EFFECTS OF A LEISURE EDUCATION PROGRAM ON GENERALIZATION OF SOCIAL SKILLS OF CHILDREN WITH SOCIAL SKILLS DEFICITS

by

ALISON LYNNE CORY

(Under the direction of John Dattilo)

ABSTRACT

A single subject multiple probe across participants design was used to examine effects of a leisure education intervention package on generalization of social knowledge and skills demonstrated by 3 participants with social skills deficits (age 4) during (a) play with 1 peer and (b) natural setting classroom play with 1 or more peers. The leisure education intervention package featured 2 components (a) Computer-assisted instruction (CAI) and (b) Instructor-Facilitated Role Play (I-FRP) (between researcher and participants). Social knowledge was assessed using a computerized version of the "Social Knowledge Assessment" (SKA) and social skills' generalization was assessed using videotaped observations of targeted social behaviors recorded on the Social Skills Assessment (SSA) during participants' play with 1 peer and during natural setting classroom play with 1 or more peers. Social knowledge and skills data were collected during baseline probe; intervention began once knowledge and skills' scores stabilized. After participants achieved *knowledge* criterion during CAI phase of intervention, I-FRP phase of intervention began. I-FRP provided participants with feedback related to targeted social skills during instructional role play with the researcher. I-FRP sessions were based on interactions depicted in CAI and continued until participants reached *skills* criteria of demonstrating targeted

social skills in both settings on 3 or more occasions at a frequency of least 50% higher than baseline probe using the SSA observation form.

Results indicated that across participants, following initiation of the CAI phase of intervention, replication of effects occurred for social knowledge indicating intervention efficacy related to that dependent measure; however, for social skills, across participants, replication of effects did not occur. Although median scores for social skills increased following implementation of CAI and I-FRP phases of intervention, data were variable for all 3 participants and visual analysis of the graphed data did not support intervention efficacy. Additionally, there was no observable trend indicating change in frequency related to greetings or inappropriate behaviors (e.g., excessive volume, verbal aggression). Participants, parents, and staff members indicated the study was socially valid through assessments and interviews related to social validity of goals, social appropriateness of procedures, and social importance of effects.

INDEX WORDS: Leisure education, Computer-Assisted Instruction, Social Skills, Role Play

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One sees clearly only with the heart. Anything essential is invisible to the eyes.
-Antoine de Saint-Exupéry

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CHAPTER 1

INTRODUCTION

Effective social skill acquisition during early childhood is imperative for individuals with and without disabilities to succeed in many realms of life, beginning on the playground (Greener & Crick, 1999), extending to the classroom (Guralnick, 1990), and eventually to the workplace (Chadsey-Rusch, 1992). Guralnick (1990; 1993) suggested that a child's perceptions of independence and self-efficacy are associated with successful and fulfilling relationships with peers. Although there is little agreement in the literature on a model that sufficiently explains the social competence process (Greenspan & Granfield, 1992), consensus exists that social competence is helpful for exchanging ideas, actively participating in play, and responding to negative interactions (Rubin, Bukowski, & Parker, 1998).

The development of social competence by children with disabilities or specific deficits often differs from that of children without disabilities. This difference is often attributed to limited skills required to establish and sustain effective social interactions and friendships (McConnell & Odom, 1999; Odom, et al., 1999). Odom, Chandler, Ostrosky, McConnell, and Reaney (1992) observed that many children with disabilities have limited involvement with peers due to absence of basic social skills and this lack of skills can result in relatively fewer: (a) interactions with peers and ensuing friendships, (b) successful responses to social initiations, and (c) opportunities for community inclusion. In addition, children with limited social skills are likely to demonstrate behaviors that reflect negative attitudes, limited interpersonal relationships, and these behaviors subsequently lead to fewer social interactions and isolation, particularly

during leisure participation (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996a, 1996b; Hughes, et al., 2000).

For children, leisure participation (play) is often a context for engaging in social interactions with peers (Odom, et al., 1999) and peer relationships during childhood and adolescence are critical (Gresham, Sugai, & Horner, 2001; Zeltin & Morrison, 1998). Social interaction is one reason individuals initially participate in and continue leisure involvement (Auld & Case, 1997; Coleman & Iso-Ahola, 1993). Leisure involvement and subsequent leisure experience facilitated by leisure participation may be desired outcomes, but without effective social skills individuals are less likely to be accepted by their peers and continue leisure participation (Dattilo, 1999). Skill acquisition and demonstration of these skills can allow individuals to participate in leisure and increase opportunities for leisure experience through acceptance by peers and development of friendships that can contribute to a range of supports (Salisbury, Evans, & Palombaro, 1997).

