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A COMPARISON OF SYNTAX TRAINING FOR STUDENTS WITH DEVELOPMENTAL DISABILITIES UTILIZING CLINICIAN-DIRECTED VERSUS SELF-DETERMINED SESSION PARADIGMS

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ABSTRACT OF DISSERTATION

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ABSTRACT OF DISSERTATION
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A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Health Sciences
At the University of Kentucky

By
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Lexington, Kentucky

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Self-determination is the ability to control one's life and to actively participate in the decisions which affect the direction of one's life. This ability is considered a critical life skill for individuals with developmental disabilities. The ability to make choices, plan, and self-evaluate are among the primary skills included in the development of self-determination. Currently, there is very limited emphasis on the importance of self-determination in the literature of communication disorders. This study was designed to determine if a teaching paradigm which incorporates key elements of self-determination is as or more effective and efficient in teaching syntax than a traditional, clinician-directed teaching paradigm for students with developmental disabilities. Two methods of syntax instruction were compared for 4 students with Down syndrome between the ages of 7 and 13 years using an Adapted Alternating Treatment (AAT) single subject design. In the Clinician Directed (CD) condition, the clinician selected the reinforcing activities, scheduled the order of those activities, and provided the students with feed-back on the accuracy of their productions. In the Self-Determined (SD) condition, the students chose the reinforcing activities from 4 possible choices, scheduled the order of activities, and self-evaluated the accuracy of their productions.

Results of the study indicated that both the traditional clinician-directed approach (CD)and the self-determined approach (SD) were effective in teaching syntax targets with all 4 students achieving criterion at an unexpectedly rapid rate and maintaining skills regardless of the teaching condition. The CD condition was slightly more efficient than the SD condition in achieving criterion for 3 of the 4 students in the study; however, for 2 of these 3 students, there was a difference of only 1 session between the 2 conditions. In the SD condition the students were required to self-evaluate responses, a key element in the development of self-determination skills. Interestingly, students appeared to learn to self-correct errors slightly sooner in the SD than the CD condition. Further investigation is needed, but a case might be

made that including elements of self-determination in syntax training could justify the slight loss of efficiency, and does so without disrupting teaching effectiveness.

KEYWORDS: SELF-DETERMINATION, COMMUNICATION DISORDERS, SYNTAX TRAINING, DEVELOPMENTAL DISABILITIES, EVIDENCED-BASED PRACTICE

Jane O'Regan Kleinert

5-6-05

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2005

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DEDICATION

This work is dedicated to those people who are the most important in my life.

They are my mother, Ruth Charlton O'Regan who pushed and pushed until I started this adventure; my husband, Harold L. Kleinert who supported and cheered until I finished EVERYTHING, and my three awesome children, Matthew, Elizabeth Coady and Lauren Kleinert who followed the process with patience, encouragement and amusement. I love you all with all my heart.

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CHAPTER ONE: RATIONALE

Introduction

Self-determination has been described as "the ability to control the basic decisions and directions of one's life," or "a fundamental approach to one's life" (Kleinert et al., 2001). Indeed, self-determination has been recognized as a critical life outcome, especially for individuals with developmental disabilities who are at risk for being denied such opportunities (Bambara & Koger, l996; Brown, Gothelf, Guess, & Lehr, l998; Field, Martin, Miller, Ward & Wehmeyer, 1998a; Holub, Lamb, & Bang, l998; Martin & Marshall, 1995; Ryan & Deci, 2000; Wehmeyer & Schalock, 2001; Wehmeyer & Schwartz, 1998). In its position paper the Council for Exceptional Children, based upon the work of Field et al. (1998a), defined self-determination as follows:

> Self-determination is a combination of skills, knowledge, and beliefs that enable a person to engage in goal directed, self-regulated, autonomous behavior. An understanding of one's strengths and limitations together with a belief in oneself as capable and effective are essential to self-determination. When acting on the basis of these skills and attitudes, individuals have greater ability to take control of their lives and assume the role of successful adults (p. 2).

Among the numerous definitions of self-determination which appear in the literature of rehabilitation and special education, certain central elements recur. These include one's ability to make life-choices, to select goals and to develop the initiative to pursue these goals (Brown et al., l998; Holub et al., l998; Ryan & Deci, 2000; Wehmeyer & Schwartz, l998). Disciplines interested in promoting self-determination in persons with disabilities are several and varied, thus, the characteristics and components of self-determination discussed in the literature vary across authors dependent upon their area of focus. The characteristic behaviors that reflect a degree of self-determination most often cited by such authorities include: choice-making; making one's needs known; self-initiated behaviors; self-prompting; involvement in assessment, planning, and goal selection; decision making skills; the ability to control one's own behaviors; and self-management (Kleinert et al., 2001; Palmer & Wehmeyer, 2003; Wehmeyer, Field, Doren, Jones, & Mason, 2004; Wehmeyer & Sands, 1998). Also considered part of self-determination are the ability to evaluate one's performance and one's work or activities; involvement

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in activities of daily living such as community access and in the planning of one's life activities. Finally, skills in self-advocacy and self-assertion are important for self-determination (Pennell, 2001; Turnbull & Turnbull, 2001). Often, however, persons with developmental disabilities are not taught or allowed to practice these life skills (Brown et al., 1998; Falvey, 1995; Kleinert et al., 2001).

Self-determination also includes premises that support self-motivation. Having control over one's own decisions is thought to be highly motivating (Ryan & Deci, 2000). Primary among the elements which support intrinsic motivation are choice-making, planning, self-monitoring, and self-evaluation (Grossi & Heward, 1998; Ryan & Deci, 2000; Palmer & Wehmeyer, 2003). These skills allow an individual to control, evaluate, and alter behaviors as necessary. Beginning in early childhood these skills develop throughout the life-span (Brown & Cohen, 1996; Ryan & Deci, 2000).

In the field of developmental disabilities, special education, vocational education, personal futures planning, and supported living all emphasize the need for self-determination. Many authors agree with Field et al. (1998a), that a focus of self-determination is to "help students with disabilities develop the skills they need to take charge of their educational programs, meet their educational goals, and prepare for their lives after graduation" (p. 117). Self-determination is seen not as an end in itself, but rather as a means to an end, that of greater independence and self-management for persons with disabilities (Wehmeyer, personal communication, September 16, 2003).

A review of self-determination as outlined above reveals that many of its components are based in part on an individual's ability to communicate. Giving voice to one's choices, making decisions, asserting one's self and evaluating one's own behavior require a mechanism for communication that is easily accessible to the individual and understandable to others. In light of this connection between self-determination and communication, it might be assumed that speech-language pathologists or communication disorders specialists would be frequently involved in the programming for self-determination with students having significant disabilities. In fact, the Individuals with Disabilities Education Act (IDEA) included the area of speech-language pathology prominently in its description of related services for students with disabilities. Bearing all this in mind, it is surprising that an extensive

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literature search of self-determination with students having disabilities revealed only one contribution by speech-language pathologists in this area of intervention (Light & Gulens, 2000).

Moreover, literature on self-determination for individuals with developmental disabilities, even in educational programs which foster self-determination for such students, until very recently has focused primarily on adolescent and adult needs and programs. If, however, self-determination abilities begin in childhood as authorities posit (Brown & Cohen, 1996; Palmer & Wehmeyer, 2003; Ryan & Deci, 2000), then an emphasis on fostering self-determination should be begun at an earlier age for individuals with disabilities. Further, if the expression of self-determined behaviors is closely linked with the ability to communicate successfully, it would seem appropriate that rehabilitationists outside the field of special education, such as speech-language pathologists, should play a role in fostering such behaviors in their students with disabilities. Finally, given that authorities believe that self-determination fosters intrinsic motivation, it may be of interest to determine if students with disabilities will make more rapid gains in instructional objectives and therapeutic interventions if the motivating elements of self-determination are included in treatment programs for students of *all* ages.

The purpose of this investigation is to determine if infusion of elements of the valued outcome of self-determination into communication therapy, specifically syntax programming for students with developmental disabilities as conducted by a speech-language pathologist, will produce more rapid achievement of syntax targets and greater student involvement in therapy when compared to a more traditional clinician-directed treatment paradigm. This investigation will be a single subject study utilizing an adapted alternating treatment design comparing the rate of target acquisition and involvement in therapy sessions by 4 students with developmental disabilities between the ages of 9 and 13 years when receiving syntax therapy based on a clinician-directed versus self-determination based treatment paradigm.

Review of the Literature

The following literature review will provide an overview of the definition and components of self-determination with particular emphasis on self-determination for individuals having developmental

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disabilities, including information on intrinsic motivation and its relation to self-determination; expressive communication and its relation to self-determination and the needs of individuals with developmental disabilities; and intervention procedures for the development of expressive communication, specifically the use of correct syntactic forms.

Overview of Self-Determination in Rehabilitation

The concepts and theory of self-determination did not originate within the area of developmental disabilities. Self-determination initially referred to the government of a country by its own citizens, that is, self-government or self-rule (Patterson, 1991). These concepts were founded in the belief that humans have the right to make decisions about their own lives and actions.

Over time, the term "self-determination" has been adopted by various rehabilitation related disciplines such as psychology, social work, vocational rehabilitation, medicine, gerontology, mental health, rehabilitation therapies, education, and developmental disabilities. Within this framework, multiple variations on the definition of self-determination exist, but most contain the same basic elements and tenets. These tenets include the belief that self-determination is a set of skills and knowledge which foster self-direction, self-regulation and autonomous behavior. The self-determined individual, regardless of level of disability, perceives him or herself as capable, able to have an impact on the environment, and having some level of control over life outcomes. The ability to make one's presence known, to make choices and understand one's own strengths and weaknesses are considered valued elements of self-determination (Cohen, 2003; Field et al., 1998a; Kyngas, 1999; Ryan & Deci, 2000; Wehmeyer & Schwartz, 1998).

Table 1.1 provides examples of elements of self-determination stressed by authorities in a variety of disciplines. The emphasis that each field places on particular elements of the concept of self-determination varies in relation to the primary goals of that field and the age of the individuals involved.

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Table 1.1: Major Components of Self-Determination Listed by Author and Discipline

Authors and Disciplines	Components of Self-Determination								
	Community Access	Self-Advocacy/ Asserting presence	Choice Making	Self Evaluation	Self Monitor/ Problem solve	Intrinsic Motivation	Making Needs known/ Control	Involvement in assessment, and treatment	Involvement in life-planning
Alper, Schloss & Schloss, 1995-Advocacy	X	X							
Browder & Bambara, 2000 Special Ed.			X					X	X
Brown et al., 1998- Severe Disabilities	X	X	X				X		X
Kyngas, 1999-Medicine			X			X	X	X	
Grossi & Heward, 1998-Voc. Rehab.				X	X	X			
Light & Gulens, 2000-Communication	X	X	X		X		X		X
Wehmeyer & Schwartz, 1998 Sp. Education	X	X	X	X	X	X	X	X	X
Cohen, 2003-Aging	X	X	X			X	X	X	X
Ryan & Deci, 2000-Psychology			X	X		X			X
Swinth, 2000-O. T.	X	X	X	X	X	X	X	X	X
Cook, Terrell & Jonikas, 2004-Mental Health	X	X	X	X	X	X	X	X	X

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Ryan and Deci (2000), for example, when writing to psychologists, focus on the components of competence, autonomy, and relatedness, emphasizing that such basic psychological needs may be necessary for an individual to experience a feeling of "well-being." They state that, "choice, acknowledgment of feelings, and opportunities for self- direction were found to enhance intrinsic motivation because they allow people a greater feeling of autonomy" (p. 70).

In the literature of social work, vocational rehabilitation and supported employment, the elements of choice, self-evaluation and self-monitoring have been emphasized in the work environment (Price, Wolensky, & Mulligan, 2002; Reid, Parsons, Green, & Browning, 2001; Wehmeyer, 2003b; West, 1996). Researchers have looked at altering behaviors of persons with cognitive and developmental disabilities who have selected employment as a life-goal by utilizing some major components of self-determination. Grossi and Heward (1998), when working with adults with developmental disabilities, found that a main reason such individuals lose jobs is "poor productivity." They developed a program based on the self-determination components of goal setting, self-monitoring, and self evaluation of one's own work for 4 adult males with developmental disabilities who had not benefited from previous training programs and who needed to increase their work productivity in order to retain employment. All 4 individuals showed an increase in work productivity when involved in the self-evaluation training program.

Authors in the fields of medicine, nursing, and mental health have begun to embrace the concepts of self-determination as they relate to the patient's rights to information, the patient's involvement in decision-making regarding treatment procedures and the development of treatment plans, and the patient's right to accept or reject treatment plans. Several studies have been conducted to help determine elements that foster increased compliance with medical treatment programs that involve behavior and lifestyle changes in persons with chronic illness. Lofman, Pelkonen, and Pietila (2003), in their work with patients with rheumatoid arthritis, found that self-determination for such individuals was impeded by "authoritarianism on the part of the (nursing) staff and poor communication" (p. 264). Kyngas, Hentinen, Koivukangas, and Ohinmaa (1996) and Kyngas (1999) in studying compliance behavior with young diabetics, found that the elements of motivation, responsibility for treatment, and collaboration with the

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physician (all elements of self-determined behavior) were among those that indicated compliance with the treatment program. Meng and McConnell (2002) found that when parents and children do not comply well with asthma treatment programs, they "may not perceive asthma treatment options as true *choices*, thus affecting *motivation* for adherence." These authors encourage practitioners "to form partnerships with parents and children in developing treatment goals" (p. 363). Elements of self-determination rise to the top when isolating techniques which foster behavior changes in persons with chronic illness. The self-determination principles of partnering with the consumer when *making decisions* regarding treatment programs, utilizing *motivation* on the part of the consumer and giving the consumer legitimate *choices and responsibilities* for his or her health have been shown to change lifestyle and behaviors. In the field of mental health, Valimaki and Leino-Kilpi (1998) indicate that self-determination has potential relevance to the discipline of psychiatric nursing. In an interview study, they found that while both positive and negative consequences had been reported in situations where individuals maintained self-determination, only negative consequences were reported when self-determination was absent.

Advocates for elderly individuals also have embraced the concepts of self-determination as they relate to cultural and policy changes which affect this population. Decision making regarding placement in a long-term care facility versus home or community placement has become a significant issue in the field of gerontology. Elias Cohen (2003), a prominent advocate for the rights of the aging, theorizes that society must strive for acceptance and advocacy for "the ethical postulate that each of us, irrespective of age, ability, intelligence, physical prowess, beauty, wealth or poverty is entitled to respect that grants life with dignity. Self-determination embodies the principles that underlie this principle of justice" (p. 2).

Literature in the area of rehabilitation therapies (i.e., the tri-alliance of speech-language pathology, occupational therapy and physical therapy) provides only limited references to self-determination theory. In a case study report, Swinth (2000), an occupational therapist, described a successful intervention program based on a self-determination model developed for a high school senior with cerebral palsy and significant orthopedic impairments. The elements of planning and self-evaluation, self-advocacy, choice-making, and autonomy were stressed when developing the student's Individualized

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Educational Program (IEP) and transition planning. Following the interdisciplinary intervention involving the occupational therapist, physical therapist, teacher, and student, the student delineated her immediate and future needs and initiated and implemented plans to address these needs. In their study with elderly individuals in a long-term care facility, Duncan-Meyers and Huebner (2000) found a strong relationship between residents' perceived amount of choice and their estimate of their quality of life. Reiter and Goldman (1999) discussed the importance of enhancing autonomy in young adults with physical disabilities in their article describing a program developed to foster independent livings skills, and a realistic self-concept and perception of one's quality of life. In the field of speech-language pathology, Light and Gulens (2000) have stressed the importance of using alternative and augmentative communication systems with individuals who can not express their choices and needs due to severe speech impairments. They state that "communicative competence and self-determination are separate constructs, but they are highly interdependent" (p. 138). They focus especially on the needs of adults with acquired disabilities and state that, "Communicative competence and self-determination are essential for adults with acquired neurogenic and neuromuscular disabilities to maximize the quality of their lives," (p. 174). However, these authors stress that "there is a critical lack of research to address issues of communicative competence and self-determination" for such individuals as yet.

The disciplines of education and special education have produced prolific literature on philosophy, curriculum, and effectiveness research in the area of self-determination for individuals with disabilities across continuum of severity and life spans. Literature which describes the philosophical base and history of the self-determination movement as it relates to developmental disabilities includes the work of Pennell (2001). This work provides a history of the self-determination movement which had its beginnings as an experimental process in service delivery systems in pilot sites supported by grant funding from the Robert Wood Johnson Foundation and model demonstration and assessment projects for youth with disabilities which were funded by the U.S. Department of Education and the Office of Special Education. Pennell noted that an analysis of these projects "showed that students had an increase in behaviors and skills related to self-determination" (p. 225). Skills stressed in these projects included

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teaching students to "evaluate their skills, recognize their limits, set goals, identify options, accept responsibility, communicate their preferences and needs, and monitor and evaluate their progress. The activities (utilized in these projects) taught decision making, goal setting, self-awareness, and self advocacy" (p. 225). Successful strategies utilized included modeling of self-determined behaviors by teachers, parents, and mentors; role playing; student portfolios and videotaped instruction and feedback. A variety of community-based settings were utilized for training. Further, Pennell notes that from the concept of self-determination, the movement toward self-advocacy by persons with disabilities and their families has developed. Wehmeyer and Schwartz (1998) studied the relationship between self-determination and quality of life for adults with mental retardation and found that individuals reporting a higher quality of life were also more self-determined. In the same year, The Division on Career Development and Transition of the Council for Exceptional Children issued a position statement which supported the approaches to education which are "rooted" in self-determination for "development and delivery of effective educational programs" for students with all levels of disability, regardless of severity, across the life span (Field et al., 1998a, p. 113). Clearly, both the literature on self-determination theory and empirical research on this topic emphasize the importance and the benefits of self-determination for persons with developmental disabilities.

Assessments and Curricula on Self-Determination

Multiple assessments and curricula to foster self-determination have been developed for a range of students with disabilities. Initially, most programs were geared toward adolescents and adults with developmental disabilities. Such programs included, for example, *The ChoiceMaker Self-Determination Curriculum* developed by Martin, Marshall, Maxson, and Jerman (1997) which offers a broad range of media to teach students to choose goals, express goals, and take action on goals. There is an emphasis in this program on active student participation in the development and implementation of the student's IEP. Another prominent authority in the field of assessment and curriculum for self-determination for students with disabilities is Michael Wehmeyer. As a pioneer in the field of assessment and curriculum development for self-determination, he and his colleagues have produced such instruments as *The Arc's*

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Self-Determination Scale (1995), which is a self-report measure regarding an individual's level of independent functioning in a variety of life situations; *Student-Directed Learning* (Agran, et al., 2003), a teacher's guide to fostering students ability to select goals, plan actions, implement goals and self-evaluate status and adjust strategies as needed; *Making It Happen* (Wehmeyer & Sands, 1998), a program to teach students to be maximally involved in their educational and transitional program planning; *Teaching Self-determination to Students with Disabilities: Basic Skills for Successful Transition* (Wehmeyer, Agran, & Hughes, 1998), a text describing instructional methods for teaching self-determination; and *A Practical Guide for Teaching Self-Determination* (Field, Miller, Ward, & Wehmeyer, 1998b). Other prominent curricula for self-determination include work by such authors as Field and Hoffman who developed the program, *Steps to Self-Determination: A Curriculum to Help Adolescents Learn to Achieve Their Goals* (1996). Opportunities for choice-making, functional activities, experiencing success, self-advocacy, self-monitoring, self-evaluation, planning and making decisions regarding students' schedules at school and at home, etc., are the focus of educators and special educators (Alper et al., l995; Kleinert et al., 2001; Wehmeyer, l993).

Effectiveness of Programs for Self-Determination

As with all interventions, evidence of the need for and the effectiveness of programs to develop self-determination are necessary. Such studies can be found in the literature on self-determination.

Evidence of need for self-determination programming. The need for information and training in self-determination for educators and clinicians in the public school setting is supported by a variety of studies. Thoma, Rogan, and Baker (2001), in a qualitative study to determine the level of involvement of students with moderate to severe disabilities in program planning in the public school, found that students were typically not involved in the planning or development of their transition plans or IEP meetings; school personnel directed themselves to parents and adults and not to the student; and students, though physically present, were not active members of their own transition planning. In a survey of educators and university professors, Thoma, Nathanson, Baker, and Tamura (2002) asked if teachers in special education were familiar with the term "self-determination" and if their training in this area was adequate.

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Results indicated that while 75% of those surveyed were familiar with the term "self-determination" for individuals with disabilities, only 33% felt that their training for intervention in this area was adequate. Results of a similar survey study by Kleinert (2004), completed with speech-language pathologists practicing in the public school setting, revealed that less than 50% of the respondents were familiar with the concept of self-determination for students with developmental disabilities and over half of these clinicians were never or seldom involved in self-determination program implementation. In a national survey of teachers, Wehmeyer, Agran, and Hughes (2000) reported that while 60% of teachers surveyed were familiar with self-determination, only 22% "indicated that all their students had IEP goals in this area" and "31% did not involve students in educational planning at all" (p. 64). Similar findings were reported in a survey of 69 special educators conducted by Agran, Snow, and Swaner (1999). While most respondents strongly supported instruction in self-determination, few actually included such goals in their students' IEPs.

Evidence of effectiveness of self-determination programming. The effectiveness of self-determination programs in supportive employment and education for individuals with developmental disabilities has been studied by a variety of researchers. Grossi and Heward (1998), as described earlier, found that self-determination strategies of self-monitoring and self-evaluation increased work productivity with 4 individuals with developmental disabilities. Reid et al. (2001) exposed 3 workers with multiple disabilities to two work conditions, one involving assistive devices which increased their independence in the work place and one with less use of assistive devices and thus, less independence. All 3 of the participants chose the more independent condition as their work preference. The authors note that "results reflect how self-determination may be enhanced by giving workers increased control over work situations" (p. 341).

Educational research into the effectiveness of self-determination programming has been growing since the late 1990s. A field test of *The Self-Determined Learning Model of Instruction* (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000) conducted with 40 students with disabilities found that students instructed with this model achieved their educational goals and showed increased self-determination. In

addition, teachers expressed satisfaction with the teaching program and indicated that they would continue with its use. Cooper and Browder (2001) designed and implemented a multicomponent training package for staff of a community based program for individuals with severe disabilities which focused on increasing the staff's frequency of offering choices to clients and the number and quality of choices clients actually made. Four staff members were involved in the training program for the study. Prior to training, staff did not offer opportunities for client choice and were intrusive in their prompting with the clients. In the first probe after training, all 4 staff immediately increased choice opportunities and decreased intrusive behaviors. In addition, staff generalized these behaviors across clients and situations. Clients increased their frequency and level of choice-making skills as well.

Agran, Blanchard, Wehmeyer, and Hughes (2002) believe that problem solving promotes the development of self-determination in students with developmental disabilities. Their approach to facilitating self-determination utilized a self-determined learning model to develop a problem solving program for 4 students with mental retardation. These students were taught problem-solving skills to achieve their "self-set" educational goals. Using a "multiple-baseline-across-participants" design, students were taught skills for participation in general education classes. Students achieved and maintained at the 100% level for performance utilizing this model. Stowitscheck, Laitinen, and Prather (1999) were interested in determining if self-determination skills could be embedded into the educational curriculum without disrupting other programming. They worked with middle and high school teachers to embed "planned incidents of instruction" in decision-making into the existing curriculum of students with developmental disabilities. Findings indicated that teachers consistently were able to embed such programming without "significantly disrupting core lessons." A meta-analysis of studies on outcomes of self-determination programs was completed by Algozzine, Browder, Karvonen, Test, and Wood (2001). Most studies were found to focus on the self-determination elements of choice-making for individuals with moderate to severe mental retardation and self-advocacy skills for individuals with higher functioning levels. These authors reported that group studies yielded an effect size of 1.38, which the

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authors considered to be a good effect size. Seven of the thirteen single-subject studies analyzed yielded a strong effect size. The authors reiterated, however, the need for further investigation in this area.

Most of the earlier work in self-determination programming involved adolescents and adults with disabilities. One study, however, by Palmer and Wehmeyer (2003), looked at the application of the self-determined model of learning with much younger children. In this study, 14 teachers were trained in the Self-Determination Learning Model, originally used with middle and high school aged students, in which students are asked to define: "What is my goal?" "What is my plan?" and "What have I learned?" At each stage, the students identify problems, possible solutions, barriers to solving the problem and consequences of each proposed solution. For this study, the steps and materials for this process were modified and adapted for 50 special education students from Kindergarten through third grade. Students as young as five years of age were found, with teacher facilitation, to select a goal, identify, and solve problems that might bar progress toward the goal.

By and large, the greatest amount of research in effectiveness of self-determination programming has been conducted with students who have developmental disabilities and attend public school. As noted above, there are multiple training programs available in the literature of self-determination. It is important to review in more detail the specific components of self-determination which are proposed as the targets in programs for children and youth with developmental disabilities.

Major Components of Self-Determination in Developmental Disabilities Programming

Program guidelines designed to develop or teach self-determination in students with developmental disabilities are many and emphasize several components seen as basic to self-determined behavior. Table 1.2 provides a listing of the self-determination components most often cited in the literature of self-determination and developmental disabilities. In reviewing the

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Table 1.2 Self-Determination Skills Important for Students with Developmental Disabilities

Sources	Components of Self-Determination										
	Intrinsic Motivation	Choice-Making/ Decision-Making	Goal Setting	Planning	Problem Solving	Self-prompting/ Self-Management	Self-Evaluation	Self-Assertion and Self-Advocacy	Internal Locus of control	Autonomy	Community Access
Alper, Schloss et al., 1995						X			X		X
Browder & Bambara, 2000		X		X				X		X	
Brown & Cohen, 1996		X						X	X	X	
Deci & Ryan, 2000	X	X					X		X	X	
Field et al., 1998b		X	X	X							X
Grossi & Heward, 1998	X				X	X	X				X
Martin & Marshall, 1995		X			X	X	X	X			
Palmer & Wehmeyer, 2003		X	X	X	X	X	X			X	X

information in this table, the reader will note that certain components of self-determination appear across several sources. *Choice-making skills* appear most often, included in six of the sources listed; next frequently occurring are the components of *self-prompting or self-management, self-evaluation, autonomy, and community access.* These particular components are closely related and interdependent, as individuals must evaluate their behaviors in order to manage them and in doing so they function with greater autonomy and gain greater access to typical community environments. The next most frequently cited components are *planning, problem solving, self-assertion and self-advocacy, and internal locus of control.* Again, these components mesh. When required to plan, an individual must problem solve and revise as needed. The components of self-assertion and self-advocacy can be seen in an individual sense, as a means to make others aware of one's immediate needs and presence, thus having an effect on the immediate environment (Brown et al., 1998; Martin & Marshall, 1995). In a broader sense, self-assertion and self-advocacy would imply actions that help attain changes in the overall environment or culture (Alper, et al., 1995). All of the other components of self-determination would seem to lead to the development of a stronger internal locus of control, especially those which result in change such as self-assertion, self-advocacy, planning and choice-making.

The last two components of self-determination listed in Table 1.2 occur in two of the sources listed, less than the other components discussed so far. These are *goal setting* and *intrinsic motivation.* The fact that these two components seem to be sub-components of several other components, almost a self-evident situation, may account for their not being directly addressed specifically in all the sources. If an individual is making choices, planning, self-evaluating and problem solving, then it is implied that he or she has set a goal and is employing these other components of self-determination in order to reach that goal. Likewise, when one has an internal locus of control and autonomy and the individual is planning and making choices to reach a goal, clearly self-motivation or intrinsic motivation is in play. When educators teach students to self-manage and self-evaluate and to problem solve, they are working toward greater independence. This greater independence often is considered a source of intrinsic motivation for students to continue to work toward their goals.

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In the next section, four of the major components of self-determination which often make-up programs for self-determination for students with developmental disabilities will be discussed in greater detail. These components include: choice-making, planning, self-evaluation and intrinsic motivation. These were chosen for further discussion because of the frequency of their occurrence in programs for self-determination and because they will be included in the experimental condition of this proposed dissertation.

Choice-making. The ability to make choices is the pivotal skill upon which self-determination is based. The very definition of self-determination implies the ability to choose. Self-determination has been described as "the ability to control the basic decisions and directions of one's life… a fundamental approach to one's life" (Kleinert et al., 2001). "The freedom to have choices and personally make decisions is cherished by people in all stages of life, yet it is a freedom that is typically denied to persons with disabilities" (Falvey, l995, p. 229). The importance of choice goes beyond the realm of self-determination. Jolivette, Stichter, and McCormick (2002) note that "several recent classroom investigations into the use of 'choice' for students with emotional and behavioral disorders have shown that this strategy is effective in increasing (or decreasing) specific behaviors in school" (p. 24). Seybert, Dunlap, and Ferro (1996) studied the effect of choice-making on negative behaviors and on-task behavior of 3 students with cognitive deficits. A multiple base line design investigation revealed "that choice conditions reduced problem behaviors and increased task engagement for all" 3 subjects (p. 49). Virtually all programs and guidelines regarding self-determination stress the importance of providing opportunities for choice. The goal of such programs is to teach students how to make choices or select goals, plan a path to those goals, evaluate progress and revise their plan as needed (Agran, King-Sears, Wehmeyer, & Copeland, 2003). Obviously, a certain level of cognition is necessary to complete this full cycle of behaviors. Choice-making, however, can and should be available to *all* students with disabilities, regardless of the severity of their disability (Brown et al., 1998; Field et al., 1998a; Turnbull & Turnbull, 2001). Opportunities for choice-making were found to significantly contribute to self-determination and autonomy in a study involving 301 individuals with disabilities by Wehmeyer and Garner (2003). In a

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study involving 3 children with multiple disabilities who used idiosyncratic gestures which were interpreted as choice-making, Sigafoos and Dempsey (1992) found that all children consistently indicated choices and increased their frequency of refusal when their choices were deliberately misinterpreted. Moes (1998) conducted a study to determine if offering choices regarding the order of task completion and the materials used improved the participants' "accuracy, productivity, affect, and reduced disruptive behaviors" (p. 319) with five to nine year old children diagnosed with autism. An ABAB design was used and results indicated that offering choices did indeed produce the desired changes with these 4 children. Clearly, choice-making will be a necessary ingredient to any self-determination intervention procedure.

Planning. Once an individual has made a choice or selected a goal, the next step is to plan how to achieve that goal. Planning is considered to be another pivotal element of self-determination programming in the educational setting for students with developmental disabilities (Kleinert et al., 2001; Palmer & Wehmeyer, 2003). As with self-advocacy and self-assertion, planning may occur at a very immediate level or on a broader scope. On an immediate level, the student may be involved in planning his daily schedule at school, even if that planning is limited to making simple choices about which activities the student prefers for that day. On the larger scale, many authorities promote the participation of students in the development of the IEPs and especially the transition plans prior to graduation from high school (Agran et al., 2003; Martin et al., 1997; Swinth, 2000; Thoma et al., 2001). Planning plays a central role in self-determination curriculum for students with developmental disabilities. In Wehmeyer's (2003a) Self-Determined Learning Model of Instruction (Support), there are three major phases: setting a goal; *developing a plan*; and adjusting the goal or plan as needed to achieve the goal. The plan is designed to "bridge the gap between (the student's) self-evaluated current status and self-identified goal status" (p. 3). Kleinert et al. (2001) advocate for student involvement both in daily classroom schedule planning as well as transition planning for life after graduation. Resources for such student involvement include the *COACH* method (*Choosing Outcomes and Accommodations for Children*) developed by Giangreco, Cloninger, and Iverson (1998) which assists teachers in working with students and families in delineating environments and goals for the educational program, and the personal futures planning approach (Mount

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& Zwernik, 1989) which assists individuals with disabilities and their families in developing life-long goals, outcomes and action plans to achieve these goals. Clearly, planning too is an integral ingredient to a complete self-determination program.

Self-evaluation. Self-evaluation has been promoted as a vital component of self-determination by authorities in both vocational/ supported employment settings (Grossi & Heward, 1998; Wehmeyer, 2003b) and the educational setting (Agran et al., 2002; Palmer & Wehmeyer, 2003; Wehmeyer et al., 2000). Wehmeyer and Palmer (2003) showed that programs involving self-evaluation of current status as well as progress toward a goal could be completed with children as young as Kindergarten age with teacher facilitation and adapted materials. Self-evaluation of current status provides the basis for goal selection, and self-evaluation during the implementation of goal specific action plans assists the student or adult in making appropriate judgments necessary for the adjustment of goals or actions plans as the need arises. Viewed in this light, self-evaluation can be seen as a vital component of a self-determination programming.

