reviewed to confirm a diagnosis of Down syndrome. Students' names without the diagnosis of Down syndrome were eliminated from the lists. Names with a confirmed diagnosis were highlighted in order to reference for further collection of data. The student's designated instructional setting was confirmed as either regular day class (inclusive setting) or special day class (segregated setting). The student's name was labeled as a number and transferred to a data collection worksheet indicating an inclusive setting (Table 1, Age Equivalents at 33 to 36 - Inclusive Setting) or segregated setting (Table 2, Age Equivalents at 33 to 36 Months - Segregated Setting). Information compiled from the student's file including gender and test scores interpreted as age equivalents from the VABS were entered in the appropriate columns of the worksheet.

Student files that had incomplete records or no educational services involved were eliminated from this study. Seven student files were not included in order to compare an equal number of cases in the 2 settings. The 7 files were randomly selected and eliminated from the data collection worksheets.

The data collected for this study is based on a post-test only control group design. Toddlers at or near 36 months of age with specialized instruction provided in either inclusive or segregated classroom settings were administered the VABS by school psychologists.

The mean and standard deviation of the age equivalents from each of the four domains using the (VABS) of toddlers at or near 36 months of age within each setting was conducted. A  $t$  test was applied to compare the means for statistical significance between inclusive and integrated settings using the test scores (age equivalents) of each identical subtest or domain. The critical variable of .025 was used as the level of significance.

## CHAPTER IV

## Results

Comparison of Developmental Outcomes

The results of this study were consistent with similar research (Buysse & Bailey, 1993; Bruder, 1997; Bruder, Staff, & McMurrer-Kaminer, 1997; Bella & Mahoney, 1998); Bruder & Staff, 1998) comparing developmental outcomes of toddlers in inclusive and segregated settings. The conclusions of these studies were similar in that there were no significant differences in comparing age-equivalent developmental scores in children with disabilities in inclusive or segregated settings. Table 3 summarizes the results of applying a *t* test to compare the mean and standard deviation values for the age equivalents of communication, daily living, social, and motor subtests or domains of toddler age students diagnosed with Down syndrome who attended either inclusive or segregated programs.

Table 3

Age Equivalence (Months) for Vineland Scores by Group Means and Standard Deviations

Variable	Inclusive Group (N=25)		Segregated Group (N=25)	
	M	SD	M	SD
Communication	15.36	2.25	15.20	2.08
Daily Living	20.52	3.75	19.04	3.03
Social	20.68	4.64	19.20	4.01
Motor	21.36	3.54	21.04	3.74



According to Table 3, the correlations for all measures show no significant differences ( $p > .025$ ) between developmental outcomes in inclusive or segregated settings. Based on the analysis of this data, there is no significant difference between the scores or age equivalents of the two groups.

## CHAPTER V

### Conclusion

#### Summary

As the importance of encouraging early experiences for infants and toddlers has long been recognized and has been the fundamental basis for early intervention programs providing collaborative services for young children who have disabilities or are at risk, the current legislative mandate for inclusive programs has prompted more research with regards to the benefits of inclusion especially for infants and toddlers with moderate to severe disabilities. This study investigated the effects of providing early childhood special education services in inclusive programs as compared to segregated programs by comparison of test scores or age equivalents as measured by the Vineland Adaptive Behavior Scales (VABS) of toddlers diagnosed with Down syndrome when early intervention was provided in either inclusive or segregated settings. The results of this study support the null hypothesis which stated that there will be no statistically significant differences between the standardized scores of toddler-age children with Down syndrome provided with early intervention services in either inclusive or segregated settings as measured by the VABS.

#### Discussion

According to the results of this study, it was clearly noted that inclusive or segregated settings did not affect developmental outcomes of toddlers with Down syndrome. However, this study did have several limitations. As the primary goal of this study was to quantitatively compare the effects of early intervention settings on developmental outcomes using historical data, the raw data, especially for the inclusive group, likely had several potential flaws. Although both inclusive and segregated groups had similar factors such as the diagnosis of Down syndrome and the same age range for testing (33-36 months), variables not considered in this study included analysis of

demographics such as family structure, educational history, employment and home languages. In addition, although families chose to participate in inclusive programs as documented on the IFSP, actual attendance or rate of attendance was not confirmed. Furthermore, comparison of program strategies, classroom composition, experience level of interventionists, or involvement of additional specialized services were beyond the scope of this study.

#### Implications and Recommendations for Future Research

The results of this study, based on the comparison of VABS age equivalents administered to toddlers following early intervention programs provided in inclusive or segregated settings, suggest that the type of setting did not significantly affect developmental outcomes or achievement. Any of the previously mentioned limitations could have contributed to the undifferentiated comparisons of test scores or age equivalents. As segregated settings within the early intervention programs continue to decline, research comparing the benefits or drawbacks of segregated and inclusive settings warrants further research.

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Table 1

Age Equivalents at 33 to 36 Months - Inclusive Setting

Student/Gender	Communication	Daily Living	Social	Motor
1 M	13	17	18	19
2 F	15	22	21	25
3 M	15	17	18	22
4 F	18	31	35	29
5 M	17	24	18	22
6 F	13	22	15	25
7 F	16	18	21	17
8 M	17	19	20	19
9 M	12	14	18	15
10 F	16	22	20	23
11 F	14	20	19	19
12 F	20	24	28	22
13 F	19	23	24	23
14 M	13	19	17	21
15 F	11	16	16	18
16 F	16	18	20	16
17 F	12	18	18	21
18 M	14	20	15	27

table continues

**Age Equivalents at 33 to 36 Months - Inclusive Setting**

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<b>Student/Gender</b>	<b>Communication</b>	<b>Daily Living</b>	<b>Social</b>	<b>Motor</b>
19 M	17	28	29	23
20 F	16	24	26	26
21 F	16	19	20	23
22 F	18	20	22	17
23 M	15	21	18	18
24 M	15	19	21	23
25 M	16	18	20	21

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Table 2

Age Equivalents at 33 to 36 Months - Segregated Setting

Student/Gender		Communication	Daily Living	Social	Motor
1	M	15	19	14	17
2	M	14	18	16	20
3	F	16	21	19	25
4	M	16	24	18	34
5	F	16	22	25	19
6	F	15	21	14	21
7	F	14	21	19	29
8	F	18	24	25	22
9	M	13	17	18	19
10	M	17	17	18	20
11	F	19	22	28	18
12	M	16	12	18	24
13	F	14	20	18	20
14	M	16	18	22	21
15	F	17	23	21	20
16	F	18	22	21	20
17	M	13	16	13	20
18	F	12	18	18	23

table continues

**Age Equivalents at 33 to 36 Months - Segregated Setting**

Student/Gender		Communication	Daily Living	Social	Motor
19	M	13	16	13	20
20	M	15	18	24	18
21	M	12	14	15	20
22	M	18	16	20	18
23	M	15	18	24	18
24	F	18	20	22	19
25	F	13	19	17	21