"Leisure" has been described in a variety of ways including (a) "combination of free time and the expectation of preferred experience" (Kleiber, 1999, p. 3), (b) having characteristics of activities (i.e., recreation, sport, hobbies), (c) time not otherwise obligated (i.e., "free time," time away from work), and (d) or as meaningful and fulfilling experience (Mannell & Kleiber, 1997). Neulinger (1974) suggested that components of leisure experience include perceived freedom and intrinsic motivation. Deci and Ryan (1985) addressed two primary dimensions of intrinsic motivation: autonomy and competence; these two dimensions often guide individuals' actions, including addressing developmental tasks (Kleiber, 1999). Other descriptions of leisure or leisure experience include enjoyment, freedom, opportunity for self-expression and authenticity, state of

mind, or spiritual attitude (Csikszentmihalyi, 1975; Kelly, 1996; Mannell & Kleiber, 1997; Pieper, 1963).

Wilson (1981) suggested that "if the talent for being leisured must be learned and nourished, the learning can probably not take place in any very deliberate or mechanical fashion" (p. 286). Systematic and mechanical introduction of leisure as a state of mind or spiritual attitude may not be likely; however, systematic leisure education may be necessary for individuals to have opportunities to develop skills necessary to create their own spaces (i.e., time, activities, experiences) either alone or with others. By participating in leisure education programs targeting social interaction in leisure contexts individuals can develop skills (i.e., verbal and nonverbal communication, understanding social rules) that promote acceptance by peers within leisure settings. Innovative leisure education strategies designed to facilitate leisure experience and enhance social skills of people with disabilities or specific deficits are needed, and one possible way to facilitate acquisition of these important skills is via computer-assisted instruction (CAI).

Rieber (1991) suggested that CAI offers powerful learning environments, especially via animated programs that can promote students' opportunities for (a) multiple practice occasions, (b) incidental learning, and (c) intrinsic motivation to learn. Advancements in technology generate possibilities for skill development for individuals with disabilities or specific deficits through experiential learning activities presented via CAI (Tennyson, 1994). Interactivity available via CAI programs is intended to engage mental processes, enhance performance and productivity, and have individuals become active participants in the learning process (Jih & Reeves, 1992).

Generally, researchers have reported CAI programs are effective learning aids (Wolfe, 1997). Children have access to increasingly sophisticated computer technology in educational

settings (Judge, 2001) and CAI has been shown to be successful for children with and without disabilities in acquiring and improving skills related to (a) reading (Lynch, Fawcett, & Nicolson, 2000; van Daal & Reitsma, 2000), (b) spelling (van Daal & Reitsma, 2000), (c) word recognition and vocabulary acquisition, (Lynch, et al. , 2000), (d) mathematics (Nicol & Anderson, 2000), (e) safety (Lee, McGee, & Ungar, 2001), (f) functional life skills of individuals with disabilities (Cafiero, 2001; Langone, Shade, Clees, & Day, 1999), (g) social-problem solving (Bosworth, Espelage, & DuBay,1998; Goldsworthy, Barab, & Goldsworthy, 2000), (h) matching (Hitchcock & Noonan, 2000), (i) social skills (Goldsworthy, et al., 2000; Margalit, 1995), (j) social knowledge (Cory, Dattilo, & Williams, in review; Dattilo, Williams, & Cory, 2003), and (k) self-determination (Dattilo, Williams, Guerin, & Cory, 2001). More specifically, a series of studies by Dattilo and others has examined effects of CAI on self-determination, social knowledge, and social knowledge and skills. Dattilo, Williams, Guerin, and Cory (2001), examined effects of a computer-assisted leisure education program targeting self-determination and findings indicated increases in knowledge related to self-determination. In a similar study, Dattilo, Williams, and Cory (2003) examined effects of a computer-assisted leisure education program targeting social knowledge of youths with mild mental retardation and findings indicated increases in knowledge related to social interaction. Cory, Dattilo, and Williams (in review) examined effects of a computer-assisted leisure education program on social knowledge and skills and findings indicated increases in social knowledge but not improvements in demonstrated social skills.