Intrinsic motivation. By definition, intrinsic motivation is not typically taught in traditional methods, but is an impetus coming from within the individual. Ryan and Deci (2000) describe this force as follows:

> The concept of intrinsic motivation describes the natural inclination toward assimilation, mastery, spontaneous interest, and exploration that is so essential to cognitive and social development and that represents a principal source of enjoyment and vitality throughout life (p. 70).

Many programs designed for students with disabilities have been based on external or extrinsic reinforcers and have produced gains in learning (Green, Sternberg, & Lepper, 1976; Malouf, 1983; Schultz, & Switzky 1990). Some authorities in the field of special education and psychology, however, are concerned that extrinsic motivation may be overused or actually interfere with the development of intrinsic motivation (Adelman & Taylor, 1986; Cohen, 1986; Dev, 1997, 1998). Cohen (1986) states that "contemporary research efforts have demonstrated repeatedly that extrinsic incentives can undermine, rather than facilitate, performance on and interest in activities which are intrinsically motivating" (p. 258).

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This is of concern because "the intrinsically motivated student is … more likely to retain the concepts learned and to feel confident about tackling unfamiliar learning situations, like new vocabulary words" (Dev, 1997, p. 13). In addition, intrinsic motivation has been shown to be significantly correlated with academic success (Adelman & Taylor, 1986; Gottfried, 1983). Unfortunately, as Dev (1997) notes, children with learning disabilities "are less likely than their nondisabled peers to be intrinsically motivated" (p.12). Waterman, et al. (2003) conducted a series of studies to determine the contribution of self-determination, among other factors, to supporting intrinsic motivation. Self-determination was found to be strongly associated with experiences of intrinsic motivation. Adelman and Taylor (1990) suggest that by allowing for choice and the feeling of self-determination, educators can increase a student's commitment to daily school activities. In the case of intrinsic motivation then, self-determination would appear to be a facilitating force and thus should be considered in educational programs, especially for students with learning difficulties.

Communication as Related to Self-Determination and Students with Developmental Disabilities

This dissertation will deal with the infusion of self-determination into communication programs for students with disabilities. The multiple aspects of self-determination, self-determination programming and the positive aspects of self-determination for students with developmental disabilities have been discussed. Now, the relationship of adequate communication skills or communicative competence to the development of self-determination and the communication characteristics and needs of students with disabilities, especially those students having Down syndrome who will be the subjects in this study, will be considered.

Communicative Competence and Self-Determination

"Communicative competence is the quality or state of being functionally adequate in daily communication and of having sufficient knowledge, judgment, and skills to communicate effectively" (Light & Gulens, 2000, p. 140). With adequate communication abilities, an individual can successfully relate wants, needs, desires, preferences, and information in a social environment. Some believe, as do Light and Gulens (2000), that:

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Communicative competence and self-determination are at the core of our existence as human beings. Together they allow us to define who we are, what dreams we have, how these dreams are realized (or not), and what connections and relationships we build with others. Communicative competence and self-determination are fundamental to the quality or our lives. They underlie the essence or our humanity (p. 138).

Major self-determination skills typically found in programming for students with developmental disabilities can be analyzed in light of their communicative components (Kleinert, 2000). Table 1.3 provides an overview of such an analysis. As can been seen on this table, each self-determination behavior listed requires an understandable means of communication to be expressed. This communication form, however, does not necessarily involve formal use of language. Behaviors, such as shared attention or focus, gestures, or facial expressions, can all be used to make choices, gain attention or act on the environment as long as they are interpretable by an attentive "listener." Higher level self-determination behaviors, such as goal setting, planning, and self-evaluation involve additional levels of language concept knowledge such as vocabulary comprehension, question comprehension, knowledge of temporal or possessive concepts, and other abstract language.

Table1.3: Self-Determination Skills and Related Communications Skills

Self –Determination Skills	Related Communication Skills
Making Choices/Expressing Preferences	Having an understandable means of communication Being able to express rejection of unwanted items Understanding questions such as "What do you want/Do you want <u>x</u>? Possessing shared attention skills Possessing shared focus skills
Gaining Attention of Another Via Appropriate Means	Having an understandable means of communication Possessing shared attention skills Possessing shared focus skills
Goal Setting	Having an understandable means of communication Having the ability to express likes/dislikes, wants, needs, preferences, and to make choices Understanding Questions Possessing a basic understanding of temporal words Possessing understanding and use of relevant vocabulary
Planning a Schedule	Having an understandable means of communication Understanding questions and relevant vocabulary Choice-making
Self-Evaluation	Having an understandable means of communication Understanding modifiers, e.g.,: good, finished, helpful, etc. Understanding concepts of possession, question forms, temporal concepts, relevant vocabulary

Kleinert, 2000

The relation between self-determination and communication is an interdependent one. Light and Gulens (2000) have noted that "people cannot be fully self-determined without being competent communicators" (p. 138) and conversely "people cannot become competent communicators without being self-determined" (p. 138). These statements are based on the concept that individuals need communication to express their self-determined choices, but communication becomes more refined and sophisticated by its use for more complex reasons, such as selecting and setting goals, planning and acting on those goals and evaluating their success. Individuals with developmental disabilities are at risk for challenges both in the areas of self-determination and communication and language development (Guess, Benson, & Siegel-Causey, 1985; Hughes et al., 2000; Light & Binger, 1998; Light & Gulens, 2000; Moes, 1998; Olney, 2001; Reichle, Drager, & Davis, 2002; Sigafoos & Dempsey, 1992). Some researchers have studied the effect of increasing communication skills which support increased self-determination. Hughes et al. (2000) provided 4 high school students with severe disabilities a program involving peer support for use of a self-prompted communication book. Results included an increase in the subjects' initiations and conversational partners' responses. Light, Binger, Ramsay, and Agate (1999) utilized an instruction program based on augmentative communication and involving least to most prompting in natural settings to teach 6 individuals with disabilities to use and maintain partner-focused questions. Subjects learned the new skill, generalized the new skill, and maintained the new skill when observed two months later. Guess et al. (1985) emphasized the importance of honoring non-standard communication of individuals with severe cognitive deficits as a means for developing choice-making and decision-making, which are considered reflective of personal autonomy. It would seem prudent, then to consider

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both the level of communication competence and self-determination when developing programs which foster greater independence for students with disabilities.

Communication and Individuals with Developmental Disabilities.

Bearing in mind the reciprocal and mutually supportive nature of the relationship between communication and self-determination, it is important to now examine the communication characteristics of students with developmental disabilities.

Deficits in communication and language development are a prominent characteristic of individuals with developmental disabilities (Mirenda, 1999; Paul, 2001; Rossetti, 2000). In general, such individuals may have a delay in language comprehension, language expression or both (Paul, 2001). Specific areas of communication and language development which may be affected in individuals with developmental disabilities include early vocal or communicative development which occurs before the onset of formalized language, vocabulary or semantic development, syntax (grammar) and morphology which affect the length and complexity of sentence structure, phonology (the speech sound system) which results in articulation errors, and pragmatics or the social aspects of communication and language (Paul, 2001; Rossetti, 2000). The specific areas of language and communication which are affected and to what degree depend upon the etiology of one's disability and the particular characteristics of a given individual (Paul, 2001). Compounding deficits, such as vision and/or hearing loss, physical disability, and delayed social/emotional development, also may affect the development of language and communication (Mirenda, 1999; Paul, 2001; Rossetti, 2000).

One major subgroup of individuals with developmental disabilities and mental retardation are those who have Down syndrome (Chapman, 1997). Down syndrome results "most commonly from a chromosomal abnormality called trisomy 21, or and extra (third) copy of the 21st chromosome" (Paul, 2001, p. 119). Symptoms may include some level of mental retardation, low muscle tone, and facial and growth differences among others. Children with Down syndrome are at high risk for speech and language disorders (Kumin, Goodman, & Councill, 1996; Miller, 1987; Stoel-Gammon, 1990). In the past,

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authorities often reported that the language development of individuals with Down syndrome, although delayed in onset and slower in rate of development than typical peers, followed a similar developmental pattern as typical children and growth in complexity of expressive language tended to cease with adolescence (Fowler, Gelman, & Gleitman, 1994; McDonald, 1997; Paul, 2001). Multiple authorities now believe that language characteristics in individuals with Down syndrome differ from language of typically developing children. Their language is characterized by delayed onset with considerably stronger comprehension than expression abilities, more severe deficits in syntactic than semantic (vocabulary) expression, greater difficulty in auditory-motor and vocal processing than with visual-motor and visual-vocal processing, and with expressive deficits possibly related to comprehension and nonverbal cognition skills (Chapman, 1997; Chapman, Hesketh, & Kistler, 2002; Kumin, Councill, & Goodman, 1998; Kumin et al., 1996). Some authorities go as far as stating that there is "a specific phenotypic profile" with Down syndrome which is characterized by strength in understanding vocabulary, but "syntactic development (that is) disproportionately delayed relative to nonverbal cognition, particularly in language production. Thus, individuals with Down syndrome, as a group, exhibit a specific language impairment that is not explained by cognitive limitations and is most pronounced in syntax" (Throdadottir, Chapman, & Wagner, 2002, p. 163). Authorities continue to differ as to how closely the development of language in children with Down syndrome mirrors typical development; however, they agree that syntax deficits are a major area of deficit in the expressive language of these individuals. (Chapman, 1997; Chapman et al., 2002; Kumin et al., 1998; Throdardottir et al., 2002). Researchers, however, no longer believe that there is a critical period of development after which syntactic development ceases. Rather, studies have indicated that "acquisition of productive syntax is shown to be ongoing in adolescence, without evidence of limits to learning at the onset of adolescence or the advent of complex syntax" (Chapman, 1997, p. 307).

Treatment of language disorders in children with developmental disabilities and Down syndrome. The rehabilitation discipline of speech-language pathology (SLP) has expertise in speech, language and communication development. Because most all children with developmental disabilities are now educated

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in the public school, a major portion of school-based speech-language pathologists' (SLPs) caseloads include these children. Indeed, the American Speech-Language-Hearing Association (ASHA, 2000) reports that of the 2,067 SLPs responding to their 2000 School Survey, 90% indicate that they provide services to children with developmental disabilities and/or mental retardation. In a survey of school-based SLPs in Kentucky, Kleinert (2004) found that 89.7% of respondents reported having children with developmental disabilities in their public school caseloads. Given these high percentages, it is reasonable to assume that SLPs are very likely to be delivering the language therapy provided to children and adolescents with Down syndrome. It is important, then, to look briefly at the various forms of intervention which have been shown to be useful in such treatment in the field of speech-language pathology.

Delivery approaches for language intervention are often divided into three major types. The first type is called trainer-oriented or clinician-directed in which the therapist determines goals, location and time of treatment, presentation style, stimulus and reinforcement, and then makes the judgments as to client accuracy (Fey, 1986; Paul, 2001). The second type includes child-centered approaches which involve more indirect approaches to stimulation such as whole language methods (Goodman, 1986). Finally, the third approach is the hybrid approach which includes such methods as incidental teaching (Hart & Risley, 1975) and incorporates specific sequencing of teaching, but occurs in more natural environments (Fey, 1986; Paul, 2001).

Specific treatment approaches for language or syntax therapy are many and varied. One older approach is a highly clinician-directed drill approach, such as an operant program involving the use of prompts, scheduled fading of prompts, and primary reinforcers (Shriberg & Kwiatkowski, 1982). A less rigid clinician-directed approach is drill play in which the reinforcer is an activity such as coloring part of a picture or taking a turn at a game (Paul, 2001). Shriberg and Kwiatkowski (1982) found the two approaches to be equally effective in speech therapy, but both therapist and client preferred the drill play approach. Fey (1986) notes that there have been several studies reporting the success of operant approaches utilizing *imitation* to teach syntax or language; however, "children trained with these procedures do not automatically begin using their new language forms as a medium for communication"

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(p. 149). Another form of clinician-directed syntax therapy is that of *modeling* in which the child is exposed to multiple presentations of the target form, but is not required to produce that form. Leonard (1975) and other researchers (e.g., Coutright & Courtright, 1979; Prelock & Panagos, 1980) report the success of this intervention for syntax, but other researchers could not replicate this success (Connell, Gardner-Gletty, Dejewski, & Parks-Reinick, 1981). Fey notes that he also has seen children for whom the modeling approach was unsuccessful and imitation procedures were necessary (Fey, 1986). One procedure which combines elements of both modeling and imitation is called the "mand-model" approach which been used successfully in language treatment (Alpert & Kaiser, 1992; Fey, 1986; Rogers-Warren & Warren, 1980; Warren, McQuarter & Rogers-Warren, 1984). In this approach, when the child is interested in "some aspect of the environment, the clinician mands, (or gives the direction for) a verbal response ("Tell me what that is")…If the response is correct the child is reinforced…If the child does not respond or produces an incomplete form of the target, prompts… are employed" (Fey, 1986, p. 230). The results of these studies illustrate that a variety of approaches to language and syntax treatment improve language acquisition.

<div align="center">Summary</div>

This literature review has dealt with several important elements which relate to successful life outcomes for persons with developmental disabilities. Foremost among those elements is the ability to lead a self-determined life. Two other elements which are closely related to self-determination for persons with disabilities also have been examined. These are intrinsic motivation which is considered a major benefit of self-determination and communicative competence which is a necessary support for the development of self-determination. Indeed, it has been stated that communication and self-determination have a mutually supportive relationship. Unfortunately, individuals with developmental disabilities, such as those having Down syndrome, are at great risk for diminished or absent self-determination skills and for communication and language deficits. A review of pertinent literature reveals that individuals with Down syndrome often have language deficits, particularly in the area of syntax development. Bearing in mind the mutually supportive relationship between self-determination and communicative competence

and the intrinsically motivating nature of self-determination, it would be of interest to investigate whether individuals with developmental disabilities, such as Down syndrome, would make greater gains in communication skill development, specifically syntax development, when provided language therapy programming which includes elements of self-determination.

Research Questions

In light of the above factors, the following research questions are proposed:

1. Is a clinician-directed syntax treatment program effective (successful) in teaching expressive syntax usage with students having a developmental disability?

2. Is a syntax treatment program including a self-determination package effective (successful) in teaching expressive syntax usage with students having developmental disabilities?

3. Does a clinician-directed syntax treatment program or a syntax treatment program including a self-determination package result in greater maintenance and generalization of targeted syntax targets?

4. Is a clinician directed syntax treatment program or a syntax treatment program which includes a self-determination package more efficient, i.e., requires fewer sessions and/or fewer errors to criterion or less time to criterion, in developing improved expressive syntax usage for students with developmental disabilities?

5. Which treatment program results in higher levels of subjects' on task behavior, as measured by rates of subject redirection to task during therapy sessions?

Social Validity of the Research

Authorities in the area of self-determination have repeatedly stressed its importance in the quality of life for persons with developmental disabilities (Brown et al., 1998; Field et al., 1998a; Ryan & Deci, 2000; Wehmeyer & Garner, 2003; Wehmeyer & Schalock, 2001). In addition, the importance of communication competence, which allows for choice and increased autonomy, is considered as a necessary means for development of greater independence and an improved quality of life for individuals with developmental disabilities (Light & Gulens, 2000; Seybert et al., 1996). Current best practices,

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however, in all fields of rehabilitation demand that evidence based investigation and evidenced-based practice be considered when designing and implementing programs for rehabilitation and education (Dollaghan, 2004; Franklin & Hopson, 2004; Sackett, Strauss, Richardson, Rosenberg, & Haynes, 2000). Research is needed to strengthen the evidence base for interventions that foster self-determination for persons with disabilities. In addition, research by and for speech-language pathologists (SLPs) in the area of self-determination and communication competence is sparse. This study, which is clinically-based, will expand the concept of integration of self-determination across fields beyond special education, and will be relevant to practicing SLPs who provide services to students with developmental disabilities, thus contributing to this much needed evidence base.

CHAPTER TWO: METHODOLOGY

General Overview

This study was a comparison of two treatment programs for teaching improved syntax in students with developmental disabilities, specifically Down syndrome. The study compared the rate of syntactic target acquisition in response to a clinician-directed treatment program versus a treatment program which incorporates the principles of self-determination. Efficiency was judged by the comparison of sessions to criterion, time to criterion, and errors to criterion. Daily probe sessions were taken at the end of each instructional condition to determine the subject's progress toward criterion. Additionally, data were collected on the rate of subject redirections to task which occurred under each condition, in an effort to provide a measure of subject engagement during each treatment condition. A single subject adapted alternating treatments design was used in this study.

Selection criteria for participants in this study included the following. The participant had to be between the ages of 7 to 13 years of age, have Down syndrome and an expressive syntax deficit, be able to use oral speech that was understandable to the researcher, and be able to participate in direct speech/language sessions of up to 1 hour in length.

This study was approved by the University of Kentucky Institutional Review Board which reviewed all elements of the study steps for the protection of student and parental rights and privacy. A copy of the IRB documents and consent and assent forms are included in Appendix I.

Typically, children who are seen for speech-language therapy in a public school setting engage in a clinician-directed treatment program which occurs in a one-to-one or small group setting (ASHA, 2000). This method of service delivery often is used in response to the large caseloads seen by public school speech-language pathologists that require treatment methods which allow for multiple trials of a target in the least amount of time. In this type of treatment, the clinician decides the activities, materials, and tasks and evaluates and directs the student's productions. This treatment paradigm constituted the Clinician-Directed (CD) condition in this study. The self-determination treatment package condition (SD) also was conducted in an individual session and allowed for multiple trials of the target. While the

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clinician selected the specific target syntax objectives based on the assessment of the student conducted prior to the beginning of intervention, the SD treatment package allowed the student to make choices about the session's activities and materials, plan the sequence of those activities, and required the student to self-evaluate his/her productions. It was hypothesized that this treatment package would foster increased feelings of ownership and control on the part of the student and might result in more rapid target acquisition as well as a higher number of on-task behaviors. In addition, the treatment paradigm reinforced the development of choice-making, planning and self-evaluation. All are important elements of self-determination.

Research Design

An Adapted Alternating Treatments Design (Sindelar, Rosenberg, & Wilson, 1985) was used to compare the effectiveness and efficiency of the two intervention procedures. This design can be described as follows.

> This design is used when comparing two or more independent variables…on two or more equivalent dependent variables… Experimental control is established when the dependent variable assigned to one intervention is acquired more rapidly than the dependent variable assigned to the other intervention regardless of the sequence of application (Johnson, Schuster, & Bell, 1996, p. 446).

In this design, two targets are selected for each subject. In this study, the targets were syntax forms that the subject did not use in spontaneous expressive communication.

Independent variables. The independent variables for this study were, Intervention 1, the Clinician-Directed treatment program or CD, and Intervention 2, the Self-Determination condition or SD.

Dependent variables. The rate of target acquisition under each condition and the rate of subject engagement under each condition were the dependent variables. The second variable, subject engagement, was judged by recording the times per condition that the clinician redirected the subject when the subject exhibited off-task behaviors during the instructional phase.

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<center>Procedures</center>

Participants

Four students aged 7:6 to 13 years who have Down syndrome, a developmental disability, and an expressive syntax deficit, (below age-level expressive use of grammatical forms in conversation), were the participants in this study. Prior to intervention, all subjects were assessed in the following areas: hearing, expressive and receptive language, concept development, comprehension and use of syntax and semantics, mean length of utterance (MLU), speech sound production and oral-motor skills in order to determine their current communication status and to select syntax targets for the instructional phase of the study. Subjects also had been previously assessed on a cognitive instrument, and these scores are reported, if the parent gave consent. Three parents did not agree with their children's most recent assessments in the area of cognition, believing that they underestimated their child's actual level of functioning, and so declined to share those results for the study. They offered approximate results but did not agree to release the actual report. In these cases, the parents' approximations of the IQ scores are given.

Evaluation and assessment instruments used. The following speech-language assessments were conducted with each subject by the researcher at the University of Kentucky Communication Disorders Clinic. Assessment tools were chosen that: were used in standard practice for assessment in speech-language pathology; were standardized instruments; and were age appropriate for the students in this study. These instruments are listed below. More extensive information about the assessment materials is provided in Appendix A.

Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4), (Semel, Wiig, & Secord, 2003), was used to assess receptive and expressive language concepts, semantic, and syntactic development.

Developmental Sentence Score (DSS), (Lee, 1974), was completed on a 50 response language sample to determine the level of each student's spontaneous expressive use of English syntax.

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Mean Length of Utterance (MLU), (Brown, 1973; Miller, 1981), was obtained on the 50 response language sample to determine each student's typical spontaneous utterance length. MLU is a count of the average number of morphemes used per utterance.

Test of Minimal Articulation Competence (T-MAC), (Secord, 1981) was used to assess each student's articulation abilities. This instrument is widely used with children and adults and provides a severity rating for speech intelligibility.

Oral Speech Mechanism Screening Examination-3 (OSMSE-3), (St. Louis & Ruscello, 2000), was used to assess oral motor structure and function with each subject.

Hearing Screening at 25dB for the frequencies 1000, 2000, and 4000 Hz was completed by a licensed audiologist. This test was used to assure that each participant's hearing acuity was within normal limits.

Interest Questionnaire for Parents was given to the parents of the subject at the first meeting. This questionnaire was used to collect information on the subjects' interests and favorite activities so that a menu of high interest materials was available for use during the treatment conditions. This questionnaire is found in Appendix B.

Interest Questionnaire for Students was completed with each subject to determine the subject's favorite activities in order to develop a menu of high interest materials to be used during the treatment conditions. This questionnaire is found in Appendix C. This was completed with the child at the end of the assessment session. If the child was 12 years of age or older, he/she also completed an Assent form to participate in the study.

Description of Subject 1: Jan

Jan is 13 year old girl who has Down syndrome and attends 7th grade in a regular education classroom with special education support. She receives speech and language services in the public school and on a private basis. To avoid any confounding of the results, her speech and language goals for those programs and the targets for this study were independent. Tables 2.1 and 2.2 display the results of her assessment.

Language sample results: Syntax errors included: incomplete sentences with omissions of pronouns as subjects and inconsistent use of subjects; lack of prepositions "to," "with," "for" and "at;" lack of past tense; lack of verb number agreement/endings; inconsistent use of verb "to be" forms: am, is, are; lack of verb "to do;" lack of possessive pronouns; and inconsistent use of objective pronoun "me" for subjective pronoun "I." Syntax errors noted in CELF-4 responses included lack of irregular plurals, third person singular verb forms, possessive nouns, possessive pronouns, regular and regular past tense, objective pronouns, future tense, and reflexive pronouns.

Cognitive level: Jan received cognitive testing in the 5th grade (2 years ago). Her mother reported that an "IQ" score was "around 50 or so," but parents strongly disagreed with these results since Jan was reportedly reading at age level at that time. They declined to share the formal report for the purposes of this study.

Hearing and oral motor and articulation status. Results of Jan's hearing, oral-motor and articulation assessments are included on Table 2.2. Hearing was within normal limits, but oral-motor and articulation deficits fell within a severe range. Jan has developmental apraxia of speech which significantly affects her speech intelligibility. Speech for one to two word combinations within context was intelligible, however. Since the study required only one to two word productions in a clear context, Jan was judged eligible for the study.

Table 2.1 Results of Language Assessment for Subject 1: Jan

CELF- 4 Core Language Sections		Scores			Expressive Language	Receptive Language	Language Structures
		SS	%	AE			
	Concepts and Following Direction	1	.1	4:4		X	
	(Word Structure)			<3:2	X		X
	Recalling Sentences	1	.1	4:0	X		X
	Formulated Sentences	1	.1	4:6	X		X
	Word Classes-2 Receptive	1	.1	7:2			
	Word Classes-2 Expressive	1	.1	6:3			
	Word Classes-2 Total	2	.4	6:3			
	Word Definitions	1	.1	<9:0			
Additional Language Structure Sections							
	Sentence Structure		No norms for this age	4:0		X	X
	Expressive Vocab-ulary		same as above	6:5	X		
	Number Repetition Forward	2	.4	<5:0			
	Number Repetition Backward	3	1	<5:0			
	Number Repetition Total	1	.1	<5:3			
	Familiar Sequences	1	.1	<5:0	X		
Develop. Sentence Score (DSS): 2.72			< 10th		X		X
Mean Length of Utterance (MLU): 2.4				33 mos.	X		X

Table 2.2 Results of Articulation, Oral Motor and Hearing Assessments
for Subject 1: Jan

	Score	Level of Severity	Pass	Fail
T-MAC	31/120	Profound Delay		
OSMSE-Third Edition				Function and Structure
Hearing Screening			Bilaterally at 25dB the frequencies for 1000, 2000 and 4000 Hz	

Description of Subject 2: Lucy

Lucy is a 10 year old girl who has Down syndrome and attends the 3rd grade in a regular classroom setting with special education support. She receives speech and language services in the public school but her goals for that program and the targets for this study did not overlap. Tables 2.3 and 2.4 display the results of her assessments.

Languages sample results. Syntax errors included: lack of the present tense form of the verb "to be;" the prepositions "at," "with;" verb number agreement and present tense with "s" ending; lack of infinitive "to;" future tense of the verb "to be;" and objective pronoun use. Other syntax errors included: inconsistent use of possessive pronouns; inconsistent use of articles; and inconsistent use of irregular past tense. Errors noted on CELF-4 responses included lack of third person singular verb "s" morpheme, possessive nouns, inconsistent use of auxiliary + ing, possessive pronouns, regular and irregular past tense, objective pronouns, future tense, reflexive pronouns, and use of objective for subjective pronouns.

Cognitive level. The parents of this subject chose not to share their daughter's cognitive testing results for the purposes of this study.

Hearing, oral-motor and articulation status. Results of Lucy's hearing, oral-motor and articulation assessments are included on Table 2.4. Hearing screening was within normal limits. Although articulation scores fell within a profound range, it should be noted that the T-MAC scores the total number of articulatory errors to determine the level of severity, not the type of error or its effect on intelligibility. Since Lucy had primarily distortions of speech sounds and substitution errors which were within one feature of the target phoneme, most of which were easily interpretable, her actual intelligibility in conversation was only moderately impaired.

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Table 2.3 Results of Language Assessment for Subject 2: Lucy

CELF-4 Core Language Sections		Scores			Expressive Language	Receptive Language	Language Structures
		SS	%	AE			
	Concepts and Following Direction	1	.1	4:4		X	
	Word Structure			3:6	X		X
	Recalling Sentences	1	.1	4:3	X		X
	Formulated Sentences	1	.1	4:6	X		X
	Word classes-2 Receptive	3	1	6:10		X	
	Word Classes2 Expressive	3	1	6:9	X		X
	Word Classes2 Total	3	1	6:9	X	X	
Additional Language Structure Sections							
	Sentence Structure			4:0		X	X
	Expressive Vocabulary			4:6	X		
	Number Repetition Forward	3	1	<5:0			
	Number Repetition Backward	1	.1	<5:3			
	Number Repetition Total	1	.1	5:2			
	Familiar Sequences 1	1	.1	5:4			
	Word Association			Non-Normal			
	Rapid Automatic Naming			Non-normal for Time and Errors			
Developmental Sentence Score (DSS): 3.34			< 10th		X		X
MLU: 3.24				42 mos.	X		X

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Table 2.4 Results of Articulation, Oral Motor and Hearing Assessments for
Subject 2: Lucy

	Score	Level of Severity	Pass	Fail
T-MAC	74/120	Profound range		
OSMSE-Third Edition			Structure	Function
Hearing Screening			Bilaterally at 25dB the frequencies for 1000, 2000 and 4000 Hz	

Description of Subject 3: Tom

Tom is a 12 year old boy who has Down syndrome and attends 6th grade in a resource classroom in a public middle school. He receives speech and language services in the public school, but goals for that program and targets for this study did not overlap. Tables 2.5 and 2.6 display the results of his assessments.

Language sample results. Syntax errors included: no usage of regular past tense "ed;" confusion of the verb "to be" for the verb " to do" in questions; lack of verb number agreement with "s;" use of you/ your; inconsistent use of infinitive "to;" inconsistent use of prepositions "to, for;" occasional omission of "am;" lack of future tense of verb "to be;" confusion of what /where in questions; omission of the past tense of verb "to do;" inconsistent use of conjunction "and" for compound sentences; inconsistent use of article "a;" and use of article "a" for noun modifier "some;" lack of objective pronoun "them;" occasional omission of subjects in compound sentences; and errors on use of irregular plural forms. Syntax errors noted on CELF-4 responses included a lack of possessive nouns, future tense, reflexive pronouns, and regular past tense "ed" morpheme.

Cognitive level. Tom had just received a cognitive assessment when this study began, but his parents strongly disagreed with the results (an IQ score of "around 50") and so declined to share the formal assessment report for the purposes of this study.

Hearing, oral-motor and articulation status. Hearing screening had been completed 3 months prior to this study by the family's private physician and thus the family declined another screening. Previous hearing screening results were within normal limits. In the areas of articulation, Tom had primarily distortion of strident and alveolar phonemes due to interdentalization and phonological errors which were within one feature of the target phoneme or involved use of open syllables, making much of his speech fairly interpretable and his actual intelligibility in conversation only moderately impaired. Results are displayed in Table 2.6.

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Table 2.5 Results of Language Assessments for Subject 3: Tom

CELF-4 Core Language Sections		Scores			Expressive Language	Receptive Language	Language Structures
		SS	%	AE			
	Concepts and Following Direction	1	.1	4:3		X	
	(Word Structure)			3:6	X		X
	Recalling Sentences	1	.1	4:6	X		X
	Formulated Sentences	8	25	4:6	X		X
	Word Classes-2 Receptive	1	.1	6:6		X	
	Word Classes-2 Expressive	2	.4	6:9	X		
	Work Classes-2 Total	2	.4	6:3	X	X	
Additional Language Structure Sections							
	Sentence Structure			4:3		X	X
	Expressive Vocab-ulary	14	91	7:1	X		
Developmental Sentence Score (DSS): 5.38			< 10th		X		X
Mean of Utterance (MLU): 4.56				60 mos.	X		X

Table 2.6 Results of Articulation, Oral Motor and Hearing Assessments for Subject 3: Tom

	Score	Level of Severity	Pass	Fail
T-MAC	44/120	Profound range		
OSMSE-Third Edition			Structure	Function
Hearing Screening			Bilaterally at 25dB the frequencies for 1000, 2000 and 4000 Hz	

Description of Subject 4: Joe

Joe is a 7 year old boy who has Down syndrome and attends the second grade in the public school setting with special education support. He receives speech and language services in the public school, but his goals for that program and the targets for this study did not overlap.

Language sample results. Syntax errors included: objective pronoun "me" for subjective "I" in novel phrases; omission of auxiliary verb "to be" forms of "am," "is," and "are"; omission of articles "the," "a," and "an;" omission of infinitive "to;" omission of possessive "s" morpheme; lack of past tense "had" and future tense "will" verb forms; and lack of regular past tense morpheme "ed." Syntax errors noted on CELF-4 responses included lack of regular plurals and irregular plurals, third person singular verb "s", possessive nouns, possessive pronouns, irregular and regular past tense, objective pronouns, future tense, reflexive pronouns, and subjective pronouns.

Cognitive level. Administration of the Standford-Bennet-4th Edition was completed on 9-25-03 in the public school setting revealed a composite score of 51.

Hearing, oral-motor and articulation status. Hearing screening was within normal limits. In the area of articulation, most consonant errors for Joe were mild distortions of sibilants and his substitution errors were within one feature of the target phoneme, therefore actual conversational intelligibility is only mildly to moderately affected by articulation errors. Results are displayed in Table 2.8.

Table 2.7 Results of Language Assessment for Subject 4: Joe

CELF-4 Core Language Sections		Scores			Expressive Language	Receptive Language	Language Structures
		SS	%	AE			
	Concepts and Following Direction	1	.1	4:4		X	
	Word Structure	1	.1	<3:2	X		X
	Recalling Sentences	1	.1	4:3	X		X
	Formulated Sentences	1	.1	4:0	X		X
Additional CELF-4 Language Structure Sections							
	Sentence Structure	1	.1	4:0		X	X
	Expressive Vocab-ulary	1	.1	4:2	X		
Developmental Sentence Score (DSS): 2.38			< 10th		X		X
Mean Length of Utterance: 2.90				36 mos. level	X		X

Table 2.8 Results of Articulation, Oral Motor and Hearing Assessments for Joe

	Score	Level of Severity	Pass	Fail	
T-MAC	80/120	moderate to severe range for age			
OSMSE-Third Edition			Structure	Function	
Hearing Screening			Bilaterally at 25dB the frequencies for 1000, 2000 and 4000 Hz		

Parental Responsibilities

Parents of each subject were asked to complete a brief questionnaire in order to provide information about the subject's interests and favorite activities. This information was used to develop a menu of high interest activities to be used during instructional phases of the sessions. At the initial meeting, the purpose of the study was explained to the parents. They were given a letter including this information as well as a parental consent form and told that the subjects may be withdrawn from the study at any time. No other parental participation was required.

Target Item Selection

Two syntax targets for each subject were selected based on the assessment completed prior to the study. Since this study was an adapted alternating treatments design, it was necessary to select two goals for each subject that were equivalent in difficulty, but independent or functionally unrelated. For example, the two personal pronouns "he" and "she" which differ only in gender would not be chosen even though they may be roughly equivalent in difficulty and developmental level, since work on one of these forms might easily lead to the use of the other due to their closely related functions. In order to determine if the two targets are equivalent, but independent, possible syntax targets found in the subject's assessment data were compared on the basis of the following aspects. First, the stage of developmental acquisition as judged by the subject's MLU and Brown's (1973) Five Stages of Sentence Construction was compared. If the potential target syntactic forms emerged at an MLU level at or below that of the subject, as judged by Brown's (1973) stages, and the two targets emerged in the same stage or within one stage above or below each other, they were considered to be roughly equivalent. This range was selected since researchers have reported that while a syntactic form may emerge at a particular stage or MLU range, that form may continue to develop through several of the following developmental stages (Brown, 1973). The other criteria considered in determining the equivalency and independence of the two targets included functional relationships between the two targets, the number of morphemes contained in the target forms, and the subject's receptive comprehension of the target item as judged by the standardized assessments

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completed at the beginning of the study and/or informal receptive assessment of the specific syntactic forms which were completed before baseline sessions began. Another possible judgment criterion considered was that of oral-motor production difficulty of the two potential targets. This criterion was not included, however, since verbal approximations of the target words, if intelligible to the clinician, were accepted as correct responses and the subjects were selected in part because they were already oral speakers.

Table 2.9 provides an example of two targets that are equivalent in most aspects but are not independent. As can be seen in that example for a hypothetical subject, the possible targets of the pronoun "I" and the verb "to be" form, "am", are roughly equivalent in developmental status, and number of morphemes, and subject receptive comprehension, but are so closely related in function that they cannot be considered as independent. Indeed, the verb "am" is used only with the pronoun "I." Therefore, they would not be chosen as targets since they may be considered equivalent, but not independent. Table 2.10 depicts two syntax targets that are both equivalent and independent. These two syntax forms are the morpheme 's' which indicates a plural when added to a noun and the morpheme 'ed' which indicates regular past tense when added to an uninflected verb. As shown on Table 2.10 the targets occur at the same stage of development, include 2 morphemes when added to the base word, and the hypothetical subject in this case has receptive comprehension of both forms. In addition, these two targets would be considered to be independent since their functions are not related and they do not depend on each other for use or meaning.

Syntax targets were selected from the assessment data for each subject and judged as equivalent and independent by three licensed speech-language pathologists, each having at least 15 years of experience in language therapy. The specific targets selected for each subject and the factors used to determine their equivalence and functional independence are displayed on Table 2.11.

Table 2.9 Example of Equivalent, Non-Independent Syntax Targets

Target	Brown's (1973) Five Stages of Sentence Construction	Number of morphemes	Relationship	Subject Understands Form Receptively
"I" first person singular personal pronoun	May occur in a noun phrase alone at Stage I and with a verb form in Stage II	1	"I" is necessary for use of "am" which is an interfering relationship	Yes
am copula verb	Stage II	1	"am" is an auxiliary or copula verb, which can **only** be used with pronoun "I" which is an interfering relationship	Yes

Table 2.10 Example of Equivalent and Independent Syntax Targets

Target	Brown's (1973) Five Stages of Sentence Construction	Number of morphemes	Relationship	Subject Understands Form Receptively
Plural morpheme "s"	Stage II	2 Noun + s	No interfering relation between the two syntactic forms	yes
Regular past tense "ed"	Stage II	2 Uninflected verb + ed	No interfering relation between the two syntactic forms	yes

Targets for Each Subject

After analyzing each subject's syntax data and weighing possible targets for equivalence and functional independence, two targets were selected per subject. The analyses of these targets are displayed on Table 2.11. The targets selected for Jan were use of the subjective first person pronoun "I" with an uninflected verb and use of the possessive morpheme "s" with a noun. The targets selected for Lucy were use of the possessive morpheme "s" with a noun and use of the regular past tense morpheme "ed" with a verb. The targets selected for Tom were use of the possessive morpheme "s" with a noun and use of the regular past tense morpheme "ed" with a verb. The targets selected for Joe were use of the subjective first person pronoun "I" with an uninflected verb and use of the plural morpheme "s" with a noun. Thirty exemplars of each target were selected if they could be depicted in a picture or photograph. The list of exemplars and the 10 words randomly selected to serve as the baseline and probe stimuli for each subject are listed in Appendix G.

Table 2.11 Targets Selected for Each Subject

Subject	Target	Brown's (1973) Five Stages of Sentence Construction	Number of morphemes	Compounding Relationship with Other Target	Subject Understands Form Receptively	MLU
Jan	Possessive forms of nouns using the " 's" form	Stage II	2	No	Yes	MLU: 2.4 at Stage II
	First person singular subjective pronoun **"I"** used with a verb.	Stage I and refines at later stages	2	No	Yes	
Lucy	Regular past tense "**ed**"	Stage II	2	No	Yes	MLU: 3.24 at State III
	Possessive form of nouns using the " 's" ending	Stage II	2	No	Yes	
Tom	Possessive noun form using the "**s**"	Stage II	2	No	Yes	MLU: 4.56 at Stage V
	Regular past tense "**ed**"	Stage II	2	No	Yes	
Joe	First person singular pronoun "**I**" used with a simple verb	Stage I and refines at later stages	2	No	Yes	MLU: 2.9 at Stage III
	Plural morpheme "**s**" plus noun	Stage II	2	No	Yes	

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Baseline data on each subject's ability to produce his/her two syntax targets were taken during 15 minute sessions on successive days. Baseline data were taken for 3 days, or until the baseline data were stable or contra-therapeutic in direction. Ten picture stimulus cards, randomly selected from the total 30 picture stimulus cards to be used in the instructional phase of the study for each subject, were presented. The same 10 picture stimulus cards were used for each day of baseline sessions. The subject was given a prompt which was designed to elicit the targeted syntactic form without modeling that form. Examples included: "Tell me about the picture," for the "I" + verb target; "Here is one <u>noun,</u> and here are two ____," for the plural "s" morpheme and a noun; "Tell me what he did?" for the past tense "ed" morpheme plus a verb; and "Whose ____?" for the possessive morpheme "s." The experimenter, referred to in this paper as the clinician, waited up to five seconds for the subject to complete his/her response using the syntax target. The clinician recorded any attempt made by the subject for each trial. After the session, the data were scored as follows. If the subject produced the target correctly, a (+) was given. If the subject did not produce the target correctly, a (–) was given. If the subject did not respond, an NR was given. An NR was equal to a (–) when plotting data, but it was thought that it might be of interest on both baseline and treatment, if attempts at targets increased in the treatment condition. Syntax targets were selected for intervention only if baseline data revealed no more than 10% correct responses.

A second set of initial data were collected on the first baseline day. All 30 exemplars (stimuli pictures) of the targeted syntax item to be used in the study were presented, 3 to 4 at a time, and the subject was asked to, "Find _____." The subject had to be able to touch 100% of the exemplars within five seconds of the prompt. If an exemplar was not identifiable by the subject within 5 seconds, the researcher explained the picture to the subject and then rechecked later to see if the subject could find the picture on two more trials. If the subject was still unable to find the picture, it was replaced by another exemplar the subject could find with 100 % accuracy.

The subjects were seen twice weekly for treatment sessions. Each treatment session was divided into two segments of between 18 to 25 minutes in length with an 8 to 10 minute break in between. One segment of each session was conducted in the CD condition and the other segment of the session in the SD condition which included the self-determination (SD) package. The 8 to 10 minute break between segments was designed to provide a clear separation between conditions so that subjects were not confused by the differing clinician behaviors in the two experimental conditions. Each target was addressed during each session. All sessions were videotaped. The order of the targets and treatment conditions were counterbalanced and each target was randomly assigned to either the SD or CD condition for each subject.

Counterbalancing

In order to avoid the interference of a multi-treatment effect, the sequence of the conditions was counterbalanced each day. On Day One, Subjects 1 and 3 received the CD condition first and then the SD condition. Subjects 2 and 4 received the SD condition first and then the CD condition. This order was then reversed each day thereafter.

Setting

Subjects were seen in an individual, 1:1, setting by the researcher, who is a licensed speech-language pathologist (SLP) with 30 years of pediatric experience.   For 3 of the subjects, sessions were conducted at the University of Kentucky Communications Disorders Clinic. For one subject, Tom, the sessions were conducted in his home because of concerns about his poor immune system.

Description of the Intervention Sessions: General Procedures

Each total session was of approximately 50 to 60 minutes in length for a full session which included both conditions. In Segment One of each session, one syntax target was taught and in Segment Two of the session, the other syntax target was taught. Each segment included: an overview of the session and explanation of the conditions, a presentation of 10 models by the clinician of the syntax target; an instructional phase and probe phase for the first segment followed by an 8 to 10 minute break. The second

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segment repeated the order of the first with the only change being the instructional condition. The order of the conditions was determined by the counterbalancing schedule described above; thus interventions and targets were counterbalanced across the sessions and across subjects. Table 2.13 displays the sequence of each full session.

The study employed a "drill-play" (Paul, 2001) organization for delivery of the instructional phase. In this mode of delivery, the child is allowed to engage briefly in a reinforcing activity after a set number of instructional trials. For this study, the subject was allowed to engage in a reinforcing activity after every five instructional trials. The reinforcing activity was changed after a total of 15 instructional trials had been completed. Each treatment condition segment included a total of 30 instructional trials for the target syntax utterance and incorporated two short reinforcing activities. In summary, each treatment segment included 10 initial models of the syntactic form by the clinician at the beginning of the segment; two short reinforcing activities, each repeated 3 times; 30 instructional trials; and the 10 trial probe on the syntactic target at the end of the segment. After a subject had achieved criterion on one target, only the remaining target was addressed in the following sessions along with a maintenance or generalization probe for the first target. This reduced the length of these sessions to about 30 minutes each.

Table 2.12 Sequence of Full Session for Each Subject

| **Opening of Session** |
| Clinician greets subject and gives overview of the session and explains the 2 conditions |
| **Instructional Phase for Segment I** |
| A. Introduction of the condition |
| B. Selection of reinforcing activities |
| C. Clinician modeling of 10 exemplars |
| D. Instruction

   5 trials

  1st Reinforcing activity

  5 trials

  1st Reinforcing activity

  5 trials

  1st Reinforcing activity

  5 trials

  2nd Reinforcing activity

  5 trials

  2nd Reinforcing activity

  5 trials

  2nd Reinforcing activity |
| **Probe Phase for Segment I:** 10 probe trials |
| **Break:** 8-10 minutes |
| **Instructional Phase for Segment II** |
| **Repeat of Segment I Instructional Phase using opposite condition** |
| **Probe Phase for Segment II**: 10 probe trials |
| **End of Session** |

Incorporation of Reinforcing Activities

The drill-play mode of instructional delivery utilized in this study involves the incorporation of a reinforcing activity during instructional trials. These activities were selected from a menu of the student's interests collected prior to the study using the questionnaires in Appendix B and C. The list of reinforcing activities for each subject appears in Appendix H. After the subject completed five instructional trials, he/she participated briefly in a reinforcing activity. For example, after five instructional trials the clinician and subject may have taken two turns on a board game. If, perhaps, the subject had a particular interest in a certain movie or TV character, the subject might complete a thematic activity based on that character. The amount of time spent on the reinforcing activity during the total 25 minute segment was based on pilot trials completed by the experimenter and a typically developing 7 year old child. The length of the reinforcing activities was usually between 1.5 and 2.0 minutes, unless the subject refused to stop the activity, which occurred several times during the study and may have affected the length of the segment slightly. When this occurred, the subject was redirected to the instructional task.

If an activity interfered with the subject's participation in instructional trials, i.e., he/she refused to stop the activity to continue the next 5 instructional trials, that activity was eliminated from subsequent sessions and a substitution of another high interest, but less distracting activity, was made. This occurred for Subjects 2, 3, and 4. Substitutions are listed in the activity list in Appendix H.

Pilot of Instructional Trials to Determine Time Available for Reinforcing Activities

To determine the average number of minutes a full session would last and the number of minutes available for the reinforcing activities between each set of 5 instructional probes, two pilot sessions were run with a typically developing 7 year old boy role-playing correct and incorrect responses. Procedures for the pilot sessions were as follows.

1. The pilot subject completed a CD and an SD condition segment, with the introductory script given by the clinician, the explanation of the target and initial 10 models by the clinician, the 6 sets of 5 instructional trials (equal to the total number used in a segment) for each segment using

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the two experimental procedures, and then a probe of 10 trials. The session was taped and timed. The two instructional segments totaled 20 minutes in length.

2. The combination of Step 1 plus 10 minutes for the break between conditions equaled 30 minutes and this was subtracted from a total estimated session length of 60 minutes to determine that there would be 30 minutes available for reinforcing activities.

3. Since there were 12 sets of instructional trials in a total session, 30 minutes divided by 12 segments yielded an average of 2.5 minutes available for reinforcing activities between instructional trial sets.

4. To summarize, Step 1 plus a 10 minutes break equaled 30 minutes.

60 minutes – 30 minutes divided by 12 allowed about 2.5 minutes available for each reinforcing activity break.

After the above calculations were completed, a second pilot session was run, video taped and timed with a typically developing 7 year old serving as the subject. Using the 2.5 minutes amount of time for the reinforcing activities during the pilot, however, revealed that more time was spent on the reinforcing activities (13.5 minutes) than on the teaching trials (approximately 10 minutes) during each segment. It was noted that the length of each reinforcing activity break varied a bit dependent upon a logical point for stopping the activity. For example, if the child was telling a story, he might take slightly more or less time for that reinforcing activity. In addition, it seemed likely that that typically developing child may well have responded more quickly than a child with developmental delays. Therefore, it was decided to limit the time spent for each short reinforcing activity to 1.5 to 2 minutes between each 5 teaching trials in order to allow the children with developmental delays longer potential response time and to better balance the time spent in teaching versus reinforcing activities. During the actual study, some of the subjects fatigued during a 60 minute session since they came to the sessions after a full day of school. On a few occasions, it was necessary to delete one or two of the reinforcing activity breaks in order keep the child in the session and to avoid losing any of the instructional or probe trials for that day. At times the full 10 minutes between conditions seemed too long and the subject seemed bored. Since no subject

evidenced any confusion regarding the clinician's behaviors between the two experimental conditions, and in order to avoid fatigue if possible, it was decided that the break between conditions could last from 8 to 10 minutes per session.

Specific Procedures for Each Session

Introducing the condition to the subject. At the beginning of the initial treatment session, the clinician explained to the subject the difference between the two experimental conditions. The clinician explained that sometimes she would pick the activities and plan the order of the session, called "Jane's turn," and sometimes the subject would do these tasks, called "<u>child's name</u> turn." In addition, the clinician told the subject that sometimes she would tell if the subject's response was correct or incorrect (Jane's turn) and sometimes the subject would complete this task (<u>child's name</u>'s turn). The script for this explanation in included in Appendix D.

*Introductions at the beginning of the first segment of each daily sessio*n. A review of the information described above regarding the two treatment conditions was given at the start of the first segment of each session as well. The clinician reminded the subject that he/she was working on "learning to make longer sentences/words when you talk." The clinician labeled the student's syntax target, explained its use, and modeled 10 examples of the syntax form that was to be targeted. The script with the exact wording used by the clinician is presented in Appendix D.

The specific instructional program used to teach the syntax targets was based on the mand-model approach (Alpert & Kaiser, 1992; Fey, 1986; Rogers-Warren & Warren, 1980; Warren, McQuarter & Rogers-Warren, 1984). In this model, the clinician initiates the trial by giving the subject a "mand," which is a question or direction to elicit the targeted production. For example, a subject might be shown a picture and asked, "What is this?" For this study, the subjects were shown a color picture which depicted the targeted syntax structure. The clinician then manded a verbal response. The specific mand was designed so that it (a) elicited the specific targeted response *and* (b) did not provide a model within the mand. If the subject was to produce, for example, the first person pronoun "I" plus a verb, and was shown a set of pictures, each depicting that subject doing one activity, the mand "Tell me about this picture,"

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was most likely to elicit the syntax target as pictured. If the subject was to produce a regular past tense verb form, the mand would have to be specific to that verb form. Therefore a mand such as "Tell me what (the person) did" could be used since it specifically elicited a past tense response, but did not model the regular past tense verb form itself. The goal of past-tense production was particularly complicated. One subject, Lucy, typically produced a present progressive "ing" morpheme ending for past tense picture stimuli, even though the stimuli showed an ongoing action coupled with the completed action, e.g., she might produce the word "kick*ing*" for the target "kick*ed*." In addition she began to confuse the past tense and present progressive verb forms when asked to "Tell me what ___ did?" There was a risk that Lucy would be confused and begin to produce the past tense "ed" ending in place of the present progressive if the concept of "past" was not more clearly stressed in the elicitation phrase. It was therefore decided to use the following procedure to elicit the past tense response. The clinician pointed to the ongoing activity pictured and said "Here they are ____ ing, but now they are done," (pointing to the completed "past tense" picture). "Tell me what ___ did." When this prompt was used with Tom, however, he began to add the "ed" morpheme to the present progressive verb form and produced such combinations as "fishinged" on attempts to produce the regular past tense verb. For Tom the prompt was modified to the provision of a point to the ongoing activity and then a point to the completed activity and the verbal prompt, "He's all done. Tell me what he did."

After the mand was given, if the subject did not make a response within 5 seconds, the clinician modeled a correct response and asked the subject to imitate. If the subject correctly imitated the model, the clinician said, "Good job." If the subject did not correctly imitate the model, the clinician simple said, "OK." This completed one instructional trial. A total of 15 instructional trials per activity was completed. Each segment of a session included 2 activities, so a total of 30 instructional trials was completed per segment.

Daily modeling level for incorrect responses. The clinician's model for each daily segment was based on a graded level of modeling of the correct syntactic form. The decision for the level of modeling to be used was based upon the previous day's probe of 10 trials which was conducted at the end of the

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previous day's instructional segment. For example, if the subject's syntax target was the unmodeled use of the first person pronoun "I," plus a verb, following the prompt "Tell me about this picture," the following levels of modeling were used in the instructional phase of the treatment session.

When the subject produced an incorrect response, the clinician provided models at one of the following levels.

Level 1: If the previous day's probe indicated that subject produced 20% or less correct responses, the model phrase was given twice with the target syntactic form stressed vocally. For example, "No, tell me, I TALK, I TALK." (Capitalization denotes voice stress on that word.) This was done in order to provide maximal emphasis on the target structure, since the target had just been introduced and correct productions were at the lowest rate of accuracy.

Level 2: If probe indicated that subject produced 21%-50% correct responses, the model phrase was given once with the target syntactic form stressed vocally. For example, "No, tell me, I TALK." This was done to gradually reduce the level of modeling, but still emphasize the target structure since accuracy had reached a 50% level.

Level 3: If the probe indicated that the subject produced above 50% correct responses, the model phrase was given once with no stress on the target syntactic form. For example, "No, tell me, I talk." Since the student was now achieving above 50% accuracy, modeling was reduced to the lowest level. This model was used until probes indicated criterion level had been reached.

Probe Phase

At the end of each instructional phase, a 10 trial probe session was taken to determine daily progress. The stimulus cards were the 10 cards used in the baseline condition. The clinician presented each of the stimulus cards, one at a time, and gave an appropriate mand for the specific syntax target, for example, "Tell me about the picture." The clinician waited up to five seconds for the subject to respond using the syntax target. After each of the subject's responses, the clinician said, "OK," or "Thank you." If the subject correctly used the syntax target, a (+) was recorded on the data sheet. If the subject did not produce the syntax target correctly or offered no response, a (–) was recorded on the data sheet. Daily

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data were plotted on a graph to record progress toward criterion. A sample probe data collection sheet is included in Appendix F.

Criterion. The criterion level for completing the instructional program was the correct production of the targeted syntactic form produced without a model following the appropriate mand, such as, "Tell me about the picture" with 90% accuracy or 9/10 correct productions for three successive probes. Sessions continued until criterion was met. If a subject reached criteria on one target, instruction continued on the other target until criterion was met. Weekly maintenance data were collected on the first target until the second target was achieved.

Clinician-Directed Condition

If the session segment was a CD condition, the introductory procedures and initial modeling of 10 examples of the targeted syntax form were completed as described above. The syntax target was then taught via the mand-model instructional approach described above. Probes for daily data were taken at the end of each segment. Since this condition is clinician-directed, the clinician selected the targets, materials, activities, and sequence of activities used in the segment. At the beginning of the segment, the clinician showed the student the two activities which were selected from a list of the subject's favorite activities developed from the parent and subject questionnaires included in Appendices B and C. Cards used to depict the CD condition were colored orange to differentiate them from the SD cards which were colored green. The CD cards were placed on a schedule board in the order in which they were to occur. In addition, the clinician judged the accuracy of the subject's response and informed the subject. This response procedure was as follows. If the subject correctly used the syntax target following a mand such as, "Tell me about the picture," the clinician said "Good job, you said _____," and repeated the subject's response. If the subject produced an incorrect response, the clinician repeated the utterance using a questioning inflection ("Me walk?") and then said "No, tell me "I walk" thus modeling the correct response. The level of modeling depended upon the subject's accuracy in responding to the probes of the previous day, as described above. The CD condition was referred to by the subject and clinician as "*Jane's turn."* The script for this condition is found in Appendix D.

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Self-Determination Condition

In the SD condition, the same introductory procedures, target introduction and explanation and initial modeling of 10 examples of the targeted syntax form were completed. The syntax target was taught via the mand-model instructional approach as described above. However, in this condition, the subject had a choice regarding the materials and activities, planned the sequence of the activities and self-evaluated his/her responses. Specific steps in this process were as follows.

Choice-making. The clinician showed the subject a menu of four possible activities which were selected from a list of the subject's favorite activities developed from the parent and subject questionnaires included in Appendixes B and C. The cards for the SD condition were colored green to differentiate them from the CD condition. The subject selected two of the activities for use in that segment.

Planning. The subject then planned the order in which the activities would be completed by placing them on a schedule board, with the first activity on top and the second activity to be completed under the first.

Self-evaluation. For each instructional trial, the clinician gave an appropriate mand, such as, "Tell me about the picture." The clinician waited up to five seconds for the subject to initiate his/her response using the syntax target.

If the subject produced a correct response, the clinician repeated the subject's response and then asked "Is that right?" The subject then judged his response as correct or incorrect. All sessions were videotaped. Data for the subject's productions were taken live, but data on self-evaluation judgments were taken from the tape. Procedures and data collection for the self-evaluation judgments were as follows. If the subject had correctly produced the syntactic target and correctly judged his/her response, the clinician said "Yes, you said correct response. Good job," and the judgment was recorded a (+). If the student correctly produced the syntax target, but misjudged his/her correct answer, did not reply or said "I don't know," the clinician said, "Oh, you did say it right. You said _____. Good job," and the judgment was recorded a (-).

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If the subject did not produce the correct syntactic target, the clinician repeated the subject's response and asked, "Was that right?" If the student correctly judged his response to be incorrect, the clinician said, "It was not right, was it. Tell me correct response," and the judgment was recorded as a (+). If the subject judged his/her incorrect response to have been correct, did not respond or said "I don't know," the clinician said, "Oops, no. Tell me, correct response," and recorded the subject's response as a (-).

The level of modeling depended upon the subject's performance on the previous day's probe as described above. The SD condition was referred to by the subject and clinician as *"Child's turn."* The exact script of intervention sessions is found in Appendix D.

Materials and Equipment

Two sets of materials were necessary for this study. One set was the 30 stimulus cards and data sheets for use in the instructional program for each target. The second set of materials included those used in the reinforcing activities completed after each set of 5 instructional trials.

Stimulus materials for the instructional program were composed of 30 pictures which depicted each of the syntactic structure targets for each subject. There were a total of 30 picture representations for each of the two syntax targets. Ten of the 30 cards were chosen at random from a container and used as baseline stimuli and for probes after the instructional phase of the segment. The full set of 30 stimuli picture cards was used in the instructional phase for each target. Other materials necessary for the instructional phases included: procedural reliability sheets and data collection sheets. Examples of these forms are included in Appendices E and F, respectively. Finally, 10 new exemplars and picture depictions for each syntax target were developed for use in the structured generalization probes conducted after the student reached criterion for each of his/her targets.

The second set of materials included all those materials necessary for completion of the 6 potential reinforcing activities per session. Each session had 2 treatment conditions, involving 2 different reinforcing activities for each condition. In addition, the subject had a choice of 4 reinforcing activity options to choose from in the SD condition, thus requiring 2 additional sets of materials for a total of 6

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sets of materials which were available for each session. The actual materials used in the reinforcing activities depended upon the interests of the subject. Examples might include materials for playing a card game, reading a book about a favorite character, painting a picture, etc. Activities and materials chosen for use in the study were those that could be completed during the instructional phase and which could easily be completed within the confines of the therapy room or home setting. The same menu of materials and activities were used under both conditions, but in the SD condition the student chose two out of four possible activities and materials to be used that day. Ten different options were included for each subject. The clinician began selecting options for activities starting from the top of the list and continuing down until the list was completed and then began the cycle again. This allowed for a large variety of materials and activities to be used in an effort to avoid boredom on the part of the subject. In a few cases, the activities were actually too distracting to the subject and made it hard for him/her to return to the instructional tasks. In those cases, the activity was deleted from the list of options and another high interest activity was substituted from the subjects' questionnaires. The list of activities for each subject and those substitutions are included in Appendix H.

Data Collection and Scoring

Data collection forms are included in Appendix F. Data were collected on baseline trials, daily probes, subject self-evaluation responses in the SD condition, and on the number of subject redirections to task during each instructional segment.

Baseline data collection and scoring. A minimum of three days of baseline data on each subject were collected for each syntax target. Baseline data were taken for 3 days, or until the baseline data were stable or in a contra-therapeutic direction. Percentage of correct responses was computed and entered on the data sheet and on the subject's graph for that target.

Probe data collection and scoring. At the end of each instructional segment, 10 probe trials were completed for each syntax target using the same 10 stimulus cards which were used in the baseline condition. If the subject produced a correct response, a (+) was recorded on the data sheet. If the subject produced an incorrect response, a (–) was recorded. If the subject did not respond, an NR was recorded

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and counted as an incorrect or (–) response. Percentage of correct responses was computed and entered on the data sheet and on the subject's graph for that target for that day.

Definition of a "correct response" during the baseline or probe condition. A correct response during the baseline or probe condition was defined as the subject's use of the exact target syntactic form produced in response to the appropriate mand. If the subject used the exact syntactic target combined with a more complex syntactic structure than required, that response also was counted as correct. For example, if the syntax target was the use of the morpheme 'ed' with an uninflected verb (e.g., walk + ed) and the subject responded to the mand "Tell me what the boy did" by using the word, "walked," that was a correct response. However, if the subject said, "The boy walked," or "Him walked," those responses also were counted as correct, since they included the correct syntax target, even though another syntax error had been produced in the utterance. In addition, if the subject used a different vocabulary word for the target word which was pragmatically appropriate and also syntactically correct, that response was counted as correct. For example, if the subject said "They stopped" for the picture which depicts two children racing and then no longer racing (which was to depict the word "raced") that response was pragmatically correct and syntactically correct and so was counted as a correct response.

Definition of an "incorrect response" during the baseline or instructional conditions. An incorrect response during baseline or probe conditions was defined as a production which did not include the correct syntactic target in response to an appropriate mand. Therefore, if the target was the first person subjective pronoun, "I," the subject must have used that form in his response or the response was scored as incorrect. So, if the subject was told "Tell me about the picture," and responded, "Me playing," the response was scored as incorrect. If the subject had no response or said simply "playing," with no subjective pronoun, the response was scored as incorrect.

Subject self-evaluation response data collection and scoring. During the SD condition, the subject was asked to self-evaluate during each instructional trial. While this information was not specific to one of the four research questions, it was considered of interest to help determine if these 4 students with developmental delays could correctly evaluate their syntax responses, if self-evaluation skills would

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be developed on an incidental basis during the study, and if the self-determination skill of self-evaluation seemed to be related to the rate of skill acquisition. Therefore the accuracy of the student's self-evaluation was recorded. If the student correctly judged the accuracy of his/her syntax response, a (+) was recorded. If the student incorrectly judged the accuracy of his syntax response, did not respond or said "I don't know," a (–) was recorded. For the purposes of this study, only the accuracy of the subject's self-evaluation was reported. Since all sessions were being taped, however, further analysis of this area may be beneficial at a later date.

Definition of a correct self-evaluation of a syntax production during the SD condition. If the subject correctly produced the syntax target and judged the production to be correct, then that self-evaluation response was correct. If the subject produced an incorrect syntactic response to the mand and judged the response to be incorrect, that self-evaluation response would also be correct.

Definition of an incorrect self-evaluation of a syntax production during the SD condition. An incorrect self-evaluation response was defined as follows. If the subject produced a correct syntactic response to the appropriate mand, and judged that syntax response to be incorrect, did not respond or said "I don't know," the self-evaluation response was incorrect. If the subject incorrectly produced the syntax target in response to the appropriate mand, and judged that syntax response to be correct, did not respond, or said "I don't know," his self-evaluation response was incorrect.

Data collection on the number of subject redirections during the instructional phase. After each session, the experimenter watched the taped segments and counted the number of subject redirections that occurred during the entire instructional segment, including the reinforcing activities. The rate of redirections per minute in a segment was plotted on a graph. The rate of redirections per minute, rather than the total number of redirections per segment, was used since segments in which much redirection was required may have run longer than segments with a low redirection rate. In that case, there would be a difference in the length of the segments and thus a simple comparison of numbers of redirections would be misleading.

Definition of a "redirection to task" by the clinician to the subject. A "redirection to task" was defined as either a repeated request by the clinician to the subject to follow the mand or the repeat of the direction to imitate the model given by the clinician during the 30 trial instructional program, when the subjects failed to do so due to non-compliance or distraction from the task at hand. In addition, if the subject's behavior was disruptive or distracted during the instructional trials or the reinforcing activities and required the clinician to verbally, gesturally, or physically assist the child to return to task, that also was counted as a redirection of the subject. Redirection statements by the clinician might include such phrases as: "Listen, please;" "It's time to work, now;" "Sit back down," or saying the subject's name to recall his/her attention to the task. Redirection data were collected for the entirety of the two instructional conditions, from the beginning of that segment up to and including the 10 item probe at the end of the segment condition.

Maintenance Probes

After each subject reached criterion for a syntax target, the second target was continued until criterion was reached. During that time, the previously achieved target was probed for maintenance at least one time per week for the duration of the study.

Generalization Probes

Structured generalization probe. When each subject reached criterion for a syntax target, a generalization probe using 10 new picture stimuli was presented, one at a time, with the appropriate mand for that syntax target. The subject's responses were recorded as correct or incorrect and the percent correct represented the generalization of the newly learned syntactic form to unfamiliar stimuli in a structured setting.

Naturalistic generalization. A second generalization probe designed to be conducted in a more naturalistic style was also completed to determine if the new skill had transferred to a less structured situation. At least 20 opportunities for production of the syntax target in a conversational setting were offered utilizing such materials as scrapbooks about the student, reading books, and active play. A

percentage of correct productions out of the total possibilities was computed and represented the amount of transfer of the target syntactic structure in a less structured setting.

<div align="center">Reliability</div>

Reliability data were taken on both the dependent and independent variables. Average reliability scores on all aspects rated had to be at least at the 80% level to be acceptable. The researcher and trained observer practiced reliability using the pilot tapes described above.

Definition and Preparation of the "Trained Observer"

Prior to the beginning of the study, the experimenter made a video tape with a child volunteer in which a complete session was run. The child had been given a script which ensured incorrect responses and off task behaviors. The experimenter then reviewed one half of the CD condition and one half of the SD condition on the tape with the observer who would serve as the reliability rater and take reliability data during the study. The experimenter and the observer scored the tape together for correct and incorrect responses during probes, and identified and counted clinician initiated redirections to task directed to the child. Ratings were compared and disagreements discussed and resolved. The experimenter and observer then watched the second half of both conditions on the tape and scored correct and incorrect responses during the probes, and counted the number of clinician redirections used during the instructional phases. Reliability on all scores was assessed using a "point by point" method. A 100% agreement in reliability on all ratings was achieved before the study was initiated.