The series of studies by Dattilo and colleagues indicate that a viable context for CAI related to social skills instruction for individuals with or without disabilities is within the realm of leisure education. More generally, leisure service providers are faced with challenges of incorporating different levels of ability and interest into existing leisure education programs. For

some individuals, leisure education may simply be exposing them to the possibilities and having them pursue leisure through intrinsically motivated behaviors (e.g., wheelchair sports following spinal cord injury, travel, art, music). For others leisure education may require systematic and repeated instruction (i.e., identifying and accessing leisure resources, learning rules of participation, finding satisfying balance between skill and challenge). Incorporating leisure into one's life through leisure education offers individuals opportunities to become empowered and active agents (not just participants) in their lives (Dattilo, 1999).

Another more traditional yet effective way to teach social skills is by establishing role play situations that contain relevant feedback. In a selective review of literature related to interventions designed to promote generalization and maintenance of children's social behaviors strategies, Brown and Odom (1994) applied existing research to three basic strategies outlined by Stokes and Osnes (1986). The three strategies included (a) use of natural communities of reinforcement (i.e., using social contingencies common in children's environments, recruiting reinforcement), (b) training diversely (i.e., training across multiple exemplars), and (c) incorporating functional mediators (i.e., common environmental stimuli or verbal behavior). Review of the literature revealed that in addition to other instructional techniques (i.e., peer-mediated, prompts, prompt-fading, training in natural settings, various reinforcement schedules, self-management), instructional role-play was successfully employed to improve children's behavior. The skills addressed (i.e., play initiations, social initiations, response behaviors to various social stimuli) and rehearsed during instructional role-play sessions promoted skill development that allowed children to solicit their own communities of reinforcement (i.e., peer interaction, adult attention) in multiple settings (i.e., classroom, playground) and with multiple individuals, using stimuli commonly found in their environments. O'Reilly, Lancioni, and

Kierans (2000) used instructional role play alone (i.e., modeling, rehearsal with therapist) to assist 4 adults with moderate mental retardation to effectively improve social skills used in leisure settings; social skills generalized from role play setting to leisure contexts and were maintained for up to 36 months. Generally, social skills interventions have incorporated more than one instructional strategy to promote generalization and maintenance and it has been difficult to determine the strength of one technique over another when used in combination. In addition, generalization and maintenance have been elusive in some social skills interventions following effective initial interventions (Brown & Odom, 1994). For this study, based on current literature, an intervention strategy of combined approaches of information presentation (leisure education via CAI), rehearsal, and specific feedback during rehearsal (instructional role play) provided an innovative process by which to improve social skills of children with social skills deficits.

Statement of Need

The lives of individuals with and without disabilities are greatly affected by the degree to which people can successfully interact within various social contexts (e.g., leisure). Brown and Odom (1994) suggested that social interactions between children and their peers in natural settings should be self-reinforcing; that is, the reward for appropriate social interaction is the opportunity for additional social interaction. Since it is important for children with social skills deficits to acquire and subsequently demonstrate effective social skills, there is value in examining effects of social skills acquired via leisure education using CAI and instructional role play. Previous research (Dattilo, et al., 2003; Cory, et al., in review) examining effects of CAI on social skills has reflected increases in scores related to social knowledge, but has not reflected increases in demonstrated social skills. In a study occurring in summer 2000, Dattilo, et al.,

(2003) incorporated CAI only as an instructional technique for improving social knowledge with no examination of social skills. A subsequent study in summer 2001, incorporated CAI and participant role play with peers, but did not provide feedback for actual behaviors in natural settings.

Purpose of Proposed Study

The purpose of the proposed study is to extend previous research of Dattilo, et al. (2003) and Cory, et al. (in review) by examining effects of a leisure education program on generalization of social skills of children with social skills deficits. An intervention will be presented that provides leisure education related to social skill acquisition through computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP). The study will address (a) social knowledge, and (b) social skills used within leisure contexts.

Research Questions

(1) What are effects of a leisure education intervention package using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) on generalization of social knowledge and skills of Pre-K children with social skills deficits as measured by percentage of target behaviors demonstrated using observations of social interactions during play with one peer?

(2) What are effects of a leisure education intervention package using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) on generalization of social knowledge and skills of Pre-K children with social skills deficits as measured by the percentage of target behaviors demonstrated using observations of social interactions during natural setting classroom play with one or more peers?