Reliability Data

Dependent variables. Dependent variable reliability was achieved by having a trained observer record data from at least 20% of the total sessions for each subject for probe and baseline responses. Reliability for baseline sessions was 100% across the 4 subjects with data taken on 25-33 % of all baseline sessions. Reliability data for instructional probe sessions were taken on 20- 25% of all sessions. The average reliability across subjects for instructional probe sessions was 96.8% agreement with a range of 88.8% to 100%. Since the observer could not hear one response on one probe for one subject, Tom, only the 9 audible responses on that probe were counted. A "point by point" procedure was used to

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calculate dependent variable reliability for baseline and probe data. Two reliability formulas were used and included the percent agreement between raters, or the number of trials on which the raters agreed divided by the total number of trials times 100 and the percent of disagreement between raters, or the number of points on which the raters disagreed divided by the total number of points multiplied by 100.

Reliability for the occurrence of redirections. Reliability for the occurrence of redirections was completed on at least 20% of the total number of instructional sessions for each subject. Reliability data was taken on 20-25% of instructional sessions. The average reliability for redirections was 87.3% agreement with a range of 71.4% to 100%. A gross method of comparison was used. The smaller total number of observed redirection per session was divided by the larger and multiplied by 100 to achieve the percent of agreement on the number of redirections per session. Only one reliability session fell below 80% and that was due to the fact the number of redirections counted was so low (7 by one rater and 5 by the other) that a small difference between raters accounted for the 71.4% score.

Independent variables. Average procedural reliability across all 4 subjects was 96.5% with a range of 94% to 98.7%. Appendix E includes the procedural reliability forms for the independent variables. Procedural reliability data were calculated by dividing the number of observed clinician behaviors by the number of planned clinician behaviors for each step of the instructional program and multiplying by 100.

<div align="center">Data Analysis</div>

Each subject has his/her own individual set of graphs or figures as follows.

1. Data for Questions 1 and 2, which address the individual effectiveness of each intervention procedure were analyzed as follows.

    a. Baseline data for each subject's percent of correct responses for his/her 2 targets were plotted on separate graphs.

    b. During intervention, daily percentages of correct probe responses were computed and plotted on the same graph as the baseline data for that target and condition. The

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graphs were be labeled "CD condition" and "SD condition" dependent upon the condition in which that target was taught.

2. Data for Question 3, maintenance and generalization for targets under the respective conditions, was collected during the session(s) after the student reached criterion for the specific target. The maintenance data were displayed on the students' graphs which also included their baseline and probe data. The generalization data for each student are displayed on Tables 3.2 and 3.3. As can be seen on these tables, not all students have the same number of maintenance probes. If a student reached criterion on one target, but continued for several sessions on the other target, a maintenance probe was conducted for the completed target at least one time per week until the study was completed. This accounts for the varying number of maintenance probes across students and targets.

3. Question 4, the comparison of the relative efficiency of the two interventions was then addressed as follows.

   a. Baseline and percentages of correct responses for each intervention segment were plotted on separate graphs and then the two graphs compared to determine which condition was the more efficient.

   b. Each set of targets was then displayed using on a chart to compare: (1) sessions to criterion; (2) number of errors to criterion; and (3) time to criterion between the two conditions for each subject.

4. Question 5 was addressed via daily totals of the counts on the number of clinician initiated redirections made to the subject during the instructional trails. These totals were then calculated as the rate of redirections per minute to adjust for the varying length of sessions. Rates were then depicted on a bar graph for comparisons of the rates of redirection required during the two conditions.

Narrative Description/Visual Analysis

A narrative summary is given for each graph or set of graphs and charts which describe the *visual analysis* of the individual effectiveness of each to the two intervention procedures for each of the four subjects; a comparison of the efficiency of the two intervention procedures for each of the four subjects; visual analysis of which intervention procedure resulted in the most correct target productions overall and which procedure took the fewest sessions, errors and time to criterion. Visual analysis and narrative summary for Question 5, regarding the subjects' on task behavior, describes which intervention procedure required the fewest redirections and thus elicited the greater on task behaviors for each of the four subjects. On task behaviors were judged by the number of recorded clinician initiated redirections made to the subject during the instructional phase of each condition.

CHAPTER THREE: RESULTS

General Overview

In this section, results pertaining to each of the 5 research questions will be presented. Results for each individual subject will be given and displayed in narrative, graph and table formats. Next, a summary of the results of the 5 questions across the 4 subjects will be presented.

Results for Subject 1: Jan

Acquisition Effectiveness and Efficiency

Baseline. Jan's baseline data for both targets were at 0% accuracy.

Instructional data. Both procedures resulted in unexpectedly rapid acquisition of the syntactic targets with the CD target, use of the possessive morpheme "s" plus a noun, reaching criterion in 3 instructional sessions and the SD target, use of "I + verb" reaching criterion in 4 instructional sessions. Criterion was set at 90% correct probe responses for 3 successive sessions. Jan had only 2 errors to criterion for the SD target and 2 errors to criterion for the CD target. Minutes to criterion were 57 min 58 s for the CD target and 81 min 57 s for the SD target. No procedural modifications were made during the instructional phase. Results are displayed in Figures 3.1 and 3.2 and in Tables 3.1.

Maintenance. Two maintenance probe sessions were conducted for each target. Results for both targets were equal with means of 100% accuracy.

Structured generalization. Two structured generalization probe sessions in which the subject was presented 10 new exemplars for the target syntactic structure and prompted using the same procedures as used in the instructional phase were conducted. The mean for the CD target was 50% with a range of 0% to 100%. The mean for the SD target was 45% with a range of 10% to 80%. These results are displayed on Table 3.2. The CD condition resulted in slightly greater structured generalization than the SD condition for Jan.

Naturalistic generalization. Jan's final session included probe sessions for the two syntactic targets conducted in a less structured manner, completed while looking at a family photo album. Naturalistic

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generalization for the CD target was again slightly greater than that for the SD target with 74.6% (20 of 27) correct responses for the CD target and 63.6% (14 of 22) correct responses for the SD target. Jan's unintelligibility made it difficult to judge some of her SD responses, however. Results are displayed on Table 3.3.

Figure 3.1 Efficiency for CD Condition for Subject 1: Jan
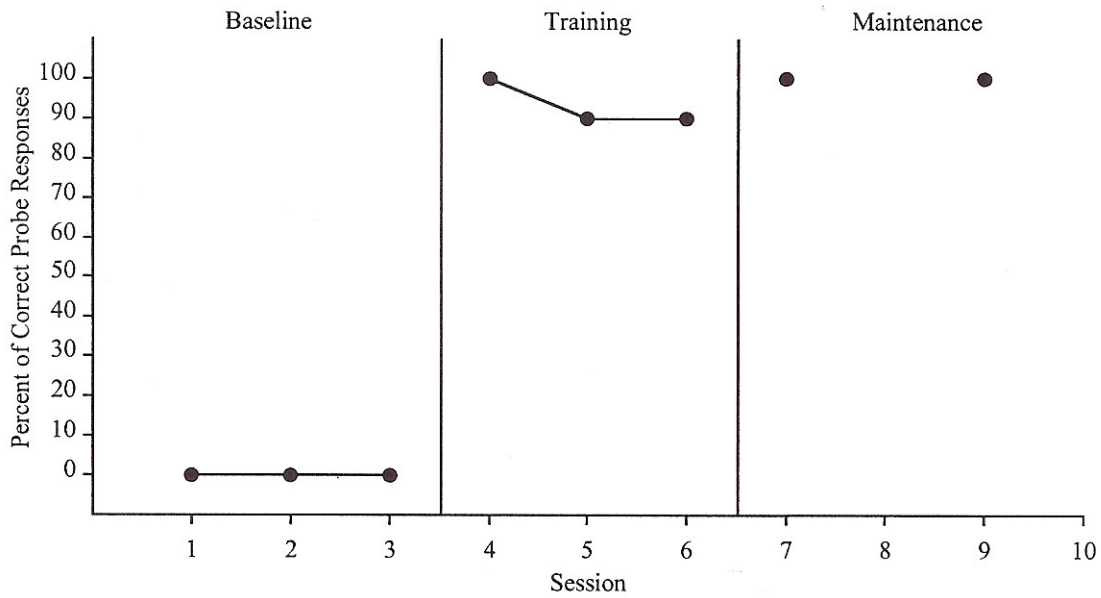
Figure 3.2 Efficiency for SD Condition for Subject 1: Jan
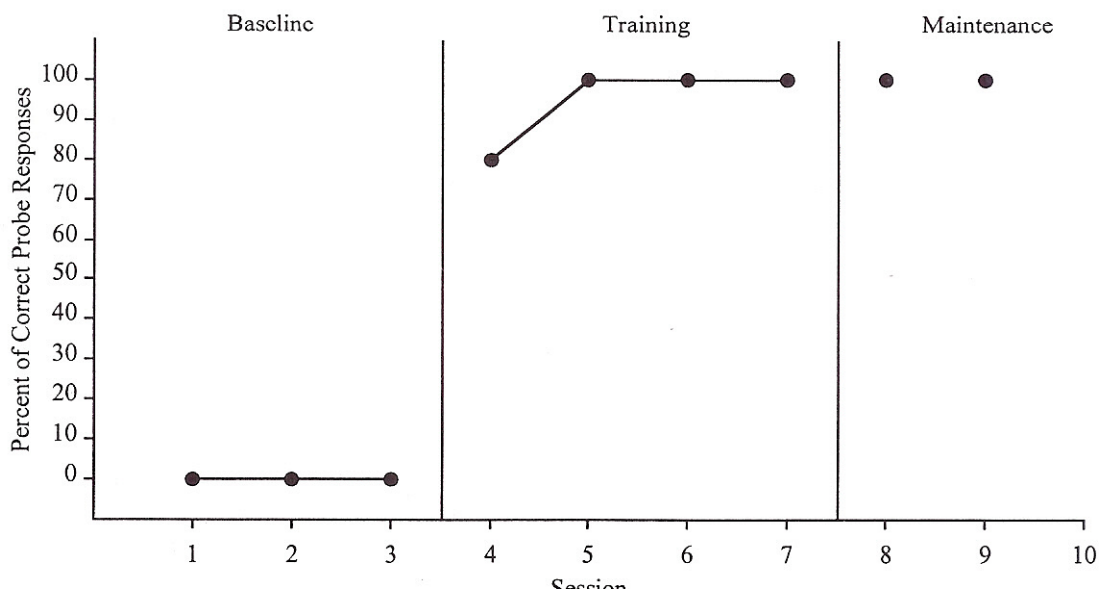
Table 3.1 Comparison of the sessions to criterion, percent of incorrect responses to criterion, time to criterion and rate of redirections per minute for each subject under each condition

Student	Number of Sessions to Criterion	Percent of Total Probe Responses to Criterion which were Incorrect	Time to Criterion: Total (Average min. per Session)	Rate of Redirections per Minute
Jan				
CD	3	0%	57:58 (19:19)	0.116
SD	4	.05%	81:57** (20:39)	0.2
Lucy				
CD	4	.075%	83:45 (20:54)	0.277
SD	9	37.7%	229 (32:42)	0.576
Tom				
CD	3	0%	61 (20:33)	0.307
SD	4	.05%	86*** (21:30)	0.471
Joe				
CD	7	14.28%	(104:48)**** Est.= 146:45 Avg.= 20:57	0.964
SD	3	0%	(44:15)**** Est.= 66:22 Avg.= 22:15	0.649
Total: CD	17	.076%	349:28	0.416
Total: SD	20	19% *	463:19	0.474

*34 of the 38 total errors for the SD condition, or 89% were accounted for by Lucy's difficulty with the past tense "ed" morpheme.

** Jan had one activity deleted in Session 1 due to her being upset about missing her bus that day.

*** Tom exhibited uncooperative behaviors during the second half of Sessions 3 and 4 and so the last reinforcing activities were deleted so that the sessions could be completed and all exemplars practiced and probes completed.

****The video tape for Sessions 3 and 4 for Joe was accidentally taped over before they could be timed. An estimate of the time for these two sessions, based on the average of his other sessions, was used to estimate the totals above.

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Subject Engagement and Redirection

     Rate of redirections. Jan had the lowest rate of redirection of all 4 subjects in the study with the total average number of redirections for SD segments being 3.75 and her average number of redirections for CD segments being 2.3. In order to account for the varying length of sessions, the rate of redirection per minute for each subject in each condition also was calculated and appears on Table 3.5. Jan also had the lowest rate of redirections per minute with her rate per minute for the CD segments being 0.116 and her rate per minute for the SD segments being 0.2. These totals include redirections from the SD segment on day one in which Jan was upset over a misunderstanding about catching her morning school bus and was distracted by this. Her total redirections required in all 4 of her SD sessions were 15, 12 of which occurred during the first session in which she was upset. This problem obviously skewed her redirection data. Results are displayed on Table 3.1 and Figure 3.3.

Self-evaluation Data

     Jan had a high rate of accuracy overall for self-evaluation with an average of 95.8% correct judgments and a range of 86.6% to 100%. She was more accurate in judging correct than incorrect productions. Results are displayed in Figures 3.4 and 3.5.

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Table 3.2 Structured Generalization for all 4 Subjects

Subject	Mean for Structured Generalization For CD condition	Range	Mean for Structured Generalization For SD condition	Range
Jan	50%	0%-100%	45%	10%-80%
Lucy	90%	90%-90%	90%	80%-100%
Tom	85%	80% - 90%	90%	*
Joe	100%	100%-100%	90%	*

* Range not given because only one probe was conducted on this target

Table 3.3 Naturalistic Generalization Data for all 4 subjects

Subject	Mean for Naturalistic Generalization for CD condition	Range	Mean for Naturalistic Generalization for SD condition	Range
Jan	74.6%	*	63.6%	*
Lucy	77.6%	62.5% - 92.8%	65.7%	*
Tom	59.3%	*	76.1%	*
Joe	94%	*	90.8%	90-91.6%

* Range not given because only one probe was conducted on this target

Figure 3.3 Redirection Rate for Subject 1: Jan in CD and SD Conditions
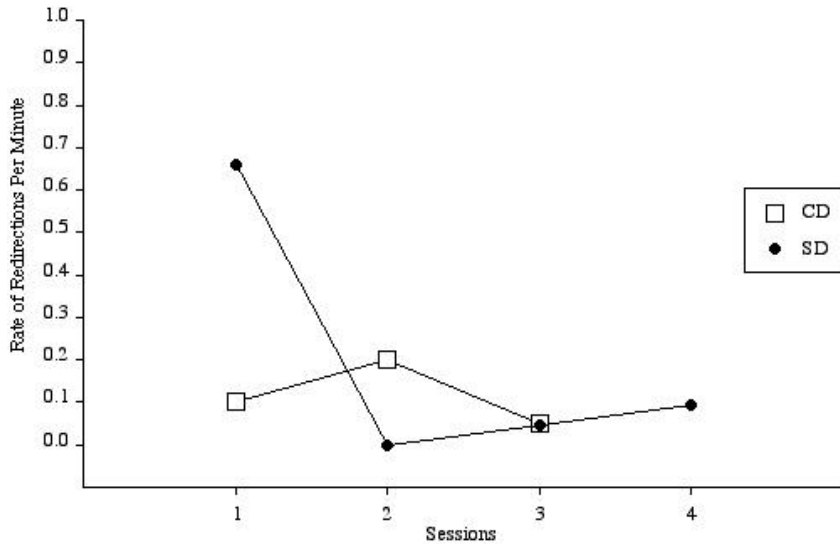
Note: In session 1, the subject misunderstood her father, and thought she would be late for school that day and she became upset. This accounts for 12 of the 15 redirections in that session and 12 of the 14 which occurred in the SD segment of that session.

Figure 3.4 Percent of Correct Self-Evaluations for Subject 1: Jan
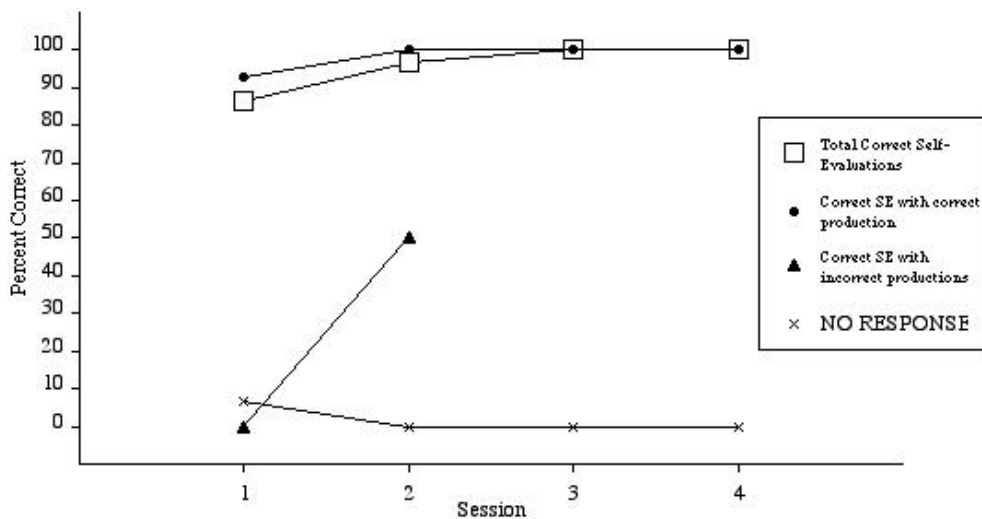
Acquisition Effectiveness and Efficiency

     Baseline. Lucy's baseline data for both targets was at 0% accuracy. Results are displayed on Figures 3.5 and 3.6.

     Instructional data. Both intervention strategies were successful in teaching the targets, but her CD target, use of the possessive morpheme "s" plus a noun, was achieved more quickly than the SD target, use of regular past tense morpheme "ed" plus a verb. Results are displayed in Figures 3.5 and 3.6. The CD target reached criterion in 4 instructional sessions and the SD target in 9 instructional sessions. Criterion was set at 90% correct probe responses for 3 successive sessions. Lucy had 4 errors to criterion for the CD target and 36 errors to criterion for the SD target. Minutes to criterion were 83 min 45 s for the CD target and 3 hr 49 min for the SD target. Results are displayed in Table 3.1.

     In the SD condition a slight procedural alteration was made in the use of the elicitation prompt. Rather than only using the target verb plus the "ed" morpheme for some exemplars, Lucy would use a short phrase and then become confused as to which word in the phrase was the verb. For examples, for the exemplar "opened" which was depicted as a girl who has opened an umbrella, Lucy would say "open the umbrellaed," placing the "ed" morpheme on the word "umbrella." This occurred on up to 4 exemplars. In order to avoid this, the prompt for these exemplars included the direction, "Just use the _____ (verb) word." This strategy corrected the problem.

     Maintenance. Two maintenance probe sessions were conducted for the CD target with both sessions resulting in 90% correct responses. One maintenance probe session for the SD resulted in 80% correct responses.

     Structured generalization. Two structured generalization probe sessions, in which the subject was presented 10 new exemplars for the target syntactic structure and prompted using the

Figure 3.5 Efficiency for CD Condition for Subject 2: Lucy
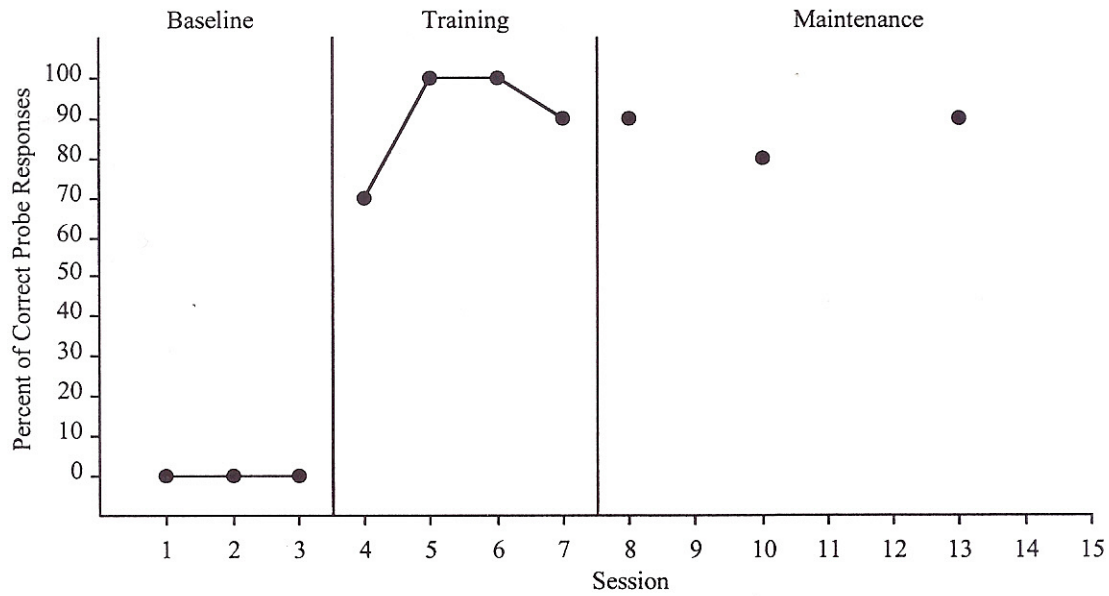
Figure 3.6 Efficiency for SD Condition for Subject 2: Lucy
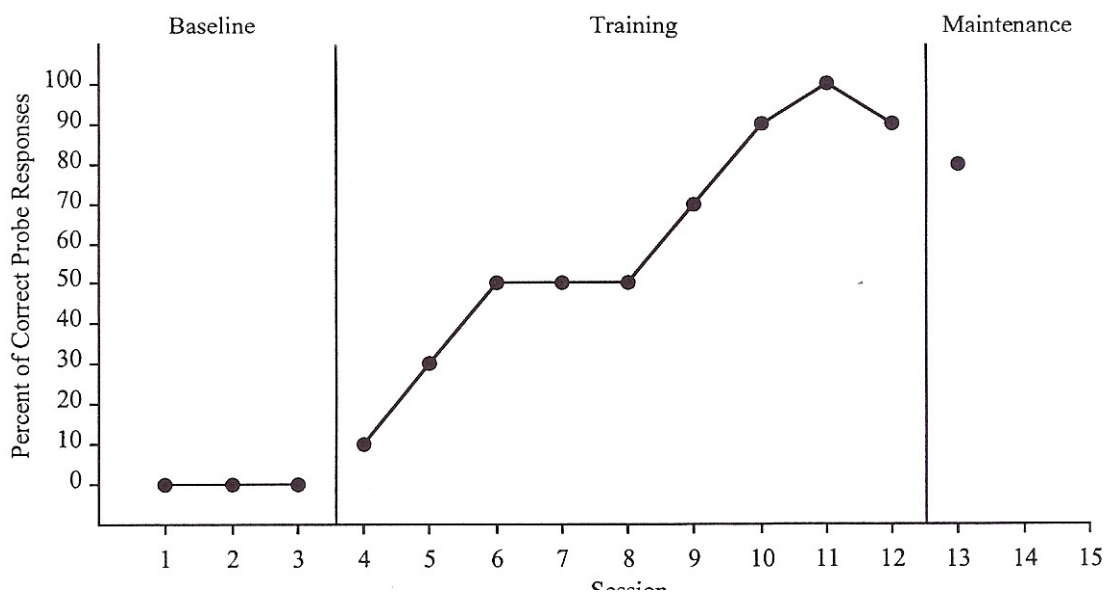
same procedures as used in the instructional phase were conducted for the each target. The mean for the CD target was 90% with a range of 90% to 90% and the mean for the SD target was 90%, with a range of 80% to 100%. These results are displayed on Table 3.2. The conditions showed equal structured generalization results, with the SD target reaching 100% on the second probe and the CD target reaching only 90% on both probes.

Naturalistic generalization. Two less structured generalization probe sessions were conducted for the CD target and one for the SD while looking at a family photo album. The mean for the CD target was 77.6% with a range of 62.5% to 92.8%. Naturalistic generalization for the SD target was 65.7% correct responses. Results are displayed on Table 3.3.

Subject Engagement and Redirection

Rate of redirections. The average rate of redirections per minute for the SD condition for Lucy was 0.576 and her average rate of redirections per minute for the CD condition was 0.277. Rate of redirection per minute was calculated to allow for the varying length of sessions. Results appear on Table 3.1 and on Figure 3.7.

Self Evaluation Data

Lucy's overall average accuracy for self-evaluation was 62.9 % correct judgments with a range of 33.3% to 90%. Results are displayed in Figures 3.8. The drop in accuracy on self-evaluation which occurred in sessions 6 and 7 were due to Lucy deliberately giving incorrect responses as a joke. When this behavior stopped in sessions 8 and 9, a high rate of accuracy returned.

Figure 3.7 Redirection Rate in SD and CD Conditions for Subject 2: Lucy

Figure 3.8 Percent Correct Self-Evaluations for Subject 2: Lucy

Results for Subject 3: Tom

Acquisition Effectiveness and Efficiency

Baseline. Tom's baseline data for the CD target of use of the possessive morpheme "s" plus a noun were at 0% accuracy. On the SD target, use of the past tense morpheme "ed" plus a verb, one baseline/probe word (kicked) had to be removed after the third day of baseline, since it was too difficult to determine if Tom was adding the "ed" or not due to articulation difficulties. When this word was replaced, 3 more days of baseline were taken with an average of 10% accuracy for 3 days. To assure that the other target had not improved, one more day of baseline was taken for the CD target, which remained at 0% accuracy. Results are displayed on Figures 3.9 and 3.10.

Instructional data. Both procedures resulted in unexpectedly rapid acquisition of the syntactic targets with the CD target, use of possessives, achieved in 3 instructional sessions and the SD target, use of regular past tense morpheme "ed" plus a verb achieved in 4 instructional sessions. Results are displayed in Figures 3.9 and 3.10. Criterion was set at 90% correct probe responses for 3 successive sessions. Tom had 0 errors to criterion for the CD target and 3 errors to criterion for the SD target. Minutes to criterion were 61min for the CD target and 86 min for the SD target. Results are displayed in Table 3.1. On the last instructional session, one reinforcing activity was eliminated since Tom was uncooperative and wanted to stop the session. By eliminating the last reinforcing activity, the child completed all the instructional and probe trials.

Maintenance. Maintenance results for the two conditions were equal. Two maintenance probe sessions were conducted for the CD target with an average of 90% correct responses and a range of 80% to 100%. One maintenance probe session for the SD resulted in 90% correct responses indicating equal maintenance for both conditions.

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Figure 3.9 Efficiency for CD Condition for Subject 3: Tom

Figure 3.10 Efficiency for SD Condition for Subject 3: Tom
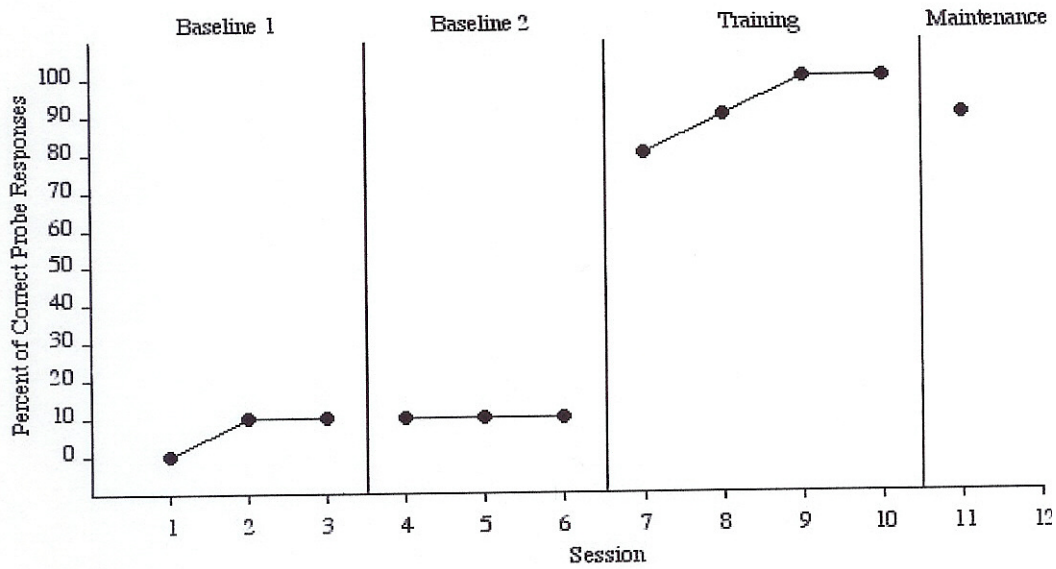
Structured generalization. Two structured generalization probe sessions for the CD target and one for the SD target in which the subject was presented 10 new exemplars for the target syntactic structure and prompted using the same procedures as used in the instructional phase were conducted. The mean for the CD target was 85% with a range of 80% to 90%. Accuracy for the SD target was 90%. These results show slightly better generalization for the SD than for the CD target. These results are displayed on Table 3.2.

Naturalistic generalization. One less structured generalization probe session was conducted for each condition while looking at photos and books. The accuracy for the CD target was 59.3% and 76.1% for the SD target. Naturalistic generalization was better for the SD than for the CD. Results are displayed on Table 3.3.

Subject Engagement and Redirection

Rate of redirections. The average rate of redirections per minute for Tom in the SD condition was 0.471 and his average rate of redirections per minute for the CD condition was 0.307. Rate of redirection per minute was calculated to allow for the varying length of sessions. Results appear on Table 3.1 and on Figure 3.11.

Self-Evaluation Data

Tom's overall average accuracy for self-evaluation was 78.2% correct judgments with a range of 66.6% to 86.6%. While Tom was highly accurate at judging his correct productions, he never correctly judged an incorrect production. Results are displayed in Figures 3.12.

Figure 3.11 Redirection in SD and CD Conditions for Subject 3: Tom
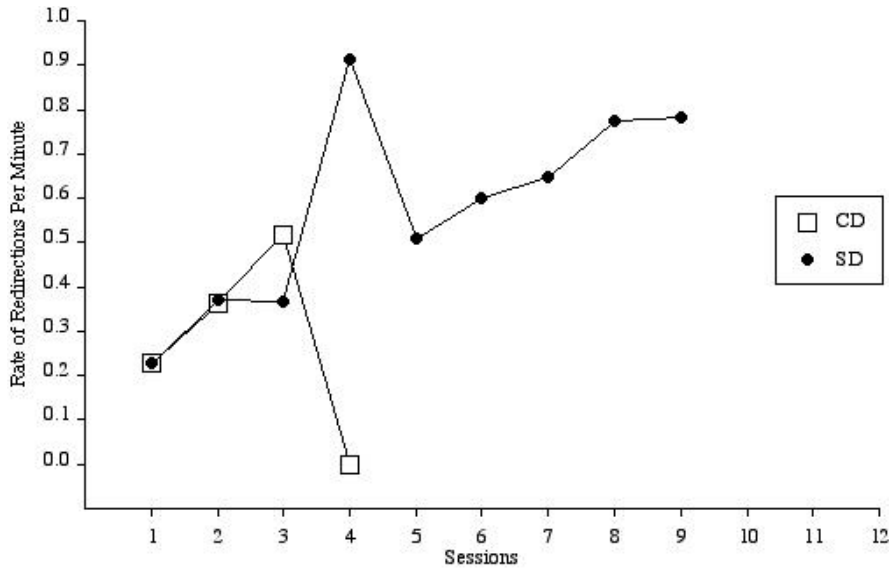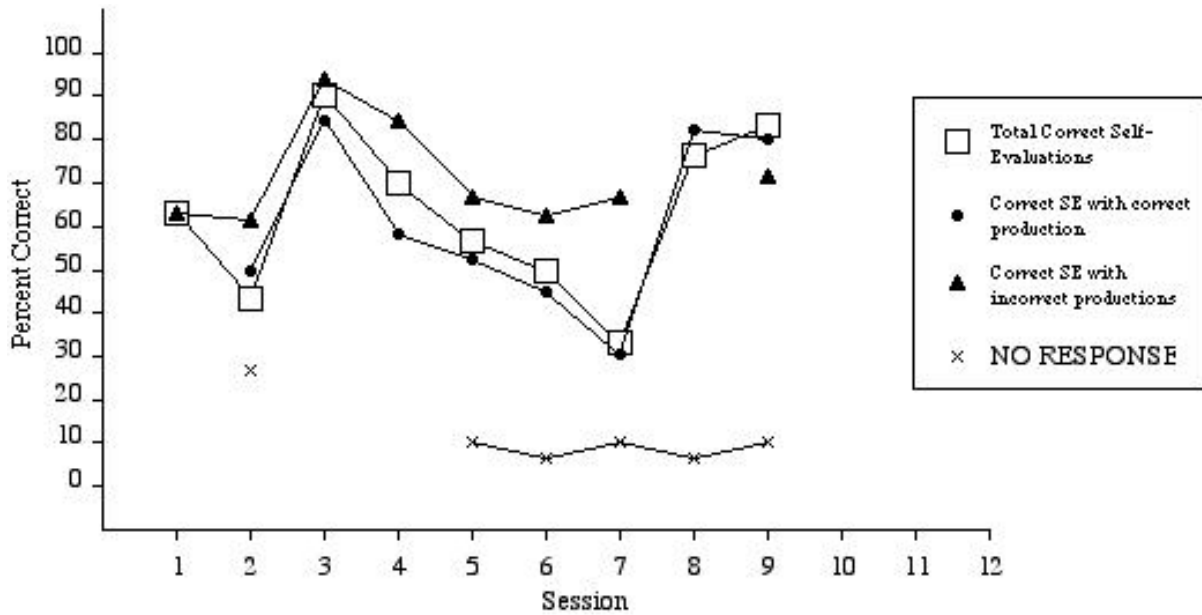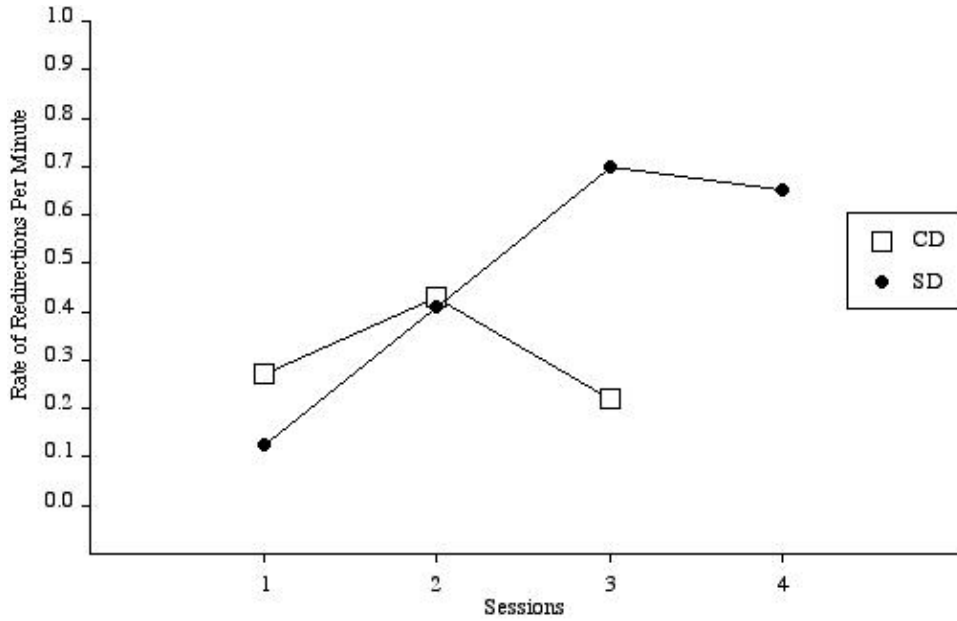

Figure 3.12 Percent of Correct Self-Evaluations for Subject 3: Tom

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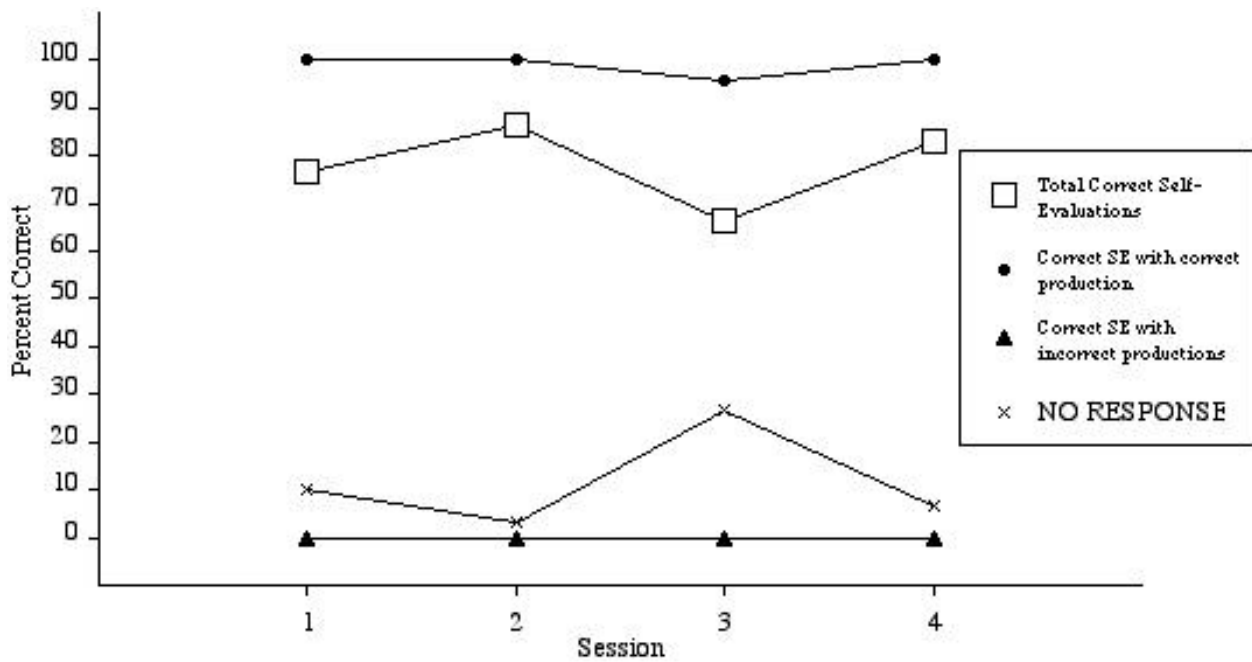
Results for Subject 4: Joe

Acquisition Effectiveness and Efficiency

Baseline. Joe's baseline data for the CD target, use of the first person personal pronoun "I" plus a verb resulted in an average of 3.3 % and a range of 0% to 10%. The 10% accuracy occurred on the second day of baseline, but fell back to 0% on the third day of baseline. Baseline for the SD target, use of the plural morpheme "s" plus a noun, was at 0% accuracy for all three days. Results are displayed on Figures 3.13 and 3.14.

Instructional data. Both procedures resulted in acquisition of the syntactic targets with the SD target achieved in 3 instructional sessions and the CD target achieved in 7 instructional sessions. The SD target was achieved more quickly that the CD target. Results are displayed in Figures 3.13 and 3.14. Criterion was set at 90% correct probe responses for 3 successive sessions. Joe had 8 errors to criterion for the CD target and 0 errors to criterion for the SD target. Minutes to criterion were 104 min and 48 s for the CD target and 66:22 min for the SD target. These figures are partial estimates, as two of Joe's sessions were accidentally taped over so 2 CD sessions and 1 SD session were lost and thus not timed. These estimates were made in order to allow Joe's data to be included in the overall totals of time to criterion, especially since he was the only subject who took longer on the CD than the SD target to achieve criterion. Total length was estimated by calculating the average length of the remaining sessions and adding twice that number to the total for the CD sessions and once to the SD session total. Results are displayed in Table 3.1. On one of the CD sessions, Joe was uncooperative and so one of the reinforcing activities was eliminated to save time and try to get him to at least complete all the instructional and probe trials. This was successful, but shortened the length of the session slightly.

Maintenance. Maintenance results for the two conditions were equal. One maintenance probe session was conducted for the CD target with a result of 100% correct responses and 3 maintenance sessions were completed for the SD which resulted in an average of 100%.

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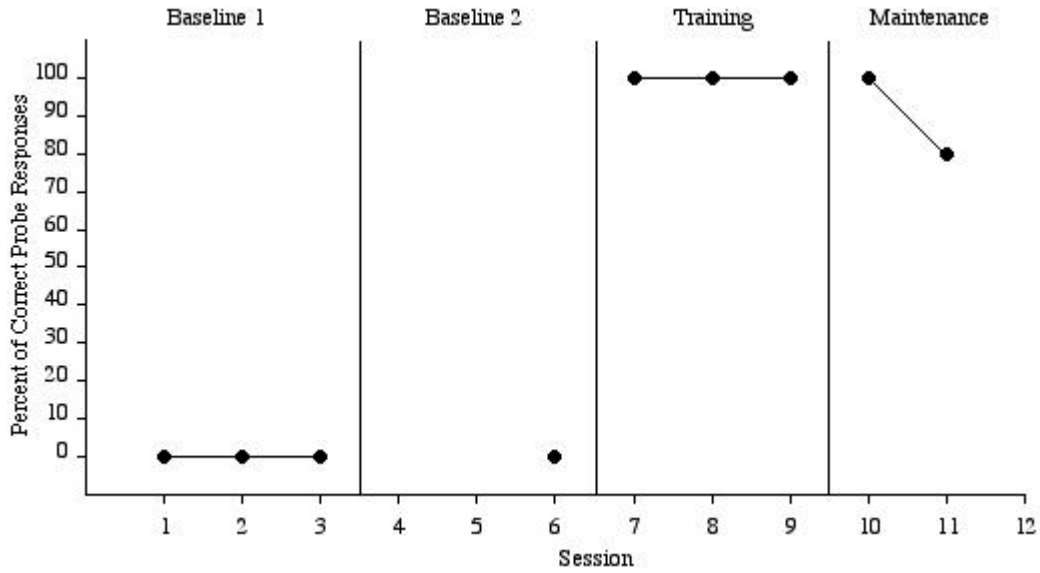Figure 3.13 Efficiency for CD Condition for Subject 4: Joe
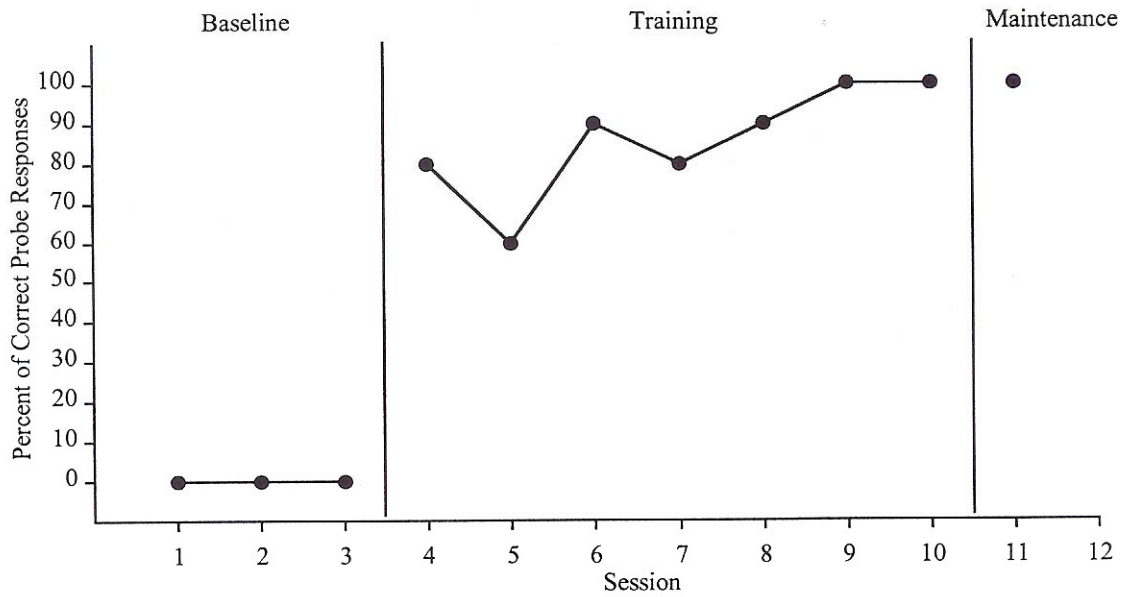
Figure 3.14 Efficiency for SD Condition for Subject 4: Joe
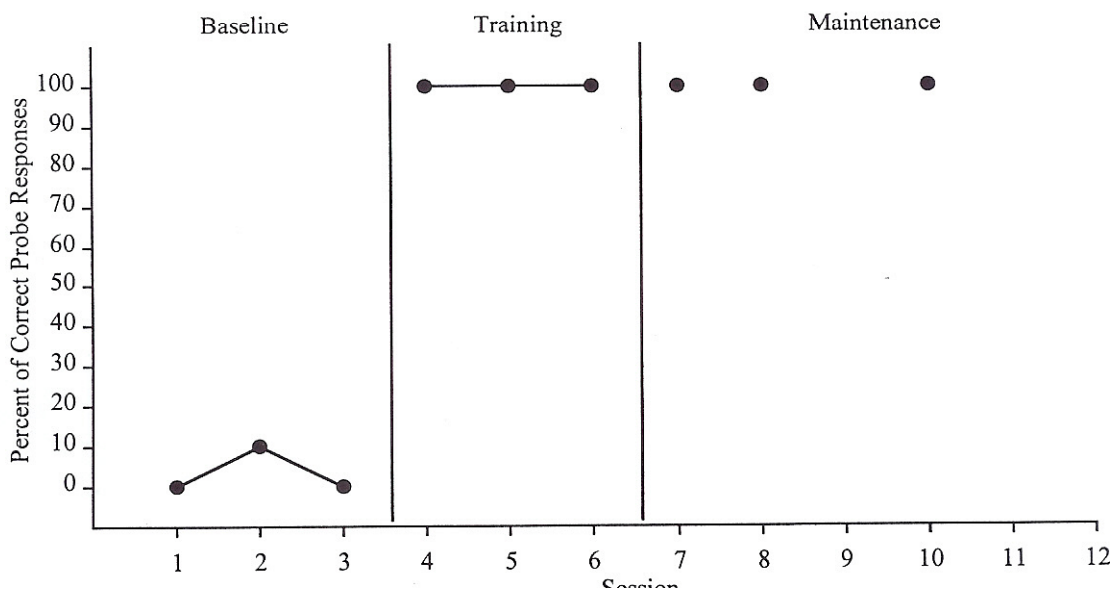
Structured generalization. One structured generalization probe session was completed for each target in which the subject was presented 10 new exemplars for the target syntactic structure and prompted using the same procedures as used in the instructional phase was conducted. The accuracy for the CD target was 100% and accuracy for the SD target was 90%. These results show slightly better generalization for the CD than for the SD target. These results are displayed on Table 3.2.

Naturalistic generalization. Naturalistic generalization probes were conducted with Joe for each target. For the SD target, use of plurals, various books and a variety of prompts were used. Two naturalistic generalization probe sessions were conducted for the SD target with a mean of 90.8% correct responses and a range of 90% to 91.6 %. One naturalistic generalization probe session was conducted for the CD target, use of "I" plus a verb used to describe what he was doing in a variety of activities. A result of 94% accuracy was achieved. Naturalistic generalization for both conditions was almost equal. Results are displayed on Table 3.3.

Subject Engagement and Redirection

Rate of redirections. The average rate of redirections per minute for Joe in the SD condition was 0.649 and his average rate of redirections per minute for the CD condition was 0.964. Rate of redirection per minute was calculated to allow for the varying length of sessions. Because 2 CD segments and 1 SD segment were accidentally taped over, these figures were based on only the segments that were available to score. Rate of redirection was greater for the CD than the SD condition. Results appear on Table 3.1 and on Figure 3.15.

Self Evaluation Data

Joe's overall mean accuracy for self evaluation was 89.9% correct judgments with a range of 83.3% to 96.6%. Although Joe participated in a total of 3 SD segments, one was accidentally taped over and thus could not be included in these calculations. Results are displayed in Figures 3.16.

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Figure 3.15 Redirection in SD and CD Conditions for Subject 4: Joe
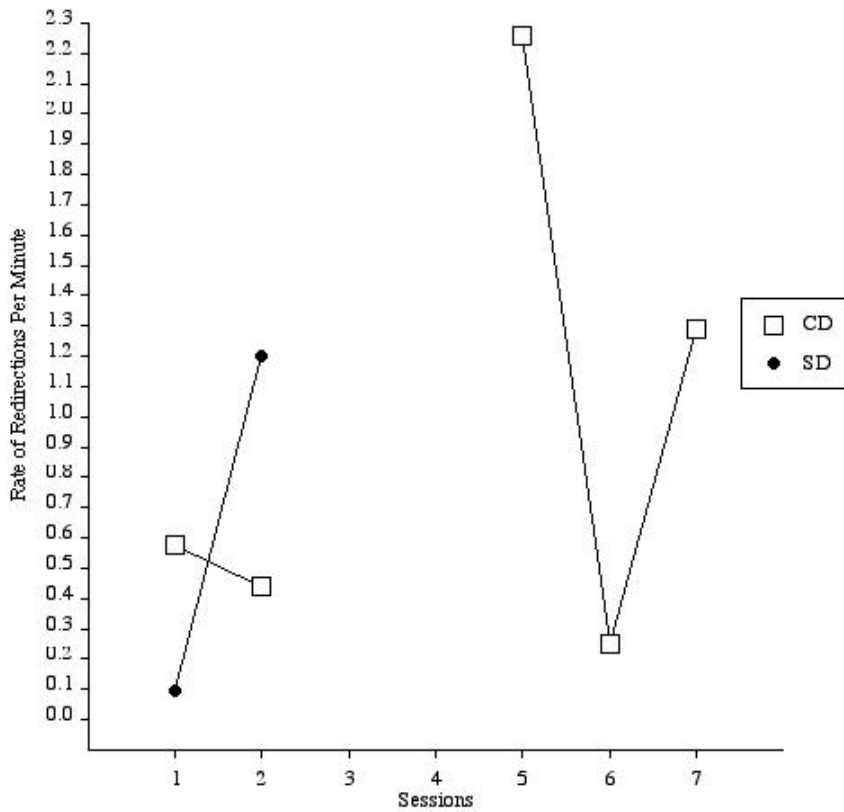
Figure 3.16 Percent of Correct Self-Evaluations for Subject 4: Joe
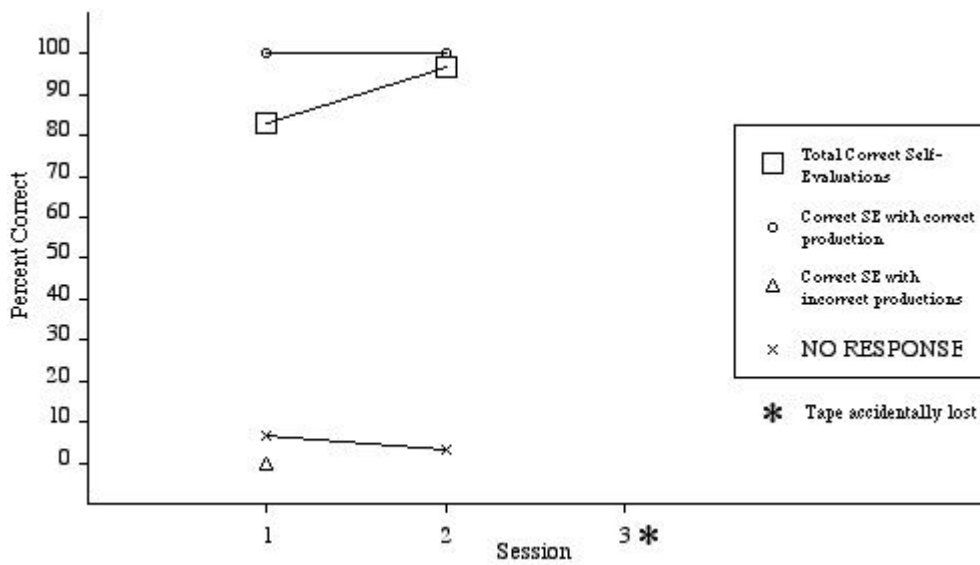
Accuracy and Efficiency

Both the CD and SD condition were effective for teaching the target syntactic structures across all 4 subjects. The CD condition was slightly more efficient in reaching criterion requiring 17 sessions to criterion versus 20 sessions for the SD condition across all subjects.

Maintenance and Generalization

The two conditions were equally effective in maintaining the new targets for three of the subjects, Jan, Tom and Joe, and the CD condition was only slightly more effective for maintenance for one subject, Lucy (85% for CD versus 80% for SD). On structured generalization accuracy, the conditions were equally effective for Lucy. The SD condition was slightly more effective in this area for Tom (90% versus 85%) and the CD condition slightly more effective for Jan (50% versus 45%) and Joe (100% versus 90.8%). The CD condition was slightly more effective in naturalistic generalization for Jan (74.6% versus 63.6%), Lucy (77.6% versus 65.7%), and Joe (94% versus 90.8%) and the SD condition slightly more effective for Tom (76.1% versus 59.3%).

Redirection Data

The average rate of redirections per minute for the two conditions was almost equal with the CD condition having a mean of 0.416 redirections per minute and the SD condition having a mean of 0.471 redirections per minute. Redirection seemed to be related to factors other than the instructional condition as can be seen in Figures 3.17, 3.18, and 3.19. The average rate of redirection was over twice as many in the second segment as compared to the first segment, regardless of the condition. In addition, the rate of redirection clearly increased as the subjects' ages decreased.

Figure 3.17 Average Rate of Redirection per Minute for SD vs. CD Conditions
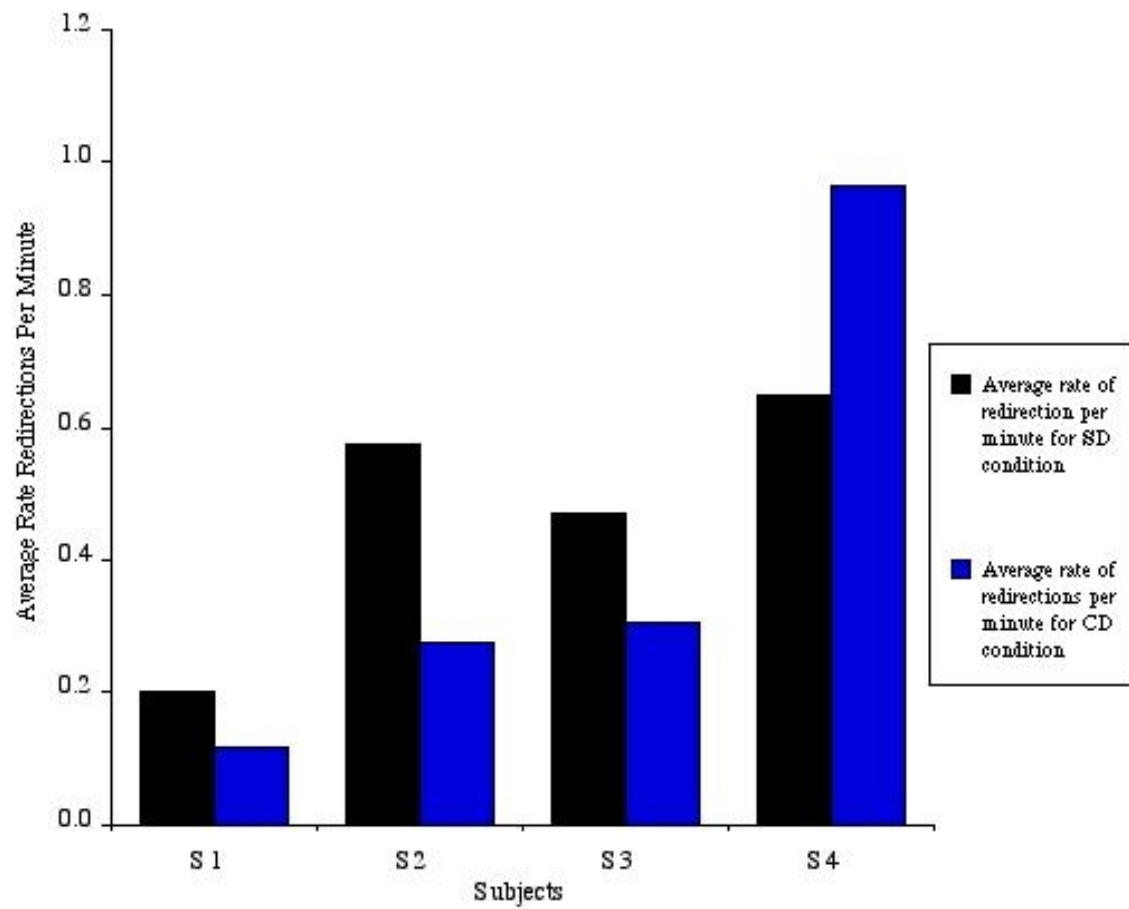
Figure 3.18 Average Rate of Redirection per Minute by Age
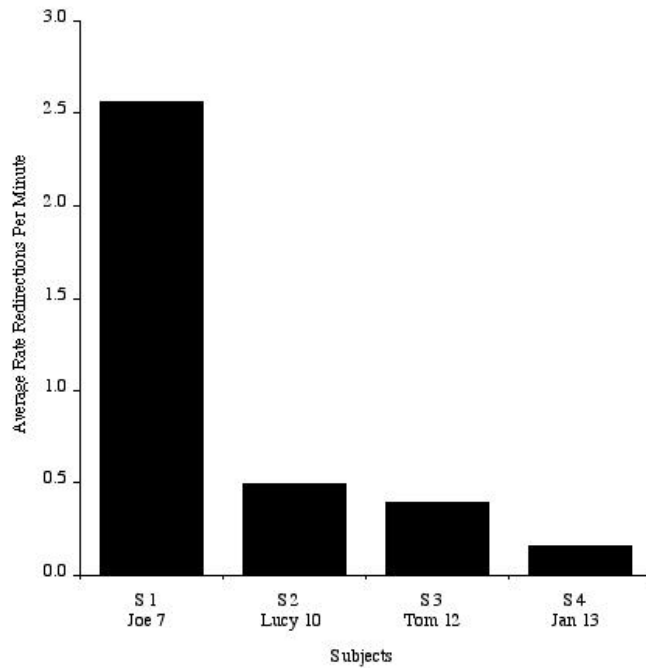
Figure 3.19 Average Rate of Redirection per Minute for First vs. Second Segment of the Session
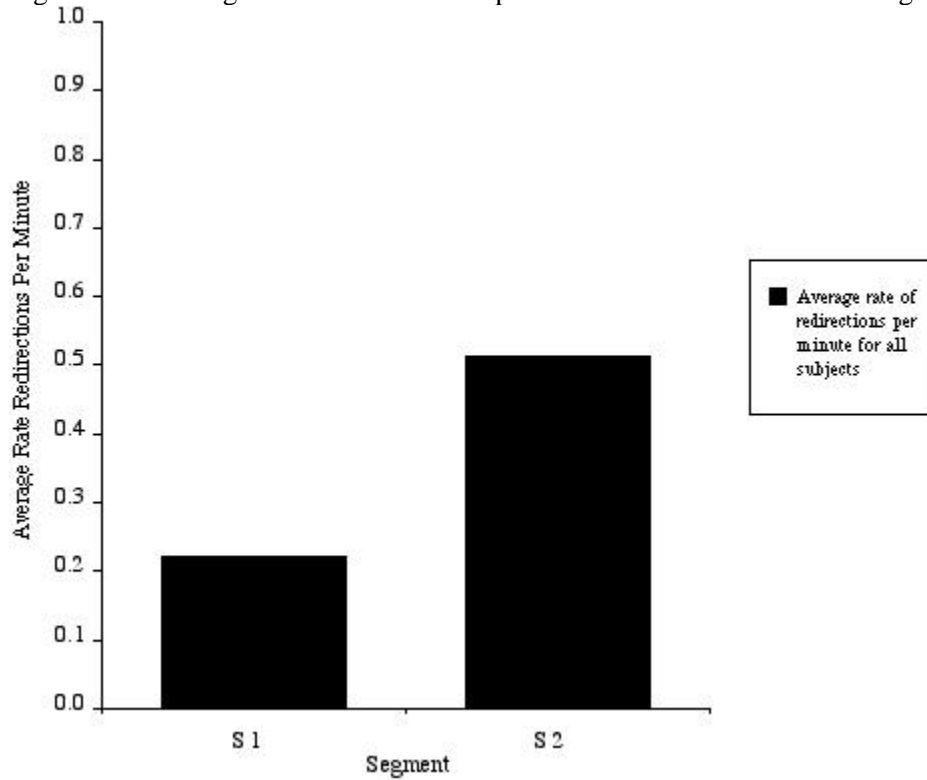
CHAPTER 4: DISCUSSION

Overview

This study was designed to investigate whether a program for teaching syntax which incorporates elements of self-determination could be as or more effective and efficient than the traditional clinician directed approach when teaching school-aged students with developmental disabilities. In addition, the study attempted to determine if elements of self-determination would enhance the students' engagement during intervention sessions.

The Research Questions

Research Questions 1, 2 and 3: Effectiveness, Maintenance and Generalization of the Interventions

Results of the study indicate that both the traditional clinician-directed approach (CD) and the intervention which included a self-determination package (SD) can be used effectively to teach syntax targets to students who have Down syndrome, one of the most prevalent etiologies for developmental disabilities. All 4 students in this study attained criterion, and maintained and generalized their new skills regardless of the teaching condition. This finding is an important one since it offers speech-language pathologists (SLPs) more options when designing syntax programs for students with developmental disabilities. Such students comprise a significant portion of the caseloads for SLPs employed in the public schools (Kleinert, 2004). Federal legislation which determines the role of SLPs as related service providers in the school setting mandates that related services be directly linked to the student's educational program. Many students in special education settings in the public school are now being provided training in self-determination within the school setting. It is important that the SLP, as a related service provider, design instructional interventions which align with each student's individualized educational program. Incorporating self-determination into SLP sessions is one way this can be accomplished. In addition, the concept of evidence-based practice, which is becoming a guiding force in both education and rehabilitation, directs that intervention programs must be based upon principles or paradigms which have been shown to be effective. This study contributes to that data base and offers

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support for the effectiveness of a syntax intervention which also reinforces the educational goal of the development of self-determination with students having developmental disabilities.

As stated above, this study indicated that both the CD and SD condition were effective in teaching syntax targets to students with Down syndrome. The effectiveness of an instructional condition can be determined, in part, if the study can show a functional relationship between the dependent and independent variables used in the study. In their most recent article describing the appropriateness of using single-subject research to identify evidence-based practice in the field of special education, Horner et al. (2005) describe four factors which indicate that a functional relationship exists between dependent and independent variables in a single-subject study. These elements are as follows.

> (a) the immediacy of effects following the onset and/or withdrawal of the intervention, (b) the proportion of data points in adjacent phases that overlap in level, (c) the magnitude of changes in the dependent variable, and (d) the consistency of data patterns across multiple presentations of intervention and nonintervention conditions (p. 171).

Utilizing these guidelines, the results of this study do show a functional relationship between its dependent and independent variables. In all cases there was an immediate effect on the student's performance on the syntax target following the initiation of the experimental condition, use of the SD and CD intervention approaches. In no case, for any of the four students involved in the study, was there an overlap between the baseline and instructional phases or the baseline and maintenance or generalization phases. The magnitude of change between the baseline and instructional phases was large in all cases, with a change from 0% to10% correct productions in the baseline phase for the SD targets to 80% to 100% accuracy for the SD targets for 3 of the 4 students, Jan, Tom and Joe. The fourth student, Lucy, showed no overlap with baseline on her SD target, but required a greater number of sessions to achieve criterion for that target. These data indicate a high rate of consistency across subjects in the study.

Research Question 4: Efficiency of the Interventions

Results of this study indicated that the CD condition was slightly more efficient than the SD condition in achieving criterion for 3 of the 4 subjects in the study. It is of note, however, that for 2 of these 3 students, there was difference of only 1 session between the 2 conditions. In addition, the SD

condition incorporated an additional response step not included in the CD condition. Under the SD condition, the students were asked to indicate the accuracy of their productions, i.e., to self-evaluate their responses. This additional skill was included in the SD package, since it is considered as primary in the achievement of self-determination (Agran et al., 2005; Agran et al., 2003; Grossi & Heward, 1998). The case could be made that the addition of this vital element in the development of self-determination to the SD condition would justify the slight loss of efficiency. This is especially true since the rate of target acquisition for all four students (2.5 to 5 weeks of intervention) was unexpectedly rapid.

The CD condition resulted in fewer errors to criterion for 3 of the 4 subjects in the study and overall there were fewer total errors to criterion for the CD than for the SD condition. It was interesting to note, however, that 34 of the total 38 errors which occurred in the SD condition were produced by Lucy on her SD target, the use of the past tense morpheme, "ed" plus a verb. Lucy's difficulty with learning this target is described later in this discussion, but briefly she had concomitant motor and cognitive difficulties which impeded her learning of the target. In light of this, it may well have been that she would have had as much difficulty learning the target under either condition and thus the comparison of efficiency, by errors to criterion, may be somewhat skewed. In actuality, if the past tense morpheme had been randomly assigned to the CD rather than the SD condition, the results of this study may have been interpreted quite differently with a much more favorable outcome for the SD condition.