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this study is to examine effects of a leisure education program on the social knowledge and skills of pre-kindergarten children with social skills deficits using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP). This section of the dissertation provides a review of literature related to the current investigation. A review of research related to (a) young children and social competence, (b) CAI strategies, (c) CAI and instructor-facilitated strategies, (d) social skills instruction strategies, and (e) theoretical basis for intervention (e.g., Bandura's Social Learning Theory) is presented. The section on the theoretical basis for the intervention examines the relationship between social skill acquisition and Social Learning Theory; by examining literature related to concepts such as social skills deficits, leisure education, and instruction strategies (e.g., CAI and I-FRP), the relationships between social skill acquisition and social interaction may be better understood.

Collection of the Literature

To conduct this literature review, both electronic and hand searches were completed. Key words including: social skills, social competence, social skills instruction, social skills training, social interaction, computer-based social skills interventions, computer-assisted instruction, role play, behavior disorders, mental retardation, children with disabilities and inclusion were entered into the following electronic databases: Current Contents, Ebscohost, Education Abstracts Full Text, ERIC, MEDLINE, Mental Measurements Yearbook, ProQuest, PsycARTICLES, PsycINFO, Sociological Abstracts, and Web of Science. These databases were searched for

information dating back to 1993; however, as directed by the literature, some articles prior to 1993 were selected for review.

Hand searches were conducted on the following journals: *Adolescence*, *American Journal on Mental Retardation*, *British Journal of Educational Technology*, *Child Development*, Educational *Technology Research and Development*, *Exceptional Children*, *International Journal of Disability*, *Development and Education*, *Journal of Applied Behavior Analysis*, *Journal of Computer Assisted Learning*, *Journal of Educational Psychology*, *Journal of Leisure Research*, *Journal of Research on Technology in Education*, *Journal of Special Education Technology*, *International Journal of Instructional Media*, *Social Development*, *Therapeutic Recreation Journal*, and *Topics in Early Childhood Education*. Similarly to the electronic searches, these journals were searched back to 1993 unless otherwise warranted.

Young Children and Social Competence

There is a paucity of literature examining effects of interventions designed to teach young children social skills, social competence, and social interactions, especially related to those interventions focusing on promoting social skills used during play and learned via leisure education; however, there is relevant literature related to social competence used with peers in classroom and child-care settings similar to the pre-kindergarten setting of the current investigation. Young children's social competencies have been examined with regard to (a) interpersonal understanding of classroom dynamics, (b) personal attributes and peer competence, (c) role of children's play in daily activities within child care settings, and (d) effects of an intervention.

Using a neo-Piagetian theoretical and analytic framework, Porath (2003) examined the nature of interpersonal understanding in 4- and 5-year-olds to determine their degree of

understanding of interpersonal dynamics within the context of the classroom with peers and teachers. Forty-two children participated in semi-structured interviews following viewing of picture stories related to social cues (i.e., nurturance, care, protection, and teaching events) as well as activities related to child preference of activity and playmates. Results from first and second hierarchical regression indicated that children's degree of understanding role and intention was a significant predictor of their ability to understand classroom relationships, roles, and intentions in addition to analysis of classroom dynamics. Limitations included lack of ongoing behavioral observations and accounting for individual differences in development as well as lack of established validity and reliability of picture stories related to social cues. However, this study supports the current investigation by suggesting that young children have a relatively sophisticated way of understanding classroom dynamics, intentions, and social roles of peers and teachers. Although this study did not address the implications of a lack of social understanding and competence by young children, there is value in understanding the implications of having social skills.

Mendez, Fantuzzo, and Cicchetti (2002) addressed implications of possessing social competence as well as not possessing social competence in a study that investigated the relationship between children's personal attributes and peer play competence of 141 African American preschool children enrolled in 11 urban Head Start programs. Ninety percent of the children lived with families having an annual income of less than $12,000 with 64% of the families having annual incomes of less than $6,000. Seventy-one percent of the families were single-parent, 13% married, and the remainder were widowed, separated, or divorced. Children's personal attributes were measured by (a) the Temperament Assessment Battery for Children-Teacher Form (T-ABC; Martin 1988), (b) California Child Q-sort (CCQ; Block & Block, 1980)