Research Question 5: Redirections and Engagement in the Instructional Sessions

In an effort to determine if the SD condition, which offered the subjects choices for the reinforcing activities and an opportunity to plan the sequence of these activities, would produce greater on-task behavior during the instructional phase, the number of redirections required to keep each subject on task was counted for each segment of each condition. These totals were then calculated as the rate of redirection per minute to account for the varying length of sessions across subjects and conditions. Results indicated that the CD condition had a slightly lower total average rate of redirections per minute for the 4 subjects in this study (.416 versus .474). Three of the four subjects, Jan, Tom and Lucy, evidenced lower average rates of redirections per minute in the CD condition and one subject, Joe,

evidenced a lower average rate of redirections per minute for the SD condition. The difference between the two conditions was small, however. When analyzing the redirection data further, it appeared that other factors had a greater impact on this rate than did the instructional condition. Subjects evidenced over twice the average rate of redirections per minute in the second segment of their total daily sessions than in the first (.513 versus .223). This may have been a sign of fatigue. Due to each family's busy schedule and the fact that two sessions per week were necessary to complete the study, most sessions were scheduled after a full day of school. Another factor which may have influenced the rate of redirection was that of the subjects' ages. There was a clear trend toward fewer redirections evidenced as the age of the subject increased. The redirections per minute rate of the youngest subject in the study, Joe who was 7 years of age, was over 15 times that of the oldest subject, Jan, aged 13. These results are displayed in Figures 3.18 and 3.19. Further research regarding the effect of the experimental conditions on students' engagement during instructional sessions is clearly warranted. It will be necessary to control for the age and fatigue level of the subjects in such studies.

A further possible influencing factor in the rate of redirection concerns the students' interest levels in the reinforcing activities. On reviewing the tapes of the instructional sessions, it was noted that many of the instances of redirection occurred during transition from the reinforcing activity back to the instructional task. In an effort to assure that these activities were truly reinforcing, the experimenter may have selected such high interest stimuli that an adverse consequence resulted. The students enjoyed the reinforcers so much that they were resistant to returning to the instructional task, especially if the materials for the reinforcing activity remained in sight or reach during the instructional tasks. Locating reinforcing activities away from the instructional area, using more moderately reinforcing activities or changing the reinforcement schedule to allow for longer instructional time before offering reinforcement may help alleviate this difficulty in future research. In actual clinical practice, the clinician would also use such procedures to avoid difficulty in transitions from reinforcing "play" back to instructional "work."

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Important Issues Noted During the Study

Massed Practice and Target Acquisition

Unexpectedly rapid acquisition of the syntax targets was observed for all 4 of the students in this study. The fewest number of sessions to criterion was 3 for the CD target for Jan and Tom and for the SD target for Joe. Only 4 sessions were required for Jan and Tom to acquire their SD targets and for Lucy to acquire her CD target. The remaining two targets, the CD target for Joe, and the SD target for Lucy, required 7 and 9 sessions, respectively. These data indicated that even the longest period of intervention to criterion was less than 5 weeks at two sessions per week. Both the SD and CD conditions involved the production of a total of 40 exemplars (30 during the instructional phase and 10 during the probe phase) for each segment. The average length of all segments was approximately 20.25 minutes per session for the CD condition and 24 minutes for the SD condition. This indicates a very high rate of practice during each session for both conditions. Such a method of instruction can be referred to as "massed practice" in which a new skill is introduced and practiced in a structured setting and with a high rate of intensity. This approach has been used with persons having developmental disabilities for many years (Hart & Risley, 1980; Kleinert & Kearns, 2004; Miranda-Linne, & Melin, 1992). While this approach has been successful in teaching skill acquisition, generalization skills have been shown to occur more often when distributive trials are given within more natural settings (Hart & Risley, 1975, 1980; Miranda-Linne & Melin, 1992; Oswald & Lignugaris, 1990). Incidental teaching practices have been utilized in early childhood programs for both skill acquisition and generalization for some time. Such programs, however, have been noted to sometimes neglect effective instructional procedures in the natural setting which should be part of the incidental teaching paradigm. Interventionists may confuse incidental teaching with the simple use of natural environments and not utilize some elements of effective instructional programming when conducting incidental teaching programs (Warger, 1999; Warren, 1998).

All the students in this study had participated in early intervention programs from a young age and also had both preschool and school based language therapy programs. In light of this fact, it is highly likely that they had participated in incidental teaching programs. In addition, these students have been

exposed to the targets which were taught in the study thousands of times over their life-time in natural conversation. However, despite their many naturalistic and incidental opportunities to learn their target syntactic structures, they had not acquired them in their expressive language. It is of interest that they were able to acquire, maintain, and begin to generalize these syntax targets when instruction was offered in a structured setting with multiple opportunities for practice. Further investigation of such instructional procedures for older students with developmental disabilities is indicated by these findings.

Self-Evaluation Skills

The abilities to self-monitor and self-evaluate one's behavior have received extensive notice in programs to promote self-determination with students having developmental disabilities (Agran et al., 2005; Agran et al., 2002; Agran et al., 2003; Grossi & Heward, 1998). For this reason, a self-evaluation of productions during the instructional phase was included in SD condition in this study. Initially, two subjects, Jan and Lucy, seemed intimidated by this task and were hesitant to respond when asked if their productions were correct. All four subjects, however, showed success at this task as can be seen in Figures 3.4, 3.8, 3.12 and 3.16. Three of the subjects, however, Jan, Tom and Joe, reached criterion so quickly on their SD targets (within 3-4 sessions) that it was difficult to make statements about their performance on the self-evaluation task, since they had such a high rate of correct responses. This limited the number of opportunities to differentiate between correct and incorrect responses. However, Tom exhibited self-correction behaviors on his SD targets during the probe phase on the third instructional day and during the generalization probe for the CD target on the fifth day of his participation in the study. Jan and Joe also evidenced self-correction during generalization probes, and Joe self-corrected during a probe session for his SD goal. Joe self-corrected on his CD target once in spontaneous speech but Jan did not. It would be of interest to know if the emphasis on self-evaluation contributed to each of subjects' spontaneous evidence of self-correction during the study. The most interesting behavior related to the self-evaluation element of the SD condition was exhibited by Lucy. Lucy was able to reach criterion for her CD goal, use of the plural morpheme "s" plus a noun within 4 sessions, but had much greater difficulty acquiring her SD target, use of the regular past tense morpheme "ed" plus a verb. Subsequently,

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she had 9 sessions in which to practice the self-evaluation step. She was the subject who appeared to attend most to the self-evaluation task. After the second session in which the SD target was introduced, Lucy's mother remarked that it had started to snow. Lucy looked out the window and said "snowing" her typical production. Then she stopped for a moment and said, "Or maybe, snowed," as if weighing which form was the correct one. Her responses to the self-evaluation task are displayed on Figure 3.8. As can be seen on that graph, Lucy had an initially fair rate of correct judgments regarding the accuracy of her target productions. Then her accuracy in judgments dropped around Sessions 6 and 7. During this time, she purposely gave incorrect judgments when asked if her target production was correct. She would laugh at her purposeful errors. For example in Session 7, she had only 10/30 correct judgements, but clearly indicated she was "joking" in her responses on 14 other trials. If she had not been "joking" her correct response rate would have been at the 80% level, rather than at 33%. When she stopped "joking" during Sessions 8 and 9, her accuracy of judgments went to about an 80% level. In addition, Lucy was the most accurate of any of the subjects on differentiating correct from incorrect productions. For example, over 4 sessions, Tom had no instances in which he correctly judged an incorrect target production. Lucy began to exhibit several instances of self-correction on probes in sessions 9 and 10 as well. In light of these observations, it would be of interest to investigate if there is a relationship between the use of the self-determination skill of self-evaluation and the emergence of self-correction abilities.

<div align="center">Contributions to the Literature</div>

Single Subject Design

Many of the studies reported in the literature involving single subject alternating treatment or adapted alternating treatment designs have involved the training of highly discrete skills such as learning specific vocabulary words or learning to read word lists (Johnson, Schuster, & Bell, 1996; Kleinert, 1987; Singleton, Schuster, Morse, & Collins, 1999). This study utilized the adapted alternating treatment design to teach two equivalent, but generative syntax skills. The use of a specific syntactic marker, such as the plural morpheme "s," the regular past tense morpheme "ed," the possessive morpheme "'s," or the first person pronoun "I" all require another word to accompany their use in order to be of communicative or

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pragmatic value. The additional word, though, must be a specific form (in these cases a noun or a verb), which could be one of perhaps a hundred or a thousand possible options. The pronoun "I" could be coupled with any number of possible verbs, so that even though a specific exemplar might have been selected to train the use of "I," a student could easily have chosen another verb to use for his/her response during a trial and still be pragmatically and syntactically correct. So if the exemplar photo depicted the student smiling while sitting on a chair, in order to elicit the phrase, "I smile," the student could have, and did say, "I sit" and still produce a correct response. This is unlike more discrete targets in which a student must read a specific word "chair," for which there is no correct alternative. In addition, when learning generative language targets, a student is required to use more than just the one target word in his/her response. He is required to *correctly couple* the target syntactic form with another correct word form (noun or verb, perhaps) and so the task involves a greater "cognitive load" than other more discrete tasks. By demonstrating that the adapted alternating treatment design can be successfully used with generative language targets, this study adds to the literature in single subject research design.

Another unique aspect involved in utilizing the adapted alternating treatment design with language targets involves the difficulty in selecting targets which are both functionally independent but equivalent. When selecting equivalent lists of vocabulary or reading words, the researcher can obtain readily available list of equivalent words for targets from such sources as the Dolch Word lists (Lee, 2001). Selecting equivalent but independent syntactic forms requires weighing such factors as developmental level, number of morphemes involved when that syntactic form is actually used to communicate in a pragmatically correct form, and receptive comprehension of the many exemplars which could be used to represent the syntactic forms. For this study, a matrix was developed to help weigh each of these factors when selecting the syntactic targets to be used in the study. This level of specificity and detail also contributes to the literature of single subject research.

Syntax Acquisition and Students with Down Syndrome

Syntax deficits are a major language deficit which persists in the expressive language of individuals with Down syndrome as they age (Chapman, 1997; Chapman et al., 2002; Kumin et al., 1998;

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Throdardottir et al., 2002)**.** Until recent years, it was believed that students with Down syndrome could not continue to learn syntactic forms after they entered adolescence. This has since been disproven by researchers (e.g., Chapman, 1997). This study contributes to the literature regarding the acquisition of syntax by older students with Down syndrome by indicating that not only can these students continue to acquire syntax into adolescence, but they can do so at a surprisingly rapid rate when given structured, intense training.

Evidenced-Based Practice

Best practice in both rehabilitation and education now directs that the specific interventions chosen for treatment be based upon evidence of effectiveness. While there is some evidence to support the effectiveness of programs for the development of self-determination for students with developmental disabilities, this research comes primarily from the areas of special education and vocational training. No current literature has been produced on the effectiveness of teaching language skills while incorporating elements of self-determination. This study is an initial indication that language intervention can include an emphasis on important elements of self-determination without sacrificing effectiveness with students having developmental disabilities. In their article on the use of single subject research in developing evidence-based practice, Horner et al. (2005) list five elements which they believe must be present in order to use single subject studies as part of an evidence-base. These include: operationally defined procedures; a well defined context for use of the practice; fidelity in implementation; demonstration of a functional relationship between the dependent and independent variables; and sufficient replication of results which has occurred across studies, researchers, and subjects. This current study includes the elements of operationally defined procedures, a well defined context for use, fidelity of implementation, and demonstration of a functional relationship between the dependent and independent variables. Since there are no other studies in this specific area regarding self-determination and language training, sufficient replication of results has not yet occurred. This study does, however, form the beginning of a potential data base for evidence-based practice in the area of incorporating elements of self-determination into language treatment for individuals with developmental delays.

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Limitations of the Study

Difficulty in the Selection of Equivalent Targets

Three of the four subjects obtained their targets within a similar number of sessions. Jan and Tom both required 3 CD sessions and 4 SD sessions to reach criterion. Joe required 4 SD sessions and 7 CD sessions to meet criterion. Lucy, however, had a greater discrepancy in target acquisition. She achieved criterion for her CD target of use of the possessive "'s" morpheme with a noun in 4 sessions, but required 9 sessions to acquire use of the regular past tense "ed" morpheme plus a verb. Several factors indicate the possibility that the difference in her sessions to criterion may not have been based so much on the condition in which the targets were taught, as on the relative difficulty of the two targets *specifically* for Lucy. Tom had the same two goals and achieved them in 3 and 4 days respectively. In studying Lucy's patterns of responses, however, three noteworthy patterns emerge. First, she had particular difficulty with the articulatory complexity of certain of her 30 exemplars and 10 probe words. If the verb to which the "ed" morpheme was to be added ended in a /k/ phoneme, such as "look," "cook," "work," or "bark," Lucy had much difficulty motorically in producing the resulting consonant cluster of /kt/. Her 10 probe words included 2 such words and so possibly set her up for 20% incorrect productions due to a motoric problem, rather than a language-based problem. Secondly, she had a tendency to produce a phrase when making her responses to the prompts for past tense rather than just the targeted word. For example, she would say "open the umbrella" rather than just "opened" for her response. For that exemplar and for 3 other exemplars, she would remember to use the "ed" morpheme, but become confused as to which word in her phrase was the verb or perhaps, was treating the whole phrase as the verb. Essentially the "cognitive load" of the task became too great for her to clearly demonstrate her mastery of the syntactic form. She would produce utterances such as "open the umbrellaed," or "wash the dished." Three of these verb forms were included in her 10 probe words. These two difficulties set Lucy up to make up to 5 errors on her probe words which were not directly related to the syntactic form or the SD condition, but rather cognitive or motor difficulties. It seems likely that there was a non-equivalence in difficulty for her between her two targets. While the CD target required only the addition of an /s/ to a noun, the SD target had both motoric

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and cognitive concomitant factors that were not obvious until the study was in progress. As noted previously, if the conditions for this student had been reversed when randomly assigned, the SD condition would have significantly improved in its efficiency.

Cognitive Requirements of the Self-Evaluation Task in the SD Condition

Self-evaluation is one of the primary behaviors stressed in programs for the development of self-determination (Palmer & Wehmeyer, 2003). For this reason, it was decided to include the self-evaluation element to the SD condition. The self-evaluation task required the students to make judgments regarding the accuracy of their production attempts. Unfortunately, it is possible that the inclusion of this important element of self-determination in the SD condition may have slowed the students' progress on the target taught under that condition. The added cognitive load of self-evaluation may have shifted some of the student's focus away from the target production, since the self-evaluation task required a more complex response than the simple production of a target and imitation of a correct model (if the student's production was incorrect) required in the CD condition. In addition, it was noted that two of the students, Jan and Lucy, seemed concerned initially when they made incorrect self-evaluation responses. This may have led to distraction from the syntax target production. However, as stated earlier, the students did begin to show a small trend toward self-correction on their SD condition targets slightly earlier and more frequently than they did on their CD condition targets. The rapid rate of acquisition by 3 of the 4 students on their SD condition targets severely limited the data on their accuracy for the self-evaluation task and so it is impossible to say if they were able to learn this ability incidentally during this study. Further research is clearly indicated in order to determine: if there is a relationship between self-evaluation and self-correction of intervention targets; if self-evaluation can be taught incidentally during speech-language sessions; and if the inclusion of self-evaluation in a typical speech-language session does actually slow acquisition of the intervention target or if, as in Lucy's case, the loss of efficiency under the SD condition as compared to the CD condition, is simply due to non-equivalent targets rather than a true difference between the two conditions.

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Maintenance and Generalization

It would have been a stronger demonstration of effectiveness for both conditions if maintenance data had been collected farther in time from the end of the instructional phase. Collection of maintenance data after perhaps 6-8 weeks after the completion of instruction would have strengthened the results of the study. In addition, performing generalization probes in a different environment such as the subject's home and having generalization data collected with another adult rather than the experimenter would have also added strength to the study.

Though it was not part of the original design, 7 weeks after the study was completed, maintenance and generalization data were collected. These additional maintenance probes indicated that the average level of maintenance across all 4 subjects for the two conditions was equal at 92.5% each. On the structured generalization probes, the average level across the 4 subjects was higher for the SD condition than for the CD condition (95% vs. 87.5%). On the naturalistic generalization probes, the average level across the 4 subjects was higher for the CD than the SD condition (92.2 vs. 79.4%). It should be noted that there were gains for *all* targets for *all* subjects on the naturalistic generalization probes over the scores on that task which had been obtained at the end of the study.

Single Subject Design

Single subject designs were developed for use with low incidence populations and thus are an excellent tool for research with children having moderate developmental disabilities. Inherent in these designs, however, is the fact that generalization of results is limited and external validity must be established by repeated replications of studies. These factors would therefore be considered a limitation of this study.

Scheduling of Sessions

Most of the sessions for this study were conducted with the subjects after they had attended a full day of school. Only Jan came before school or in the morning on Saturday. Lucy occasionally came on Saturday, but had the majority of her sessions after school. This undoubtedly contributed to fatigue with at least 3 of the subjects in the study. It is of interest that the rate of redirections increased for all the

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subjects during the second segment of the session and that Jan, who had no sessions after school, had the lowest rate of redirections. She was, however, also the oldest student in the study. For these reasons it is difficult to make any statement regarding the level of engagement in relation to the experimental conditions, since fatigue clearly may have played a role in the subjects' behaviors.

<div align="center">The Speech-Language Pathologist's Role in Self-Determination Programming</div>

Speech-language pathologists have a long history of providing services to persons with disabilities across the life span. In addition they have championed the concept of interdisciplinary or team service provision for clients in order to facilitate transfer of intervention targets and comprehensive programming to meet the total needs of clients and their families. It is easy to see, then, how participation in self-determination programming would be a natural "fit" for the profession of speech-language pathology. The exact role of the SLPs participation in such programs has yet to be defined, however. Only very limited contributions to the literature in this area by SLPs has been made and only limited familiarity with self-determination programming is reported by SLPs (Kleinert, 2004). The case can be made though, that SLPs may be especially well suited as participants in the fostering of self-determined behaviors in students with developmental disabilities. Much of the observable behavior related to self-determination such as, choice and decision making, self-assertion, self-evaluation, and planning requires a clear means of communication. While colleagues in special education and vocational rehabilitation may initiate the actual programmatic aspects of self-determination in their daily programs, the SLP, as well as other related service providers such as occupational and physical therapists, is needed to provided the supportive skills necessary to evidence self-determination behaviors. In addition, we know that true interdisciplinary teams plan, support, and reinforce a core set of goals for a given client rather than focus on a single, narrow segment of behaviors. This study indicates that SLPs can support the practice of key self-determined behaviors without interfering with specific speech-language programming.

The expansion of such interdisciplinary programming for self-determination is needed, however. By embedding information regarding the importance of self-determination for students with disabilities in on-going training for graduate students in speech-language pathology or communication disorders, entry

level clinicians will be ready to participate in self-determination programs and foster the skills that have been shown to support improved life outcomes for persons with developmental disabilities (Wehmeyer & Garner, 2003; Wehmeyer & Schalock, 2001; Wehmeyer & Schwartz, 1998). Interdisciplinary practica and research experiences for graduate students in speech-language pathology, special education and vocational rehabilitation would also better prepare new SLPs for their role in fostering a higher quality of life for their clients within an interdisciplinary framework.

<div align="center">Future Research</div>

The analysis of this study has produced several avenues for further research. The primary areas for future research are as follows.

Self-Determination Skills and Speech-Language Intervention

This study was designed to determine if certain self-determination behaviors could be included and reinforced within speech-language intervention sessions without disrupting on-going instruction in language development. Results indicate that this can be done. Data from this particular study, however, were not collected regarding the possible acquisition of the self-determined behaviors which were reinforced within the SD condition. These behaviors included: choice-making, planning, scheduling and self-evaluation. These skills areas were selected as components of the SD condition because they are the skills most frequently cited and studied in the literature on self-determination and developmental disabilities. This can be seen by reviewing Tables 1.1 and 1.2. Future research should be conducted to determine if such skills can actually be taught or at least increased within speech-language intervention sessions. Such studies should include only one of these self-determination behaviors at a time to determine which, if any, can successfully be increased within speech-language sessions. Given the importance of self-determination, such research should focus on systematic measurement of those component behaviors students with disabilities already possess and the degree to which SLPs can successfully increase or develop self-determination behaviors. Research regarding the most efficient manner in which to include self-determination skills within an SLP program should also be completed so that school-based SLPs are provided a model of effective intervention in this area.

Developing a Base of Evidence

It would be useful to replicate this study with students having other types of developmental disabilities and students of varying ages. If this were done, the study should control for fatigue by avoiding scheduling sessions after school, or by completing only one condition per day, thus reducing the length of the sessions to less than 30 minutes, but increasing the frequency to 4 rather than 2 days per week. This could be done by seeing the students in their school setting, rather than in a clinic setting and would therefore offer greater opportunities especially for generalization probes across environments and individuals. In light of the already overwhelming demands on public school SLPs, it will be important to have evidence of the effectiveness of incorporating elements of self-determination into existing language programs, *and* evidence which indicates that such programming additions do not impede the progress of students.

Use of Self-Evaluation in Language Interventions for Students with Developmental Disabilities

Self-evaluation is a primary element emphasized in programs for self-determination for students with developmental disabilities. A replication of the current study which includes only the addition of the self-evaluation task, rather than the full SD package, would be of interest in an effort to determine if self-evaluation increases the incidence of self-correction in probe, maintenance, and generalization responses. In addition, measuring the levels of generalization for targets with and without the use of self-evaluation would also be an important area of study, as our major goal in rehabilitation is to foster the greatest amount of independence possible in our clients. Generalization of new skills across environments is primary to the establishment and enhancement of independent functioning for students with developmental disabilities.

Training Formats for Older Students with Developmental Disabilities

A major area of interest which would contribute to the literature on communication intervention, developmental disabilities, and teaching strategies for middle and high school students with disabilities would be a comparison of the effectiveness and efficiency of teaching new skills via massed practice versus distributive practice versus a combination of the two. It is obvious from the age of the subjects in

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this study, that if such students were going to "pick up" these syntactic structures by exposure in their natural settings they would have done so after the many thousands of models which they had experienced by the ages of 7 or 10 or 13. All 4 students made unexpectedly rapid acquisition of their syntax targets when offered intervention which included massed practice of the target. We know, however, that generalization is less likely to occur when students receive only such structured intervention. It is interesting, even so, to note that all 4 subjects in this study did achieve a moderate level of generalization in a naturalistic activity during this study without the provision of distributive practice. Further research should be completed with older students with developmental disabilities to determine which style of intervention or combination of interventions result in the greatest gains and generalization of syntactic targets.

Determining Which Communication Abilities are Most Important to the Development of Self-Determined Behaviors for Students with Developmental Disabilities

The premise of this study was to begin to blend the areas of communication and self-determination. It can be posited that the more effective one's communication abilities, the greater the level of self-determination since so many skills included in self-determination, such as choice-making, self-assertion, self-evaluation, planning, etc., are expressed by some mode of communication. Which communication skills contribute the most to the development of self-determination has not been addressed. Research into this area would allow us to concentrate on such communication skills or their requisite behaviors with young children from the time of early intervention in order to enhance their movement toward a more self-determined life as an adult. In addition, information regarding the most supportive communication skills for the development of self-determination would aid in target selection for students with the most severe disabilities, who currently have the least number of opportunities to make choices or evidence some level of control over their own lives (Falvey, 1995; Kleinert et al., 2001).

Indeed the areas of communication and self-determination offer a broad expanse of possibilities for future research in order to enhance the quality of life for persons with developmental disabilities. It is

hoped that future research will focus on the blend of these two important elements in order to enhance the

independence of persons with developmental disabilities.

Appendix A

Assessment Instruments

Clinical Evaluation of Language Fundamentals-Fourth Edition (CELF-4), (Semel, Wiig, & Secord, 2003), was used to assess receptive and expressive language concepts, semantic and syntactic development. This instrument is appropriate for children and adolescents with language deficits and is considered a standard assessment tool in the area of speech and language development. The test includes a total of 10 sub-tests. The specific sub-sections included for this study were the ones specified in the instrument as pertaining to: core language (which includes receptive language and language content development); and those additional sub-tests which pertained to: expressive language; and language or sentence structure.

Developmental Sentence Score (DSS), (Lee, 1974), was completed on a 50 response language sample to determine the level of each student's spontaneous expressive use of English syntax. The DSS is a normed instrument which provides percentiles to determine a student's level of syntactic complexity.

Mean Length of Utterance (MLU), (Brown, 1973; Miller, 1981), was obtained on the 50 response language sample to determine each student's typical spontaneous utterance length. MLU is a count of the average number of morphemes used. Researchers have determined that MLU is a better guide for predicting the emergence of various syntactic and semantic forms in spoken language than is chronological age, since children vary in the actual *chronological age* at which they develop various syntactic and semantic forms, but are very similar in their length of *utterance* in developing such forms (Brown, 1973; Paul, 2001).

Test of Minimal Articulation Competence (T-MAC), (Secord, 1981) was used to assess each student's articulation abilities. This instrument is widely used with children and adults and provides a severity rating for speech intelligibility.

Oral Speech Mechanism Screening Examination-3 (OSMSE-3), (St. Louis & Ruscello, 2000), was used to assess oral motor structure and function with each subject.

Hearing Screening at 25dB for the frequencies 1000, 2000, and 4000 Hz was completed by a licensed audiologist. This test was used to assure that each participant's hearing acuity was within normal limits.

Interest Questionnaire for Parents was given to the parents of the subject at the first meeting. This questionnaire was used to collect information on the subjects' interests and favorite activities so that a menu of high interest materials was available for use during the treatment conditions. This questionnaire is found in Appendix B.

Interest Questionnaire for Students was completed with each subject to determine that subject's favorite activities in order to develop a menu of high interest materials to be used during the treatment conditions. This questionnaire is found in Appendix C. This was completed with the child at the end of the assessment session. If the child was 12 years of age or older, he/she also completed an Assent form to participate in the study.

Appendix B

Interest Questionnaire for Parents

It is very important that I have activities and materials that are of interest to your child when we meet for our sessions. Would you please complete the following questions about your child's favorite things? Please feel free to add any information that you would think helpful that I have not included.

Thank you,

Jane Kleinert, CCC

Date:

Child's Name:

Your relation to the child:

1. Please list your child's favorite classes at school:

   _____

   _____

2. Please list your child's favorite activities at home:

   _____

   _____

3. Please list your child's favorite foods:

   _____

   _____

4. Please list your child's favorite games:

   _____

   _____

5. Please list your child's favorite books:

   _____

   _____

6. Please answer the following questions with a YES or NO. If you answer YES, please expand a

   little on the answer. For example, if your child likes to cook, please name some favorite foods he

   likes to make/cook.

   Does your child enjoy:

   Cooking: _____

   Reading: _____

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Computers: _____

Painting: _____

Shopping: _____

Drawing: _____

Coloring: _____

Dancing: _____

Singing: _____

Acting: _____

Playing any type of music him/herself: _____

Listening to music: _____

Does he/she prefer tapes or CDs and what kind:

_____

"Writing" stories: _____

Taking pictures: _____

Making books: _____

Meeting new people and talking to them:

_____

Puzzles: _____

Pretend play: _____

Talk on the phone: _____

Watch videos: _____

Physical exercises: _____

Please list anything else that you can think of that you child might really enjoy doing during our

therapy sessions.

_____

_____

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_____

_____

_____

THANK YOU!!

Appendix C

Interest Questionnaire for Students

I want to know what you really like to do. First I'll name some different things to do and you tell me if you like them or not. If you do like them, I'll ask you to tell me more about doing these things. For example if you say you like to cook, I'll ask you what you like to cook. After we finish those questions, I'll ask you to tell me all you favorite things to do and I will write them down. OK?
 Let's get started.

I will name an activity or thing and if you like it, say "Yes." If you don't like it, say "No."

Subject ID _____   Date _____

Do you like: (If child says "yes," then ask follow-up questions)

1. Playing games: (What kind?") ___ yes ___ no

_____

_____

2. Coloring: (What do you like to color? What is your favorite color?) ___ yes ___ no

_____

_____

3. Drawing: (What do you like to draw?) ___ yes ___ no

_____

_____

4. Cutting things out: (What do you like to cut out?) ___ yes ___ no

_____

_____

5. Writing: (What do you like to write about?) ___ yes ___ no

_____

_____

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6. Reading: (What do you like to read? What are your favorite books? Who are your favorite characters)

___ yes ___ no

_____

_____

7. Making books: (What kind of books do you like to make?) ___ yes ___ no

_____

_____

8. Playing games: (What are your favorite games? What kind of games do you like? Do you like card

games, which ones? Do you like board games, which ones?) ___ yes ___ no

_____

_____

9. Do you like to cook? (What do you like to make?) ___ yes ___ no

_____

_____

10. Do you like to meet new people? (Do you like to talk to new people?) ___ yes ___ no

_____

_____

11. Do you like to talk on the phone? (Who do you like to call? Who do you like to talk to?) __yes ___

no

_____

_____

12. Do you like music? (What kind of music do you like? Do you like CDs? Do you like tapes? Do you

play any music? What do you like to play?) ___ yes ___ no

_____

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_____

_____

13. Do you like to act or pretend? (What would you like to pretend? What story would you like to act-

out? Who are your favorite characters?) ___ yes ___ no

_____

_____

14. Do you like to take pictures? ___ yes ___ no

_____

15. Do you like to paint? (What do you like to paint?) ___ yes ___ no

_____

16. Do you like to dance? ___ yes ___ no

_____

17. Do you like to exercise? (What exercises do you like to do?) ___ yes ___ no

_____

18. Do you like to sing? (What do you like to sing?) ___ yes ___ no

_____

19. Do you like puzzles? (What are your favorite puzzles?)___ yes ___ no

_____

20. What are your favorite things to do at home?

_____

_____

_____

21. What are your favorite things to do at school?

_____

_____

_____

22. What are your favorite things to eat?

_____

_____

_____

23. What are your favorite tapes to watch on TV?

_____

_____

24. What are your favorite computer games?

_____

_____

25. What is your FAVORITE thing to do in the whole world?

_____

_____

Appendix D

Scripts for the Instructional Sessions

Script for the initial session

*Clinician says: "*When you come to see me we will work on making your sentences longer. We will do lots of fun things when we work. We will do our work in two different ways."

"Sometimes when we work, I will pick two activities that we do and I will put their pictures on this board. The one on top we will do first, then the next one. We will call this 'Jane's turn.'"
Sometimes, you will pick two activities that we will do and put their pictures on this board. You will put the one you want to do first on top and the next one underneath. We will call this '<u>child's name's</u> turn.'"

"Every time you come, we will work for a little while and then take a break. We might go for a walk, have a snack, or play a game. When we come back, we will work for a few more minutes."

"When you come, we will work on making you sentences longer when you talk. You need to work on using the words '<u>name the two syntax targets.</u>' When we are working, sometimes I'll tell you if you said the right words and sometimes you will tell me."

"I think we will have a lot of fun when you come!"

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Script for each intervention session

Clinician greets subject.

"You remember that we will do two short sessions to work on making your sentences/words longer when you talk. We will work on one kind of sentence first, then take a break, and then come back and work on the other kind of sentence." The clinician will show the subject a simple schedule chart with a card (picture and printed words) representing the day's first target, then a picture with printed words representing "break-time" and then a card representing the second target (picture and printed words.)
You remember that sometimes you will help me choose our activities and plan the schedule and you will tell me if you think you used your words correctly. We will call that "subject's name's turn."
"Sometimes I will pick our games, plan our schedule and tell you if you used the right words. We will call that "Jane's turn.""
"Are you ready?" "Let's get started."

Script for the beginning of each CD segment

"This time when we work, it will be Jane's turn."
Clinician places two orange colored activity pictures with print labels on the table. She takes the schedule board and says, "First we will do _____ and then we will do _____. Then we will take our break," (or go home depending on the order of the sessions for that day.) During the session, the clinician will check off a box beside the activity card after completion of each reinforcing activity time so that the subject knows when the activities will be switched.

Specific instructional sequence for CD condition

1. "First we will work on your syntax target sentences. They sound like this." The clinician presents 10 stimulus pictures one at a time and models correct syntactic forms.
2. Mand-Model approach. The clinician presents a picture card depicting the syntax target and mands using a direction which specifically targets the subject's syntactic target (e.g., "Tell me about this picture," "Tell me what the boy did,"). The clinician waits up to 5 seconds for the subject to respond.
3. If the subject correctly responds within five seconds, the clinician says: "Yes, you said child's correct response. Good job."
4. If the subject does not produce the correct syntax target within five seconds, the clinician repeats the subject's response with a question inflection and says, "No, tell me correct model." The clinician waits for 5 seconds for the subject to respond.
5. Subject attempts to imitate the correct model. If the subject correctly imitates the model, the clinician says "Good job." If the subject incorrectly imitates the model or does not respond the clinician says, "OK."
6. Level of modeling: The clinician's model for each daily segment will be based on a graded level of modeling of the correct syntactic form. The decision for the level of modeling to be used will be based upon the previous day's probe of 10 trials which will be conducted at the end of each treatment segment. Levels of model are as follows:
> Level 1: If probe indicates that subject produces 20% or less correct responses, the model phrase is given twice with the target syntactic form stressed vocally, e.g., "No, tell me, HE is walking, HE is walking." Capitalization denotes voice stress on that word.
> Level 2: If probe indicates that subject produces 21%-50% correct responses, the model phrase is given once with the target syntactic form stressed vocally, e.g., "No, tell me, HE is walking."

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Level 3: If the probe indicates that the subject produces above 50% correct responses, the model phrase is given once with no stress on the target syntactic form, (e.g., "No, tell me, 'He is walking'"). This phase is used until probes indicate criterion level has been reached.

7. After 15 instructional trials, the activity is changed to the next scheduled activity on the schedule board. The above process is repeated.

Probe phase for CD segment

Immediately after the instructional phase of the segment has been completed, a 10 trial probe is completed. The clinician presents each of the 10 stimulus pictures which were used in baseline sessions, one at a time and uses the mand, selected for the specific syntactic structure (e.g., "Tell me about the picture," or "Tell me what he did.") The clinician waits five seconds for the subject to respond. The subject's responses are recorded as a (+) for a correct response, or a (-) for an incorrect response or no response on the daily data sheet.

When the probe is completed, the subject and clinician take a break or subject goes home, depending on the order of the session for that day.

Script for the beginning of each SD segment

"This time when we work, it will be subject's name's turn."

The clinician then places four green-colored activity pictures with print labels on the table and says, "You are going to choose the activities we do this time. You can pick two of these activities to do now." The student chooses two of the four activity pictures.

Then the clinician says, "Now you can plan our schedule. Which activity do you want to do first?" The subject indicates which activity he/she chooses to do first. The subject then places that picture on the schedule board in the first spot. The clinician says, "What will we do next?" The student then places the second activity on the schedule board under the first activity. The clinician says, "OK, so first we will do _____ and then we will do _____. You made a plan." "You will also tell me if you think your word was right or not."

The clinician then explains the syntax target for this condition and provides 10 models.

The subject and clinician then complete 15 instructional trials for the syntax target and then switch to the next scheduled activity and complete 15 more instructional trials. The clinician will check off a box beside the activity card after completion of each reinforcing activity time so that the subject knows when the activities will be switched

Specific instructional sequence for SD condition

1. Clinician presents a picture card depicting the syntax target and mands using the specific mand selected for that syntactic target (e.g., "Tell me about this picture," "Tell me what they boy did.") The clinician waits five seconds for the subject to respond.

2. After the subject's response, the clinician repeats the subject's response and asks, "Was that right?"

3. If the subject used the correct syntax form and correctly judged the production as correct, the clinician scores the self-evaluation response as (+) and says, "Yes, you said correct response. Good job." If the student misjudges his or her correct answer, does not respond or says "I don't know," the clinician scores the self-evaluation response as (-) and says, "Oh, you did say it right. You said, _____. Good job."

3. If the subject does not produce the correct syntax target the clinician repeats the subject's response and asks the subject, "Was that right?" The clinician waits up to 5 seconds for the subject to respond. If the subject correctly judges his response to be incorrect, the clinician scores the self-evaluation as (+) and says, "It was not right, was it. Tell me correct response." If the student judges his/her incorrect response to have been correct, does not respond or says "I don't know," the clinician scores the self-evaluation response as (-) and says, "Oops, no, Tell me, correct response."

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4. The subject attempts to imitate the correct model. If the subject correctly imitates the model, the clinician says, "Good job." If the subject incorrectly imitates the model or does not respond, the clinician says, "OK."

5. Level of modeling: The clinician's model for each daily segment will be based on a graded level of modeling of the correct syntactic form. The decision for the level of modeling to be used will be based upon the previous day's probe of 10 trials which will be conducted at the end of each treatment segment. Levels of model are as follows:

Level 1: If probe indicates that subject produces 20% or less correct responses, the model phrase is given twice with the target syntactic form stressed vocally. E.g., "No, tell me, HE is walking, HE is walking." (Capitalization denotes voice stress on that word.)

Level 2: If probe indicates that subject produces 21%-50% correct responses, the model phrase is given once with the target syntactic form stressed vocally, e.g., "No, tell me, 'HE is walking.'"

Level 3: If the probe indicates that the subject produces above 50% correct responses, the model phrase is given once with no stress on the target syntactic form. E.g., "No, tell me, He is walking." This phase is used until probes indicate criterion level has been reached.

After 15 trials, the activity is changed to the next scheduled activity on the schedule board. The above process is repeated.

Probe phase for SD segment

Immediately after the instructional phase of the session has been completed, a 10 trial probe is completed. The clinician presents each of the 10 stimulus pictures, one at a time and uses the appropriate mands for the syntactic target (e.g., "Tell me about the picture," or "Tell me what the boy did.") The clinician waits five seconds for the subject to respond. The subject's responses are recorded as a (+) for a correct response, or a (-) for an incorrect response or no response on the daily data sheet.

When the probe is completed, the subject and clinician take a break or subject goes home, depending on the order of the session for that day.

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Appendix E

Procedural Reliability

Procedural Reliability for CD Condition- Materials   Subject ID:

Date/ Session No.	Tape on	Materials		2 activity cards	Schedule board	Activity 1		Activity 2	
		Probe sheet	10 Probe cards			15 stimulus cards	Materials for the activity	15 stimulus cards	Materials for the activity

Procedural Reliability for SD Condition- Materials   Subject ID:

Date/ Session No.	Tape on	Data Sheets		4 activity cards	Schedule board	Activity 1		Activity 2	
		Probe sheet	10 probe cards			15 stimulus cards	Materials for the activities	15 stimulus cards	Materials for the activities

Procedural Reliability for **CD Activity 1**   Subject ID:

Date/ Session No. Trials **activity after each 5 trials**	Explain Turns	Label condition	2 reinforcing activities presented	Clinician places activity cards on schedule board in order	C. labels and explains target and provides 10 models	C. shows card and mands,	Depending on the Subject's response, the Clinician says, +, Yes, you said ___, "Good Job"	-, Repeat with question inflection, No, tell me model
Reliability								
1								
2								
3								
4								
5								
activity								
6								
7								
8								
9								
10								
activity								
11								
12								
13								
14								
15								
activity								

Procedural Reliability for **CD Activity 2**   Subject ID:

Date/ Session No.	Explain Turns	Label condition	2nd reinforcing activity presented	Clinician places activity cards on schedule board in order in which they will occur	C. provides 10 models	C. shows card and mands,	Depending on the Subject's response, the Clinician says,	
Trials for activity 1 **activity after each 5 trials**	**NA**	**NA**		**NA**	**NA**		+, Yes, you said ___, "Good Job"	-, Repeat with question inflection, No, tell me <u>model</u>
Reliability								
1								
2								
3								
4								
5								
activity								
6								
7								
8								
9								
10								
activity								
11								
12								
13								
14								
15								
activity								

Procedural Reliability for **SD Activity 1**, P. 1.   Subject ID:

Date/ Session No.	Explain Turns	Label condition	4 choices of activities presented	Subject places activity cards on schedule board in order in which they will occur	C. C. labels and explains target and provides 10 models	C. shows card and mands,	Depending on the Subject's response, the Clinician says,				
Trials for activity 1 **activity after each 5 trials**			Subject selects 2				+ or - C. repeats S. response and asks, "Is that right?"	S's response + and eval. +: C. says: Yes, you said ___, Good job.	S's response + and eval -: C. says, Oh, you did say it right. You said ___, Good job.	S's response --, and eval. +: C. says "It was not right, was it. Tell me _____."	S's response --, and eval. -: C. says, "Oops, no. Tell me, _____."
Reliab.											
1											
2											
3											
4											
5											
activity											
6											
7											

Procedural Reliability for **SD Activity 1**, P. 2. Subject ID:

Date/ Session No. Trials for activity 1 **Stop after each 5 trials for activity**	Explain Turns	Label condition	4 choices of activities presented Subject selects 2	Subject places activity cards on schedule board in order in which they will occur	C. provides 10 models	C. shows card and mands,	Depending on the Subject's response, the Clinician says,				
							+ or - C. repeats S. response and asks, "Is that right?"	S's response + and eval. +: C. says: "Yes, you said ___, Good job."	S's response + and eval -: C. says, "Oh, you did say it right. You said ___, Good job."	S's response --, and eval. +: C. says "It was not right, was it. Tell me _____."	S's response -- , and eval. -: C. says, "Oops, no. Tell me, _____."
8											
9											
10											
activity											
11											
12											
13											
14											
15											
activity											
Total											

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Procedural Reliability for **SD Activity 2,** P. 1.   Subject ID:

Date/ Session No.	Explain Turns	Label condition	4 choices of activities presented	Subject places activity cards on schedule board in order in which they will occur **NA**	2nd rein-forcing activity introduced	C. shows card and mands,	Depending on the Subject's response, the Clinician says,				
Trials for activity no. 2 **Activity after each 5 trials**	**NA**	**NA**	Subject selects 2 **NA**				+ or - C. repeats S. response and asks, "Is that right?"	S's response + and eval. +: C. says: "Yes, you said ___, Good job."	S's response + and eval -: C. says, "Oh, you did say it right. You said ___, Good job."	S's response --, and eval. +: C. says "It was not right, was it. Tell me _____."	S's response --, and eval. -: C. says, "Oops, no. Tell me, _____."
Reliab.											
1											
2											
3											
4											
5											
activity											
6											
7											

Procedural Reliability for **SD Activity 2,** P. 2.   Subject ID:

Date/ Session No.	Explain Turns	Label condition	4 choices of activities presented	Subject places activity cards on schedule board in order in which they will occur **NA**	C. provides 10 models	C. shows card and mands,	Depending on the Subject's response, the Clinician says,				
Trials for activity 2 **Stop for activity after each 5 trials**	**NA**	**NA**	Subject selects 2 **NA**		**NA**		+ or - C. repeats S. response and asks, "Is that right?"	S's response + and eval. +: C. says: "Yes, you said ___, Good job."	S's response + and eval -: C. says, "Oh, you did say it right. You said ___, Good job."	S's response --, and eval. +: C. says "It was not right, was it. Tell me _____."	S's response --, and eval. -: C. says, "Oops, no. Tell me, _____."
8											
9											
10											
activity											
11											
12											
13											
14											
15											
activity											
Total											

129

Appendix F: Data Collection Sheets

Data Sheet for Probes   Subject ID: Condition: SD   CD (circle one)

Date/Session No.	Card and Mand	Response	Agreement (reliability)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total			
Date			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total			

Data Sheet for Baseline   Subject ID:

Date/Session No.	Target: 1	Response
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		
Date		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		

Data Sheet for Baseline   Subject ID:

Date/ Session No.	Target: 2	Response
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		
Date		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		

132

Data Sheet for Receptive Comprehension of Picture Stimuli   Subject ID: P. 1

Date	Stimulus Word	Response	Target No.
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
Total			

133

Subject Self-Evaluation	Subject ID:	P 1.	
Date/Session No.	Target	Target Response +/-	Self-Evaluation +/-
Activity 1			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
Total			
Activity 2			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
Total			

Data Sheet for Redirection Counts   Subject ID:

Date/Session No.	CD condition	Total/no. of minutes = rate	SD condition	Total/ no. of minutes = rate

135

Appendix G

Listings of the 30 Exemplars and Baseline Words for Each Student

Student 1: Jan
Target 1: CD condition
Possessive Morpheme "s" + noun

1. Yayoo's (birthday)
2. Dad's (shirt)
3. Drew's (tie)
4. Kate's (hat)
5. Matthew's (trophy)
6. Mom's (lipstick)
7. man's (belt)
8. Fireman's (coat)
9. Grandma's (chair)
10. Mickey's (gloves)
11. cat's (spots)
12. Tigger's (tummy)
13. duck's (beak)
14. lion's (mane)
15. boy's (shoes)
16. dog's (bone)
17. clown's (banana)
18. doctor's (light)
19. snowman's (hat)
20. king's (crown)
21. teacher's (desk)
22. farmer's (hoe)
23. baker's (bread)
24. mailman's (bag)
25. rabbit's (ear)
26. Jane's (hand)
27. painter's (brush)
28. girl's (hair)
29. baby's (bed)
30. Belle's (books)

Baseline word for Target 1
1. painter's brush
2. doctor's light
3. Belle's books
4. Grandma's chair
5. Yayoo's birthday
6. girl's hair
7. mailman's bag
8. cat's spots
9. fireman's coat
10. farmer's hoe

Target 2: SD condition
"I" + verb

1. I hug
2. I play
3. I brush
4. I hit
5. I catch
6. I scream
7. I read
8. I stand
9. I write
10. I draw
11. I color
12. I paint
13. I blow
14. I eat
15. I drink
16. I stir
17. I tear
18. I pour
19. I hide
20. I cook
21. I exercise
22. I watch
23. I dance
24. I talk
25. I cry
26. I sleep
27. I open
28. I wave
29. I clean
30. I sit

Baseline words for Target 2
1. I pour
2. I color
3. I play
4. I drink
5. I catch
6. I hide
7. I tear
8. I brush
9. I write
10. I stir

Student 2: Lucy
Target 1 CD Condition
Possessive Morpheme "s" + noun

1. Rabbit's ears
2. Jane's hand
3. bear's head
4. Tigger's tummy
5. boy's shoes
6. farmer's hoe
7. teddy's foot
8. duck's beak
9. teacher's desk
10. lion's mane
11. doctor's light
12. king's crown
13. clown's banana
14. mailman's bag
15 painter's brush
16. baby's bed
17 Grandma's chair
18. dog's bone
19. snowman's hat
20. Belle's books
21. Mickey's gloves
22 lady's scarf
23. baker's bread
24. cat's spots
25. policeman's stick
26. penguin's nose
27. horse's tail
28. witch's boot
29. Dad's coffee
30. Anne's box

Baseline and Probe Words

1. Jane's hand
2. witch's boots
3. boy's shoes
4. clown's banana
5. doctor's light
6. king's crown
7. grandma's chair
8. mailman's bag
9. teddy's paw
10. Mickey's gloves

Target 2: SD condition
"ed" morpheme for past tense + verb
1. bowled

2. bounced
3. waved
4. ironed
5. popped
6. brushed
7. opened
8. kicked
9. tied
10. combed
11. picked
12. played
13. raced
14. washed
15. dropped
16. barked
17. looked
18. worked
19. skied
20. cooked
21 talked
22. hopped
23. watered
24. climbed
25. jumped
26. mailed
27. fished
28. painted
29. poured
30. cried

Baseline and Probe words for past tense "ed" + verb
1. washed
2. cried
3. worked
4. bowled
5. waved
6. painted
7. brushed
8. kicked
9. mailed
10. opened

Student 3: Tom
Target 1 CD Condition
Past tense morpheme "ed" + verb
1. poured
2. climbed
3. cried
4. painted
5. mailed
6. jumped

7. fished
8. hopped
9. talked
10. cooked
11. skied
12. raced
13. waved
14. worked
15. looked
16. barked
17. dropped
18. washed
19. played
20. picked
21. tied
22. combed
23. kicked- deleted due to poor intelligibility. Changed to climbed
24. opened
25. brushed
26. popped
27. ironed
28. bounced
29. bowled
30. watered

Baseline and Probe words

1. picked
2. poured
3. cooked
4. washed
5. raced
6. fished
7. kicked- deleted due to poor intelligibility. Changed to climbed
8. hopped
9. dropped
10. played

Target 2: SD condition
Possessive morpheme "s" + noun

1. duck's beak
2. boy's shoes
3. Tigger's tummy
4. girl's bow
5. lady's scarf
6. fireman's coat
7. nurse's shot
8. bear's head
9. teddy's foot
10. Daddy's tie

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11. Jane's hand
12. penguin's nose
13. cat's ears
14. dog's bone
15. doctor's light
16. teacher's desk
17. policeman's stick
18. clown's banana
19. mailman's bag
20. lion's mane
21. king's crown
22. man's bread
23. Grandma's chair
24. turtle's shell
25. Witch's boots
26. Horse's tail
27. Snowman's hat
28. Mickey's gloves
29. Belle's books
30. Baby's bed

Baseline and Probe Words

1. man's bread
2. cats ears
3. lady's scarf
4. girl's bow
5. boy's shoes
6. snowman's hat
7. baby's bed
8. lion's mane
9. mailman's bag
10. clown's banana

Subject 4
Target 1 CD Condition
First person pronoun "I" + verb

1. I watch
2. I play
3. I blow
4. I pour
5. I brush
6. I sleep
7. I dance
8. I comb
9. I talk
10. I exercise
11. I pat
12. I hide
13. I catch

14. I work
15. I tear
16. I draw
17. I color
18. I wipe
19. I read
20. I write
21. I tie
22. I kiss
23. I eat
24. I paint
25. I drink
26. U hug
27. I wave
28. I clean
29. I sit
30. I open

Baseline and Probe Words

1. I paint
2. I work
3. I pour
4. I sleep
5. I talk
6. I tie
7. I drink
8. I eat
9. I brush
10. I roll

Target 2: SD Condition
Plural morpheme "s" + noun

1. bears
2. trees
3. shoes
4. bikes
5. cakes
6. kites
7. cups
8. drums
9. cats
10. cows
11. lamps
12. ducks
13. dogs
14. houses
15. coats
16. chairs
17. eyes

18. balls
19. apples
20. trucks
21. girls
22. boys
23. beds
24. cars
25. tables
26. spoons
27. hats
28. books
29. cookies
30. boats

Baseline and Probe Words
1. cars
2. hats
3. apples
4. tables
5. boys
6. balls
7. lamps
8. kites
9. cookies
10. eyes

Student 1: Jan

Miniature Basketball
Addressing Valentines to Friends
Playing Teacher: child role played being teacher
Reading a Clifford book
Taking pictures with a camera
Playing "Go Fish" card game
Writing a story
Making a book about a favorite topic
Coloring, cutting and pasting
Eating Pretzels

Student 2: Lucy

Playing "Old Maid" card game
Coloring in a Clifford book
Pretend "Picnic with Barbie"
Painting
Playing Candy Land
Addressing Valentines to Friends
Reading books
Pretend phone conversations (This was substituted for taking pictures with a camera which proved to be too distracting for the subject.)
Making a book about friends or favorite characters
Playing Teacher: child role played being teacher

Student 3: Tom

Playing with cars (this was substituted for playing Nerf Basketball which proved to be too distracting for the subject)
Hide and Seek with a flashlight
"Trouble" board game
"Connect 4" game
Sponge Bob card game
Reading books
Addressing Valentines to friends and family
Coloring
Puzzles
Pretend phone conversations

Student 4: Joe

Making a train
Addressing Valentines to family and friends
Painting
Reading a book
Pretend phone conversations (This was substituted for Nerf Basketball which proved to be too distracting for this child.)
Spiderman sticker game

Coloring
Making a Spiderman book
Board games
Eating pretzel

Parental Informed Consent/Authorization Form for Child to Participate In the Study:
A Comparison of Syntax Training for Students with Developmental Disabilities Utilizing a
Clinician-Directed versus a Self-Determined Instructional Paradigm

WHY IS MY CHILD BEING INVITED TO TAKE PART IN THIS RESEARCH?

Your child is being invited to take part in a research study to:
1). To determine if language therapy (specifically for syntax or grammar development) which includes the self-determination (selected by your child) elements of choice-making, helping in planning the daily session and evaluating his/her responses in language therapy sessions, is as effective or more effective as traditional language therapy in which the clinician directs the entire session.
2). To determine if children are more attentive to tasks in language therapy session which include elements of self determination.

WHO IS DOING THE STUDY?

The person in charge of this study is Jane Kleinert, CCC in the Rehabilitation Sciences Department of the University of Kentucky. The supervisor of the study is Dr. Lori Gonzalez, Professor in the Department of Rehabilitation Sciences at the University of Kentucky.

WHAT IS THE PURPOSE OF THIS STUDY?

Self-determination is an important ability for all people but especially important for students with developmental disabilities. Self-determination simply means that people have some control over the decisions which affect them. Too often students with disabilities are not allowed to make choices, help plan their schedules, participate in decision making, evaluate and revise their choices and actions. Authorities in special education and developmental disabilities stress that these are important skills for people with disabilities. Self-determination is also purported to increase a student's intrinsic (internal) motivation. It is important that all individuals who work with students with disabilities are aware of the principles of self-determination and help students learn to use these skills in a variety of settings. This study is designed to determine if using principles of self-determination can be completed by speech-language pathologists within the language therapy setting, if such sessions are as effective as traditional language therapy alone and if students are more attentive to tasks during sessions which include opportunities for self-determination.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?

The study will be conducted at the Communication Disorders Clinic of the University of Kentucky. If you are unable to transport your child to the Clinic, I will come to your home to complete the study. We will complete two language therapy sessions per week until your child accomplishes his/her syntax (grammar) goals which should take about 6-10 weeks.

WHAT WILL MY CHILD BE ASKED TO DO?

Your child will receive a full speech/language assessment conducted by a Communication Disorders graduate student and directly supervised by the researcher who is a licensed/certified speech-language pathologist with 30 years of pediatric experience. The results of the assessment will be analyzed by the researcher to determine if your child would benefit from language therapy which addresses syntax (grammar) development. Two syntax (grammar) objectives will be selected with your approval. Then, one objective will be taught using traditional language therapy techniques and one will be taught using the same techniques plus the inclusion of self-determination elements within the session. Specifically these will include: the opportunity to choose which reinforcing activities we will play in between work on their objectives and the order in which these activities will be completed. In addition the student will be asked to evaluate his/her responses during this session as correct or incorrect. All the intervention sessions will be conducted by the researcher. I will see each student two times per week for about 60 minutes each time. One half of the session will completed with traditional language therapy and one half will be the self-determination-based therapy. You and your child will also be asked to complete a short survey about his/her favorite activities so that we can use this information to select the reinforcing activities we uses during the sessions order to assure the student's interest in the activities used during the sessions.

ARE THERE REASONS WHY MY CHILD SHOULD NOT TAKE PART IN THIS STUDY and WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?

To the best of my knowledge, the things your child will be doing have no more risk of harm than he/she would experience in everyday life. There should be no more risk than your child would experience by attending speech-language therapy in any school or clinic setting. You may choose to withdraw your child from this study at any time.

WILL I BENEFIT FROM TAKING PART IN THIS STUDY?

Your child will receive a full speech-language assessment and high quality language therapy two times per week at no cost to you and the goals of the sessions will be specific to the needs of your child.

DO YOU HAVE TO TAKE PART IN THE STUDY AND IF YOU DON'T WANT TO TAKE PART IN THE STUDY, ARE THER OTHER CHOICES?

Participation in this study is completely voluntary. If you do not want your child to be in the study, he or she does not have to participate. You can withdraw your child from the study at any time.

WHAT WILL IT COST MY CHILD TO PARTICIPATE?

There are no costs involved with taking part in this study. The researcher will pay for any parking costs if you come to the University of Kentucky Communication Disorders Clinic.

WILL MY CHILD RECEIVE ANY PAYMENT OR REWARDS FOR TAKING PART IN THE STUDY?

Your child will not receive any payment or reward for taking part in this study.

WHO WILL SEE THE INFORMATION ABOUT MY CHILD?

Your child's information will be combined with information from other people taking part in the study. When I write about the study to share it with other researchers, your child will not be identified in the written material. Your name, your child's name or identifying information will never be used in any write-up or publication of our results of the study or of the initial assessment of your child. Children will be referred to only as: Subject 1, 2, 3, or 4.

All information about your child will be kept confidential and seen only by the researcher and my supervisor who will observe some of our sessions and review the data from assessments and language therapy sessions. The assessment data will be seen only by the graduate student who conducts the assessment, the researcher and my supervisor. The assessments are for the purpose of this study only. All the sessions will be video taped so that we can review the tapes for data collection and reliability data. Only Jane Kleinert and Dr. Lori Gonzalez will see the tapes unless specific permission is given by you. You should be aware that there are some circumstances in which I may have to show your child's information to other people. This would include: The Office of Research Integrity/Institutional Review Board, who oversees all research at the University of Kentucky.

With your permission, I would like to keep the tapes after this study is completed in order to use their data for further research on student engagement (participation) differences when the Self-Determination model is used in therapy. I will keep the tapes in my possession, in a locked drawer and will be the only person with access to them. I will obtain your permission for their use again when I begin that study. I hope to begin that study in the summer of 2005.

WILL THERE BE ANY OTHER INFORMATION GATHERED ABOUT MY CHILD?
With your permission, I will talk to your child's current Speech-Language Pathologist to let him/her know the objectives we are targeting in our sessions, so that we do not overlap with your child's current language therapy goals. In addition, with your permission, I will review your child's most recent cognitive testing results as part of his/her assessment history.

CAN MY CHILD'S TAKING PART IN THE STUDY END EARLY?

If you give permission for your child to take part in the study, you still have the right to later decide at any time that you no longer want your child to continue. Participation in the study is completely voluntary.

WHAT HAPPENS IF MY CHILD GETS HURT OR SICK DURING THE STUDY?
If your child needs to end any session before its completion, we can reschedule at another time, or simply wait until the next scheduled sessions to continue the study.

WHAT IF I HAVE QUESTIONS?

Before you decide whether to consent for your child to participate in the study, please ask any questions that might come to mind. Later, if you have questions about the study, you can contact the researcher, Jane Kleinert at 859-323-110 ext. 80568 or Dr. Lori Gonzalez at 859-323-1100 ext. 80560. If you have any questions about your rights as a research volunteer, contact the staff in the Office of Research Integrity at the University of Kentucky at 859-323-2446. In addition, since you will bring your child to the sessions, I will be able to answer your questions at any session. I will give you a copy of this consent form to take with you.

WHAT ELSE DO I NEED TO KNOW?

You will be told if any new information is learned which may influence your willingness to continue taking part in this study. I greatly appreciate your consideration.

_____

Signature of Both Parents or Legal Guardian Giving Consent for Child to   _____
Participate   Date

_____   _____

Name of Child for Whom Consent has been Obtained   Date

_____   _____

Signature of person agreeing to take part in the study
(son or daughter)   Date

_____   _____

Printed name of person taking part in the study   Date
(son or daughter)

_____   _____

Printed name of parents or legal guardian   Date

_____   _____

Signature of person obtaining informed consent   Date

Assent to Participate in the Research Study:
A Comparison of Syntax Training for Students with Developmental Disabilities Utilizing a Clinician-Directed versus a Self-Determined Instructional Paradigm

I _____ will be part of this study about learning language.

Being in this study will help to answer questions about what kinds of language therapy are helpful to children who need to make longer sentences. I will complete some speech and language tests. I will talk about my favorite things and Jane Kleinert will write down what I say. This will help her to pick activities and games which will be interesting for me when we work together. I will have language therapy two times each week for about an hour each. One part of the session will be like the language therapy I have had before and the other part will include making some choices and helping to plan the schedule of the session. Sometimes I will also be asked if my answers are right or not.

If I and my parents decide to be in this study, I will start working with Jane Kleinert at the University of Kentucky or at my house. If I or my parents do not want to be in the study, I do not have to be in the study.

All our sessions will be taped for Jane Kleinert and her teacher, Dr. Lori Gonzalez to look at later, but no one else will see those tapes unless my parents and I say that is all right. No one who reads about the study will ever be told my name. All the information about me will be private (that means no one but Jane Kleinert and Lori Gonzalez can see it).

As far as Jane Kleinert and Dr. Gonzalez know, being part of this study will not hurt me at all and I do not have to be in the study if I do not want to. I can stop being in the study later on if I want to. I have been given a copy of this paper about the study.

_____
_____   _____
Signature of participant in this study   Date signed

I have explained and defined in detail the research procedure in which the subject has consented to participate.

Principle Investigator (PI) _____

Name of Individual Who Provided
Explanation to the Subject if Different than the PI_____

References

Adelman, H., & Taylor, L. (1986). Summary of the survey of fundamental concerns confronting the LD field. *Journal of Learning Disabilities, 19*, 391-393.

Adelman, H., & Taylor, L. (1990). Intrinsic motivation and school misbehavior: Some intervention implications. *Journal of Learning Disabilities, 23*, 541-550.

Agran, M., Alper, S., Cavin, M., Sinclair, T., Wehmeyer, & Hughes, C. (2005). Using self-monitoring to increase following-direction skills of students with moderate to severe disabilities in general education. *Education and Training in developmental disabilities, 40*, 3-13.

Agran, M., Blanchard, C., Wehmeyer, M., & Hughes, C. (2002). Increasing the problem-solving skills of students with developmental disabilities participating in general education. *Remedial and Special Education, 23*, 279-288.

Agran, M., King-Sears, M. E., Wehmeyer, M., Copeland, S. (2003). *Student-directed learning.* Baltimore, MD: Paul Brookes.

Agran, M., Snow, K., & Swaner, J. (1999). Teacher perceptions of self-determination: Benefits, characteristics, strategies. *Education and Training in Mental Retardation and Developmental Disabilities, 34*, 293-301.

Algozzine, B., Browder, D., Karvonen, M., Test, D., & Wood, W. (2001). Effects of interventions to promote self-determination for individuals with disabilities. *Review of Educational Research, 71*, 219-277.

Alper, S., Schloss, P. J., & Schloss, C. N. (l995). Families of children with disabilities in elementary and middle school: Advocacy models and strategies. *Exceptional Children, 62*, 261-270.

Alpert, C., & Kaiser, A. (1992). Training parents as milieu language teachers. *Journal of Early Intervention, 16*(1), 31-52.

American Speech-Language-Hearing Association (2000). 2000 ASHA Schools Survey. Retrieved on 9-6-04 from http://www.asha.org/members/slp/schools/resources/schools_resources_data.htm

Bambara, L., & Koger, F. (1996). *Innovations: Opportunities for daily choice making*. Washington, DC: American Association on Mental Retardation.

Browder, D., & Bambara, L. (2000). Home and community. In M. Snell & F. Brown, *Instruction of students with severe disabilities, 5th Ed.,* (pp. 543-589). Columbus, OH: Merrill.

Brown, E., & Cohen, S. (1996). Self-determination and young children. *Journal of the Association for Persons with Severe Handicaps, 21*, 22-30.

Brown, F., Gothelf, C., Guess, D., & Lehr, D. (1998). Self-determination for individuals with the most severe disabilities: Moving beyond Chimera. *The Journal of the Association for Persons with Severe Handicaps, 23*, 17-26.

Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press.

Chapman, R. S. (1997). Language development in children and adolescents with Down syndrome. *Mental Retardation and Developmental Disabilities Research Reviews, 3,* 307-312.

Chapman, R., Hesketh, L., & Kistler, D. (2002). Predicting longitudinal change in language production and comprehension in individuals with Down syndrome: Hierarchical linear modeling. *Journal of Speech, Language & Hearing Research, 45*, 902-916.

Cohen, E. S. (2003). *Aging and self-determination*. Presentation for the Center for Self-Determination Symposium, Las Vegas, NV.

Cohen, M.W. (1986). Intrinsic motivation in the special education classroom. *Journal of Learning Disabilities 19*(5), 258-261.

Connell, P., Gardner-Gletty, D., Dejewski, J., & Parks-Reinick, L. (1981). Response to Courtright & Courtright. *Journal of Speech and Hearing Research, 24,* 146-148.

Cook, J., Terrell, S., & Jonikas, J. (2004). *Promoting self-determination for individuals with psychiatric disabilities through self-directed services: A look at federal, state and public systems as sources*

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of cash-outs and other fiscal expansion opportunities. Ann Arbor, MI: The Center for Self-Determination.

Cooper, K., & Browder, D. (2001). Preparing staff to enhance active participation of adults with severe disabilities by offering choice and prompting performance during a community purchasing activity. *Research in Developmental Disabilities, 22*(1), 1-20.

Courtright, J., & Courtright, I. (1979). Imitative modeling as a language intervention strategy: The effects of two mediating variables. *Journal of Speech and Hearing Research, 22,* 389-402.

Dev, P. C. (1997). Intrinsic motivation and academic achievement. *Remedial & Special Education, 18*, 12-20.

Dev, P. C. (1998). Intrinsic motivation and the student with learning disabilities. *Journal of Research and Development in Education, 31*(2), 98-108.

Dollaghan, C. (2004). Evidence-based practice myths and realities. *The ASHA Leader*, April, 13, 12.

Falvey, M. (1995). *Inclusive and heterogeneous schooling: Assessment, curriculum and instruction.* Baltimore: Paul Brookes.

Fey, M. (1986). *Language intervention with young children*. San Diego, CA: College-Hill Press, Inc.