that measures emotional regulation and autonomy), (c) Expressive Language measures [Expressive One-Word Picture Vocabulary Test-Revised (EOWPVT-R; Gardner, 1990); Peabody Picture Vocabulary Test Revised (PPVT-R; Dunn & Dunn, 1981); and vocabulary subscales of the Wechsler Preschool and Primary Scales of Intelligence for Children Revised (Wechsler, 1974)], (d) Receptive language measures [PPVT-Third Edition (PPVT-III, Dunn & Dunn, 1997)] and (e) Penn Interactive Peer Play Scale (PIPPS; Coolahan, et al., 2000). Detailed information was provided on each of the measures' validity and reliability and indicated high degrees of validity and reliability for each instrument. Variable-centered analyses of children's competence (i.e., canonical variance and redundancy analyses) were conducted examining relationships between personal attributes and peer play competence and suggested that personal attributes explained some degree of variation in children's peer competence. A person-centered analyses revealed six profiles (i.e., verbal competence, inattentive-active, task persistent, prosocial-resilient, dysregulated, and calm-reticent). Children identified as "prosocial-resilient" demonstrated they were highly adaptable, outgoing, engaged other children in interactions, refrained from overexcitement and/or overactivity, and had highest mean vocabulary scores – these children had the most ongoing social interactions than children who were identified by other profile categories. Conversely, children within the variable-centered category of "overactive-disruptive" demonstrated behaviors that "revealed a strong positive association between children's temperamental predisposition toward overactivity and problematic peer interactions during play" (p. 1094). This study is just one in a body of literature finding that children who have social competence demonstrate emotional flexibility and maturity and children who lack social competence have hyperactivity and demonstrate peer aggression and difficulties maintaining peer relationships. Mendez, et al. analyzed individual differences

and personality components that can influence social interactions; further research combining behavioral observations with personality assessments can extend knowledge and understanding related to young children and the use of personal attributes during social interactions with peers.

Hännikäinen (2001) examined the role of children's play, playful actions, and "togetherness" in childcare centers within typical day activities occurring in childcare centers. Using observations of 16 five-year old children during daily activities in seven childcare centers the author found that the children attempted to make the daily activities a source of play and playful actions using humor, fantasy, dramatic gestures, and joking with language and exaggeration. Additionally, the playful actions were considered to contribute to a sense of "togetherness" by the children; observations indicated that playful actions were interpreted by the children as ways to communicate, express positive feelings, and potentially develop and maintain friendships through togetherness. Limitations of the study included lack of detail about the children and their degree of overall development (i.e., socially, language, physical) and limited information about data collection and analysis. Therefore, more in-depth behavioral observations would be helpful that lasted for a longer time period over various settings and examined social interactions and friendship development within these settings.

Using three sociometric assessments (e.g., peer nomination, peer rating, and teacher's observation) pre- and post-intervention, Choi (2000) examined effects of a five-session cognitive-social intervention on the social skills of 34 children (ages 4 and 5) with low peer acceptance. The intervention included three components (a) teaching concept learning, (b) practicing skills performance through guided learning, and (c) fostering skill generalization through self-directed rehearsal. The stories used in the intervention were comprised of scripts of a series of events that might occur in specific situations (i.e., inappropriate behaviors, conflicts

resulting from inappropriate behaviors, resolution of conflict, and implications of resolution). Children were randomly assigned to a control or experimental group; children who were assigned to the control group played with toys during the experimental group's instruction session and did not receive instruction. Group differences were analyzed using two-way repeated measures ANOVA in addition to comparison of Pearson correlation coefficients. Although children in the experimental group showed increases on assessments post-intervention compared with the children in the control group, there were no statistically significant group differences. Further research examining effects of rehearsal through guided learning, script, and specific feedback during rehearsal is warranted.

Computer-Assisted Instruction (CAI) Strategies

Research related to CAI indicated that CAI alone can be an effective method for delivering instruction. Effects of CAI have been examined on (a) social skills, (b) literacy skills (e.g., spelling, reading), and (c) community living skills (e.g., personal safety, violence prevention, grocery shopping).