Field, S. & Hoffman, A. (1996). *Steps to self-determination: A curriculum to help adolescents learn to achieve their goals*. Arlington, VA: Council for Exceptional Children.

Field, S., Martin, J., Miller, R., Ward, M., & Wehmeyer, M. (1998a). Self-determination for persons with disabilities: A position statement of the division on career development and transition. *Career Development for Exceptional Individuals, 21*(2), 113-128.

Field, S., Martin, J., Miller, B., Ward, M., & Wehmeyer, M. (1998b). *A practical guide for teaching self-determination*. Arlington, VA: Division of Career Development and Transition and Council for Exceptional Children.

Fowler, A., Gelman, R., & Gleitman, L. (1994). The course of language learning in children with Down syndrome. In H. Tager-Flusberg (Ed.), *Constraints on language acquisition: Studies of atypical children.* Hillsdale, NJ: Erlbaum.

Franklin, C., & Hopson, L. (2004). Into the schools with evidence-based practices. *Children & Schools, 26*(2), 67-70.

Giangreco, M. F., Cloninger, C. J., & Iverson, V.S. (1998). *Choosing outcomes and accommodations for children (COACH): A guide to educational planning for students with disabilities (2nd ed.).* Baltimore: Paul H. Brookes.

Goodman, K., (1986). *What's whole in whole language: A parent-teacher guide.* Portsmouth, NH: Heinenmann.

Gotfried, A. E. (1983). Intrinsic motivation in young children. *Young Children, 39*, 64-73.

Green, D., Sternbert, B., & Lepper, M. (1976). Overjustification in a token economy. *Journal of Personality and Social Psychology, 34,* 1219-1234.

Grossi, T. A., & Heward, W. L. (1998). Using self-evaluation to improve the work productivity of trainees in a community-based restaurant training program. *Education and Training in Mental Retardation and Developmental Disabilities, 33*, 248-263.

Guess, D., Benson, H., & Siegel-Causey, E. (1985). Concepts and issues related to choice-making and autonomy among persons with severe disabilities. *Journal of the Association for Persons with Severe Handicaps, 10* (2), 79-86.

Hart, B., & Risley, T. (1975). Incidental teaching of language in preschool. *Journal of Applied Behavior Analysis, 8*, 411-420.

Hart, B., & Risley, T. (1980). In vivo language intervention: Unanticipated general effects. *Journal of Applied Behavior Analysis, 13*, 407-32.

Holub, T., Lamb, P., & Bang, M.Y. (1998). Empowering all students through self-determination. In C. Jorgensen, *Restructuring high schools for all students: Taking inclusion to the next level* (p. 183-208). Baltimore: Paul Brookes.

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Horner, R., Carr, E., Halle, J., McGee, G., Odom, S. & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71,*165-179.

Hughes, C., Rung, L., Wehmeyer, M., Agran, M., Copeland, S., Hwang, B. (2000). Self-promoted communication book use to increase social interaction among high school students. *Journal of the Association for Persons with Severe handicaps, 25*, 153-166.

Johnson, P., Schuster, J., & Bell, J. (1996). Comparison of simultaneous prompting with and without error correction in teaching science vocabulary words to high school students with mild disabilities*. Journal of Behavioral Education, 6,* 437-458.

Jolivette, K. Stichter, J. P., & McCormick, K. (2002). Making choices-Improving behavior-Engaging in learning. *TEACHING Exceptional Children, 34*(3), 24-30.

Kleinert, H. (1987). Single and multiple print exemplar strategies in enhancing generalized sight word reading with students wit moderate retardation. Dissertation. University of Kentucky.

Kleinert, H., Denham, A., Groneck, B, Clayton, J., Burdge, M., Kearns, J., & Hall, M. (2001). Systematically teaching the components of self-determination. In H. Kleinert & J. Kearns, *Alternate assessment: Measuring outcomes and supports for students with disabilities* (pp. 93-133)*.* Baltimore, MD: Paul Brookes.

Kleinert, H., & Kearns, J. (2004). Alternate assessments. In F. Orelove, D. Sobsey, & Silberman (eds.), *Educating children with multiple disabilities: A collaborative approach* (4th Ed.) (pp. 115-149). Baltimore: Paul Brookes.

Kleinert, J. (2000). *Fostering communication skills for self-determination in young children.* Unpublished paper for RHB 701, University of Kentucky, Lexington, KY.

Kleinert, J. (2004*). Speech-language pathologists' knowledge of self-determination programs for students with disabilities*. American Speech-Language-Hearing Association Annual Convention, Philadelphia, PA.

Kumin, L., Councill, C., & Goodman, M. (1998). Expressive vocabulary development in children with Down syndrome. *Down Syndrome Quarterly, 3*, 1-7.

Kumin, L., Goodman, M., & Councill, C. (1996). Comprehensive speech and language intervention for school-aged children with Down syndrome. *Down Syndrome Quarterly, 1,* 1-8.

Kyngas, H. (1999). A theoretical model of compliance in young diabetics. *Journal of Clinical Nursing, 8*, 73-80.

Kyngas, H., Hentinen, M. Koivukangas, P., & Ohinmaa, A. (1996). Young diabetics' compliance in the framework for the mimic model. *Journal of Advanced Nursing 24*, 997-1005.

Lee, B. (2001). Funny Dolch words book #3. Brunswick, GA: Learning Abilities Books.

Lee, L. (1974). *Developmental sentence analysis*. Evanston, IL: Northwestern University Press.

Leonard, L. (1975). The role of nonlinguistic stimuli and semantic relations in children's acquisition of grammatical utterances. *Journal of Experimental Child Psychology, 19,* 346-357.

Light, J., & Binger, C. (1998). *Building communicative competence with individuals who use augmentative and alternative communication.* Baltimore: Paul Brookes.

Light, J., Binger, C., Ramsay, K., & Agate, T. (1999). Teaching partner-focused questions to individuals who use augmentative and alternative communication to enhance their communicative competence. *Journal of Speech, Language, and Hearing Research, 42*(1), 241-255.

Light, J., & Gulens, M. (2000). Rebuilding communicative competence and self determination for adults with acquired disabilities who require augmentative and alternative communication. In D. Beukelman, K. Yorkston, & J. Reichle (Eds.). *Augmentative and alternative communication for adults with neurogenic and neuromuscular disabilities* (pp. 137-179)*.* Baltimore, MD: Paul H. Brookes.

Lofman, P., Pelkonen, M., & Pietila, A. (2003). Evaluation of self-determination for patients with rheumatoid arthritis: Starting points for the development of nursing practice. *Hoitotiede, 15*(6), 264-76.

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Martin, J., & Marshall, L. (1995). ChoiceMaker: A comprehensive self-determination transition program. *Intervention in School and Clinic, 30*(3), 147-156.

Martin, J., Marshall, L., Maxon, L., & Jerman, P. (1997). *The ChoiceMaker self-determination curriculum.* Longmont, CO: Sopris West.

Malouf, J. C. (1983). Do rewards reduce student motivation? *School Psychology Review, 12,* 1-11.

McDonald, J. (1997). Language acquisition: The acquisition of linguistic structure in normal and special populations. *Annual Review in Psychology, 48*, 215-41.

Meng, A., & McConnell, S. (2002). Decision-making in children with asthma and their parents. *Journal of the American Academy of Nurse Practitioners, 14*(8), 363-371.

Duncan-Meyers, A., & Huebner, R.A. (2000). Relationship between choice and quality of life among residents in long-term-care facilities. *American Journal of Occupational Therapy. 54*, 504-508.

Miller, J. (1981). *Assessing language in children.* Boston, MA: Allyn & Bacon.

Miller, J. (1987). Language and communication characteristics of children with Down syndrome. In S. M. Crutcher (Ed.) *New perspectives in Down syndrome(* pp. 233-262.) Baltimore, MD: Paul H. Brookes.

Miranda-Linne, F., Melin, L. (1992). Acquisition, generalization, and spontaneous use of color adjectives: A comparison of incidental teaching and traditional discrete-trail procedures for children with autism. *Research in Developmental Disabilities, 13,*191-210.

Mirenda, P. (1999). Augmentative and alternative communication techniques. In J. Downing, *Teaching communication skills to students with severe disabilities.* Baltimore: Paul Brookes.

Moes, D. (1998). Integrating choice-making opportunities within teacher-assigned academic tasks to facilitate the performance of children with autism. *The Journal of the Association for Persons with Severe Handicaps, 23*, 319-328.

Mount, B., & Zwernik, K. (1989). *It's never too early- it's never too late: A booklet about personal futures planning.* Minneapolis: Minnesota Governor's Planning Council on Developmental Disabilities.

Oswald, L., & Lignugaris, B. (1990). The effects of incidental teaching on the generalized use of social amenities at school by a mildly handicapped adolescent. *Education & Treatment of Children, 13*, 142-153.

Patterson, R. (Ed.). (1991). *New expanded Webster's dictionary.* Miami, FA: P.S.I. & Associates, Inc.

Palmer, S., & Wehmeyer, M. (2003). Promoting self-determination in early elementary school: Teaching self-regulated problem-solving and goal-setting skills. *Remedial and Special Education, 24*(2), 115-126.

Paul, R. (2001). *Language disorders from infancy through adolescence* (2nd. ed.). St. Louis, MO: Mosby, Inc.

Pennell, R. L. (2001). Self-determination and self-advocacy: Shifting the power. *Journal of Disability Policy Studies, 11*(4), 223-227.

Prelock, P., & Panagos, J. (1980). Mimicry versus imitative modeling: Facilitating sentence production in the speech of the retarded. *Journal of Psycholinguistic Research, 9,* 565-578.

Price, L., Wolensky, & Mulligan, R. (2002). Self-determination in action in the classroom. *Remedial & Special Education, 23*(2), 109-116.

Reichle, J., Drager, K, & Davis, C. (2002). Using requests for assistance to obtain desired items and to gain release from nonpreferred activities: Implications for assessment and intervention. *Education and Treatment of Children, 25,* 47-67.

Reid, D., Parsons, M., Green, C., & Browning, L. (2001). Increasing one aspect of self-determination among adults with severe multiple disabilities in supported work. *Journal of Applied Behavior Analysis, 34*, 341-344.

Reiter, S., & Goldman, T. (1999). A programme for enhancement of autonomy in young adults with physical disabilities: The development of a realistic self-concept, individual perception of quality of life and the development of independent living skills. *International Journal of Rehabilitation Research, 22*(1), 71-7.

Rogers-Warren, A., & Warren, S. (1980). Mands for verbalization: Facilitating the generalization of newly trained language in children. *Behavior Modification, 4,* 23-245.

Rossetti, L. (2000). Communication intervention: Birth to Three (2nd ed.). San Diego, CA: Singular Publishing/Thomson Learning.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

Sackett, D. L., Strauss, S. E., Richardson, W. S., Robenberg, W., & Haynes, E. B. (2000). *Evidence-based medicine: How to practice and teach EBM*. New York: Churchill Livingstone.

Santos, R., & Lignugaris/Kraft, B. (1997). Integrating research on effective instruction with instruction in the natural environment for young children with disabilities. *Exceptionality, 7*, 97-129.

Schultz, G., & Switzky, H. (1990). The development of intrinsic motivation in students with learning problems. *Preventing School Failure*, 34(1), 14-21.

Secord, W., (1981). *Test of minimal articulation competence*. San Antonio, TX: Harcourt Assessment, Inc.

Semel, E., Wiig, E., & Secord, W. (2003) *Clinical evaluation of language fundamentals-Fourth edition.* San Antonio, TX: Harcourt Assessment, Inc.

Seybert, S., Dunlap, G., & Ferro, J. (1996). The effects of choice-making on the problem behaviors of high school students with intellectual disabilities. *Journal of Behavioral Education, 6*, 49-65.

Shriberg, L., & Kwiatkowksi, J. (1982). Phonological disorders II: A conceptual framework for management. *Journal of Speech and Hearing Disorders, 47*, 256-270.

Sigafoos, J., & Dempsey, R. (1992). Assessing choice making among children with multiple disabilities. *Journal of Applied Behavior Analysis, 25*, 747-55.

Sindelar, P. T., Rosenberg, J. S., & Wilson, R. J. (1985). An adapted alternating treatments design for instructional research. *Education and Treatment of Children, 8,* 67-76.

Singleton, D., Schuster, J., Morse, T., & Collins, B. (1999). A comparison of antecedent prompt and test and simultaneous prompting procedures in teaching grocery words to adolescents with mental retardation. *Education and Training in Mental Retardation and Developmental Disabilities, 34,*182-199.

St. Louis, K., & Ruscello, D. (2000). *Oral speech mechanism screening examination*. Austin, TX: Pro-Ed.

Stoel-Gammon, C. (1990). Down syndrome: Effects on language development. *ASHA, 32*, 42-44.

Stowitschek, J., Laitinen, R., Prather, T. (1999). Embedding early self-determination opportunities in curriculum for youth with developmental disabilities using natural teaching incidents. *Journal for Vocational Special Needs Education, 21*, 15-26.

Swinth, Y. (2000). The development of self-determination by students with disabilities: What is the role of occupational therapy? *School System Special Interest Section Quarterly, 7*(4), 41-44.

Phelps-Teresaki, D., & Phelps-Gunn, T. (1992). *Test of Pragmatic Language(TOPL)*. San Antonio, TX: Psychological Corporation.

Thoma, C., Nathanson, R., Baker, R., & Tamura, R. (2002). Self-determination: What do special educators know and where do they learn it? *Remedial & Special Education, 23*, 242-248.

Thoma, C.A., Rogan, P., & Baker, S. (2001). Student involvement in transition planning: Unheard voices. *Education and Training in Mental Retardation and Developmental disabilities, 36*, 16-29.

Thordardottir, E., Chapman, R., & Wagner, L. (2002). Complex sentence production by adolescents with Down syndrome. *Applied Psycholinguistics, 23*, 163-183.

Turnbull, A., & Turnbull, R. (2001). Self-determination for individuals with significant cognitive disabilities and their families. *Journal of the Association for Persons with Severe Handicaps, 26*, 56-62.

Valimaki, M., & Leino-Kilpi, H. (1998). Preconditions for and consequences of self-determination: The psychiatric patients' point of view. *Journal of Advanced Nursing, 27*(1), 204-212.

Warger, C. (1999). Early childhood instruction in the natural environment. *Eric Digests E591.*

Warren, S. (1998). Back to the future? *Journal of Early Intervention, 21*, 297-298.

Warren, S., McQuarter, R., & Rogers-Warren, A. (1984). The effects of mands and models on the speech of responsive language-delayed pre-school children. *Journal of Speech and Hearing Disorders, 49,* 43-52.

Waterman, A., Schwartz, S., Goldbacher, E., Green, G., Miller, C., & Philip, S. (2003). Predicting the subjective experience of intrinsic motivation: The roles of self-determination, the balance of challenges and skills, and self-realization values. *Personality and Social Psychology Bulletin, 29*(11), 1447-1458.

Wehmeyer, M. (1993/94). Self-determination: A means to an end. *IMPACT, 6* (4), 9.

Wehmeyer, M. (1995). *The Arc's self-determination scale.* Arlington, TX: The ARC of the United States.

Wehmeyer, M. (2003a). Self-determination, vocational rehabilitation, and workplace supports. *Journal of Vocational Rehabilitation, 19*(2), 67-70.

Wehmeyer, M. (2003b). *Overview of the self-determined learning model of instruction (support).* Presentation to the Kentucky Peer Service Project, Lexington, KY.

Wehmeyer, M., Agran, M., & Hughes, C. (1998). *Teaching self-determination to students with disabilities: Basic skills for successful transition*. Baltimore: Paul Brookes Publishing Co.

Wehmeyer, M., Agran, M., & Hughes, C. (2000). A national survey of teachers' promotion of self-determination and student-directed learning. *Journal of Special Education, 34*, 58-69.

Wehmeyer, M., Field, S., Doren, B., Jones, B., & Mason, C. (2004). Self-determination and student involvement in standards-based reform. *Exceptional Children, 70*, 413-425.

Wehmeyer, M., & Garner, N. (2003). The impact of personal characteristics of people with intellectual and developmental disability on self-determination and autonomous functioning. *Journal of Applied Research in Intellectual Disabilities, 16*, 255-266.

Wehmeyer, M., Palmer, S., Agran, M., Mithaug, E., & Martin, J. (2000). Promoting causal agency: The self-determined learning model of instruction. *Exceptional Children, 66*, 439-453.

Wehmeyer, M., & Sands, D. (1998). *Making it happen: Student involvement in education planning, decision making and instruction.* Baltimore, MD: Paul Brookes Publishing Co.

Wehmeyer, M., & Schalock, R. (2001). Self-determination and quality of life: Implications for special education services and supports. *Focus on Exceptional Children, 33*(8), 1-16.

Wehmeyer, M., & Schwartz, M. (1998). The relationship between self-determination and quality of life for adults with mental retardation. *Education and Training in Mental Retardation and Developmental Disabilities, 33*, 3-12.

West, M. (1996). Promoting self-determination for individuals with severe disabilities in employment services. In D. Sands & M. Wehmeyer (Eds.). *Self-determination across the life span: Independence and choice for people with disabilities.* Baltimore, MD: Paul H. Brookes.

GENERAL INFORMATION

Present Position: Coordinator of Recruitment and Distance Learning
Rehabilitation Sciences Doctoral Program Grant
College of Health Sciences
University of Kentucky
Lexington, KY

Date of Birth: December 1, 1951
Location: Louisville, KY

EDUCATION

1975	University of Washington, Master's of Speech Pathology and Audiology (MSPA)
1972	Bellarmine University, Bachelor of Arts, Speech and Hearing

SPECIALIZED TRAINING AND CERTIFICATION:

2004	Developmental Disabilities Certification, Interdisciplinary Human Development Institute, University of Kentucky
1997	KEIS-First Steps Assistive Technology Internship, Kentucky Early Intervention System
1996	Primary Service Coordinator Training, Kentucky Early Intervention System
1981	Neurodevelopmental Treatment Pediatric Training, Curative Rehabilitation Workshop, Milwaukee, WI.,

HONORS:

2005	Recipient, Special Dean's Scholarship from the University of Kentucky College of Health Sciences
2004-2005	Recipient, Academic Excellence Fellowship for Instate Tuition from The University of Kentucky Graduate School
1994 & 2000	Recipient, ACE Certificate (Award for Continuing Education) American Speech-Language-Hearing Association.
1998	Recipient, Kentucky's Clinical Achievement Award
1998	Kentucky Nominee for the American-Speech-Language-Hearing Foundation DiCarlo Award
1990	Member, Kentucky SIFT team which participated in the Carolina, Chapel Hill, NC. Federally funded EI grant
1993-94	Member of the Training for American Speech/Language and Hearing Association's Building Blocks Project.
1992-93	Member, Kentucky Team to the American Speech/Language and Hearing Association Infant Project, Washington, D.C.

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PROFESSIONAL EXPERIENCE

2003- Present	Coordinator of Distance Leaning and Recruitment Rehabilitation Science Doctoral Program Grant University of Kentucky
2003-2004	Project Coordinator and Primary Content Author for Communication Technology Module, Assistive Technology CD, ORCCA Technology Lexington, KY
1988- 2003	Speech/Language and Communication Consultant and State-wide Trainer for the SHIPP (Severely Handicapped Integrated Preschool Programming) Project, of the Kentucky Deaf-Blind Project, University of Kentucky.
1992-2003	Speech/Language Pathologist for the Child Development Centers of the Bluegrass (CDCB), Lexington. Ky.
2002	Clinical Supervisor, University of Kentucky Communication Disorders Clinic, Division of Communication Disorders, Department of Rehabilitation Sciences.
1992-1998	Program Director for the Child Development Centers of the Bluegrass, Lexington and Madison Co., KY 1992-1993 Member, Project Lexington Training Team
1986-1992	Speech/Language Pathologist, Horn, Richardson and Associates in Speech/Language Pathology.
1988-1992	State-wide trainer, Project SPLASH (Strategies for Planning Longitudinally for all Students with Severe Handicaps
1991-1992	Consultant to the Comprehensive System of Personnel Development
1989-1990	Associate Director of the Early Intervention Team Training Project, UKY
1989-1990	Speech/Language Consultant to the Infant, Toddler, and Family Program, a federal grant awarded to the Human Development Institute, University of Kentucky
1989- 1990	Member of the Rhysotomy Research Team at Central Baptist Hospital, Lexington, Ky.
1988-1989	Speech/Language Pathology Contract Consultant to the Kentucky Systems Change Project for Students with Severe Handicaps.
1979-1985	Speech/Language Pathologist and Pre-speech and Feeding Specialist/Consultant to Infant, Preschool and Rural Programs of the United Cerebral Palsy/Child Development Centers of the Bluegrass, Lexington, Ky
1979-1985	Member of inservice training teams federal grants to UCP of the Bluegrass
1982-1984	Program Director UCPB-Child Development Centers of the Bluegrass
1976-1979	Director of Component in Speech/Language Services- Joint Early Education of Preschool Handicapped, Institute of Child Behavior and Development, University of Illinois
1974-1976	Speech/Language Pathologist, Kentucky Easter Seal Society, Louisville, KY

TEACHING ACTIVITY

Division of Communication Disorders, University of Kentucky

Spring, 2005	Clinical Management in Communication Disorders II, Early Intervention Segment (CD 483)
Spring, 2003	Disorders of Articulation (CD 588)
Spring, 2002	Seminar in Advanced Language Disorders (CD 647)
Spring, 1989	Co-taught the Neurogenic Speech Disorders (EDS 679), Speech/Language Graduate Program, Department of Special Education, University of Kentucky, Spring, l989.

University of Illinois

Fall, 1979	Speech/Language Treatment for the Preschool Child Department of Special Education and Speech/Language of the University of Illinois
Spring, 1978	Speech/Language Diagnostics and Treatment for the Preschool Child, Speech/Language Department of the University of Illinois

Numerous guest lectures primarily relating to early intervention, prespeech, feeding, vocal and communication in infant and severely/profoundly challenged populations, pediatric language development, self-determination and persons with disabilities.

- Division of Communication Disorders, University of Kentucky. Spring, 2002, 2003; Summer, 2003; Summer, 2004; Fall, 2004.
- Department of Physical Therapy, University of Kentucky, August, 2002, 2003, 2004.
- Interdisciplinary Human Development Institute, Developmental Disabilities Certificate course, HDI 603, Spring, 2003, 2004, 2005.
- Occupational Therapy Department of Eastern Kentucky University, April, 2001
- Special Education Department of the University of Kentucky, 1979-82
- Physical Therapy Department of the University of Kentucky, 1982
- Special Education Extension Program, Georgetown College, Georgetown, KY, l982.
- Speech/Language Department of Eastern Kentucky University, l980-81.
- Special Education Department of the University of Illinois, l979.
- Speech/Language Department of the University of Illinois, l976- l979.

PEER REVIEWED PRESENTATIONS

Kleinert, J. (2005). Incorporating Principles of Self-Determination into Speech and Language Intervention. Kentucky Speech-Language-Hearing Association Annual Convention, Lexington, KY.

Kleinert, J. (2004). Speech-Language Pathologists' Knowledge of Self-Determination Programs for Students with Disabilities. American Speech-Language-Hearing Association, Philadelphia, PA.

Kleinert, J. & Gonzalez, L. (2004). Educating Graduate Students on Strategies to Foster Self-Determination in Clients. American Speech-Language-Hearing Association, Philadelphia, PA.

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Kleinert, J. & Lovelace, Sherri. (2004). Adequacy of Services for Children with Disabilities in Foster Care. American Speech-Language-Hearing Association, Philadelphia, PA.

Kleinert, J. & Stewart, S. (2004). Technical Literacy Skills for Faculty in Allied   Health. American Society of Allied Health Professionals, Tampa, FL.

Kleinert, J., Stewart, S., & Gonzalez, L (2004). Integrating Technical Literacy into Doctoral Education for Health Related Professions. San Juan, Puerto Rico.

Kleinert, J. (1988).Innovative Speech/Language Treatment Techniques for the Handicapped Infant. American Speech-Language-Hearing Association,
 Boston, MA.

Kleinert, J., Wilhite, D. & Walker, D. (1983). The Effects of Severe Motor Disabilities on Speech-Language Development. American Speech-Language-Hearing Association,
Cincinnati, OH.

Kleinert, J. (1980). Speech/Language Therapeutic Intervention Techniques for the Infant. American Speech-Language-Hearing Association Annual Convention, Detroit, MI..

Rosenwinkel-Marshalla, P., **Kleinert,** J. & Robbins, R. (1979). Remediation of Severe Language Disorders: A Prespeech Sensori-Motor Developmental Model. American Speech-Language-Hearing Association Annual Convention, Atlanta, GA.

Rosenwinkel-Marshalla, P., **Kleinert,** J. & Robbins, R. (1979). Remediation of Severe Language Disorders: A Prespeech Sensori-Motor Developmental Model. Illinois Speech and Hearing Association, Chicago, IL.

INVITED PRESENTATIONS

Kleinert, J. (1997). Communication in Infancy: Assessment and Intervention. Indiana   Speech-Language-Hearing Convention, Indianapolis, IN.

Kleinert, J. (1997). Oral-Motor and Feeding Treatment for Infants.
Kentucky Conference on Communication Disorders, Lexington, KY.

Kleinert, J. (1993-94). Presenter for ASHA Building Blocks Module on "Family-Centered Services," sponsored by the ASHA Infant Project. Lexington, KY, Charleston, WVA, and Atlantic City, NJ.

Kleinert, J. (1992). "Evaluation and Management of Infants in Intensive Care/Acute Care Settings," American Speech-Language-Hearing Association Teleconference

Kleinert, J. (1989-1990). Communication in Infancy: Assessment and Intervention. Two day workshop presented three times in the state of Kentucky by The Early Intervention Team Training Project, a federal grant to the Human Development Institute, University of Kentucky.

Smith, P., **Kleinert,** J. & Page, J. (1988-1989). Communication Programming for Students with Severe and Multiple Handicaps.   Two day workshop presented five times across the state of Kentucky as part of the Kentucky Systems Change Project.

Kleinert, J., Southerland-Morris, D. & Horn, D. (1988). An Integrated Approach to

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Dysphagia Assessment and Treatment. Two-day conference sponsored by Humana   Hospital, Lexington and Horn, Richardson and Associates, Lexington, KY.

Kleinert, J., Southerland-Morris, D. & Horn, D. (1987). Techniques in Developing Oral Speech in Individuals with Significant Physical Handicaps. Two-day workshop sponsored by Humana Hospital Lexington and Horn, Richardson, and Associates.

Kleinert, J., Wilhite, D. & Walker, D. (1987). Integrated Speech-Language and Motor Treatment for Multiply Handicapped Students. Pennsylvania Council for Exceptional Children Annual meeting, Harrisburg, PA.

Kleinert, J. (1987). Neurodevelopmental Treatment and Speech-Language Disorders. Kentucky Conference on Communication Disorders, Lexington, KY.

Kleinert, J., Wilhite, D. & Walker, D. (1987). Effects of Severe Motor Disorders on Speech-Language Disorders. Pennsylvania Speech Language Hearing Association Annual Convention, Pittsburgh, PA.

Kleinert, J. (1985). Prespeech and Feeding. Kentucky Pediatric Physical Therapy Special Interest Group, Lexington, KY.

 Kleinert, J., Wilhite, D. & Walker, D. (1984). The Integration of Physical, Occupational and Speech Therapies for the Physically Handicapped. Three-day course, Thunder Bay Ontario, Canada

Kleinert, J. (1983). Pre-Speech and Feeding Development with Implications for Treatment. Kentucky Conference on Communication Disorders, Lexington, KY.

Kleinert, J. (1982). Vocal Development in Infants and Severe-Profound Populations with Implications for Treatment. Illinois Speech-Language-Hearing Association Annual Convention Chicago, IL.

Kleinert, J. (1981). Early Intervention Techniques for Infants and Severe/ Profound Handicapped Populations. Carle Clinic Lecture Series, Urbana, IL.

Kleinert, J., Wilhite, D.& Meyers, D. (1980). A Comprehensive Service Team Approach to Handicapped Children and Their Parents," National Parents Association Meeting, Louisville, KY.

Kleinert, J., Wilhite, D. & Meyers, D. (1980). A Comprehensive Service Team Approach to Infant Intervention," Triple T Consortium, Dallas, TX.

Presented 40+ presentations in associated topic areas at local, regional, and state levels.

PUBLICATIONS

Kleinert, J.& Effgen, S. (2005). Early intervention. In *Meeting the Physical Therapy Needs of Children.* Susan Effgen, Ed. Philadelphia: F.A. Davis Company.

Kleinert, J.(1988). Innovative speech/language treatment techniques for the handicapped infant. Mini-Seminar selected by the American Speech/Language/Hearing Association for audio-taping for national distribution following the l988 ASHA Annual Convention, Boston.

Rosenwinkel-Marshalla, P., **Kleinert**, J., Robbins, R.(1980). A pre-speech sensori-motor model for the remediation of severe language disorders. *Journal of the Illinois Speech/Hearing Association.*

Rosenwinkel-Marshalla, P**., Kleinert**, J., Robbins, R.(1980). A pre-speech sensori-motor developmental model for remediation of severe language disorders. In Martha Burns & J. Andrews, *Selected Papers from the l979 ASHA Convention.* Evanston, IL: Institute for Continuing Education.

Kleinert, J.(1980). What do babies way? In *Proceedings of TripleT Consortium Annual Infant Education Conference*. Ruth Turner, Ed., Dallas.

OTHER PUBLICATIONS: MANUALS

Kleinert, J. (1990). Communication in Infancy: Assessment and Intervention*.* A manual for the Early Intervention Team Training Project, a federally funded grant with the Interdisciplinary Human Development Institute, University of Kentucky.

Kleinert, J. (1989). Case studies. In *Communication Programming for Students with Severe and Multiple Handicaps.* Kentucky Systems Change Project, University of Kentucky.

Kleinert, J. (1989). Intervention strategies. In *Communication Programming for Students with Severe and Multiple Handicaps*. Pam Smith & Jane Kleinert, Eds. Kentucky Systems Change Project, University of Kentucky.

Kleinert, J. (1989). Assessment strategies. In *Communication Programming for Students with Severe and Multiple Handicaps.* Pam Smith & Jane Kleinert, Eds. Kentucky Systems Change Project, University of Kentucky.

Smith, P. and **Kleinert,** J.(Eds*.)(1989). Communication Programming for Students with Severe and Multiple Handicaps*. A product of the Kentucky Systems Change Project for Students with Severe Handicaps, U.S.O.E. Grant No. G008703061-88.

GRANT ACTIVITY

Effgen, S. & **Kleinert**, J. (2003). Completing the TEAM: Preparation of Leadership Personnel in Related Services: Preparation of Leadership Personnel CFDA 84.325D. Submitted 1-03, approved, not funded. $774,145.

PROFESSIONAL MEMBERSHIP:

1975 to Present   American Speech-Language-Hearing Association (ASHA)
1975 to Present   Kentucky Speech-Language-Hearing Association (KSHA)
1981-2000   Neurodevelopmental Treatment Association (NDTA)
1976-1980   Illinois Speech-Language-Hearing Association (ISHA)

PROFESSIONAL ACTIVITY & PUBLIC SERVICE

Reviewer: Language Impairment, Parent-Child Shared Reading, and Phonological Awareness: A Feasibility Study for the Journal of

Member of advisory board for proposed grant: ILEAP (Improving Language and Emergent Literacy through AAC Preparation) Division of Communication Disorders, University of Kentucky, 2004.

Member of the Executive Committee of the Kentucky Speech-Language-Hearing Association. 2000-2004.

Member of the Advisory Board for Project PLAY, a federally funded grant to the Department of Family Studies at the University of Kentucky, Lexington, Ky., 2002.

Member, Committee on Assistive Technology for Infants and Toddlers, Kentucky Early Intervention System, First Steps, l997- 2000.

Outside Member of Dissertation Committee for University of Louisville
Doctoral Candidate (Rhonda Mattingly, PhD) for her dissertation on "Consensus of Needed Competencies for Therapists Who Work with Infants and Children with Cerebral Palsy", l998-1999.

Member, Kentucky's SIFT Training Group, l994.

Member, Kentucky's ASHA Infant Project Team, l992-93.

Reader, Program Submission Papers for KSHA Convention, l99l

Member, KSHA Sub-Committee on Infancy, l988-89.

Member, Program Committee, KSHA Convention, l987.

Member, Program Committee, KSHA Convention, l982-83.

Advisory Board to the Jefferson Co. Public Schools Early Intervention Program for Children with Down Syndrome, l98l

Member, Program Committee, Eastern IL. Speech-Language-Hearing Association, 1978-79.

Member, Executive Council, Eastern IL. Speech-Language-Hearing Association, l978-79.

Exhibits Chair, Kentucky Speech and Hearing Association (KSHA) Convention, l976.