Using an experimental design with repeated measures MANOVA, Margalit (1995) examined effects of a 12-week CAI social skills intervention (2 x wk, 60 min sessions) on the social skills of 73 students (ages 11-15) with mild intellectual disability. The experimental group (n = 38) utilized the computer instruction software "I Found a Solution" (Margalit & Weisel, 1990) and participated in social interaction role-plays and discussions. The control group (n = 35) did not use the social skills computer instruction software, but did participate in social interaction role-plays and discussions. Data were collected on (a) students' loneliness via the Hebrew adaptation of the Loneliness Questionnaire (Williams & Asher, 1990), (b) teacher ratings of students' social interactions using the Aggressive Behavior Scale (Margalit, 1985) and

the Hebrew adaptation of the Social Skills Rating Scales (Gresham & Elliott, 1990), and (c) peer ratings using a 5-point Likert scale rating "1" (*they do not like at all to work or be with that child*) to "5" (*they like to be or work with that child a lot*). Results from pre- and post-tests indicated that although students in the experimental group demonstrated higher social skills scores and teachers perceived them to be less disruptive, and peers rated them as more socially accepted, there were no differences in the self-perception of loneliness. Although this study suggests that using CAI social skills instruction can improve scores related to social skills of children with disabilities, a detailed description of the social behavior discussions and role-plays were not provided and social skills knowledge was not assessed. This study suggested that using CAI can be effective for social skills instruction and results indicated that further research is needed to determine the effects of instructional strategies (CAI and role play) on acquisition and generalization of social knowledge and skills.

Utilizing self-guided CAI software packages, van Daal and Reitsma (2000) examined effects of CAI in two pilot studies involving reading and spelling for kindergarten children. In the first study, a 16-week intervention involving computer reading practice (M = 193 min per task completion) on reading skills of 21 children (ages 6 – 6.5) was assessed using an experimental design with repeated measures. Children were randomly assigned to the experimental group (n = 9) and given access to computer reading practice and the control group (n = 13) was not given access to computer reading practice. Although participants in the experimental group improved on letter naming and reading skills more than members in control group, these comparisons were not statistically significant. In the second study, using a repeated measures design the authors examined effects of a 26-week CAI spelling instruction program (3 x week, 5 min sessions) on spelling skills and learning behavior of 14 children (ages 8 – 12)

from a special education school. The intervention included practice words that increased in difficulty as students demonstrated mastery; at each level of mastery, students were presented with a flashing word and then were required to type the word on the keyboard. Over several trials, the flash duration was shortened until only aural prompts were offered on target words. Spelling skills were assessed using PI-dictee (a standardized dictation test) (Geelhoed & Reitsma, 1999) and learning behavior was assessed using the Coping Analysis Schedule for Educational Settings (Spaulding & Papageorgieu, 1977). Findings indicated that the CAI spelling improvements were statistically significant post-intervention ($t = 5.77$, $p < .001$) and behavior improved during computer training; however, there was no evidence of generalization or maintenance of effects. Results of these two studies offer support for CAI as an instructional technique; additionally, these studies may be suitable for replication using single subject methodology to more closely assess individual responses to CAI intervention and resulting learning behaviors.

Using repeated measures design, Lynch, Fawcett, and Nicolson (2000) examined effects of a 10-week intervention (3 x wk, 20 min sessions) on literacy skills of 8 youth (ages 11-12) with reading deficits. Three participants were identified as having dyslexic-specific learning difficulties, 3 as being non-dyslexic poor readers, and 2 as having English as their second language (ESL). Assessments indicated participants performed reading and spelling skills at chronological skill levels of 7-8 year-olds. The intervention included having teacher-specified goals presented via the computer, utilizing the computer as a "Reading Intelligent Teaching Assistant" (RITA). Post-test results indicated statistically significant improvements in some areas, including performance ($t = 1.94$, $p < .05$), rate of progress and reading accuracy ($t = 1.93$, $p < .05$), reading rate and comprehension ($t = 2.12$, $p < .05$); however, the 2 children having ESL

did not experience the same degree of improvement as the children having English fluency. RITA's suitability to address all literacy skills or all literacy deficits is unclear. Implications for practice and future research include the potential for CAI as an effective intervention for targeted knowledge and skill, especially for participants whose existing skills (i.e., speech, computer, fine and gross motor) are appropriately matched to the skill required to meet goals and objectives embedded in CAI programs.

In a quasi-experimental design using repeated measures MANOVA, Lee, McGee, and Ungar (2001) examined effects of a 15-week CAI Personal Safety Program (1 x wk, 50 min sessions) on knowledge of personal safety concepts of 49 participants (20 female, ages 11-18) with severe learning disabilities assigned to an experimental group (n = 31) or a comparison group (n = 18). The CAI Safety Program contained various scenarios, opportunities for role-play, and visual images with the computer program presented in a small group format prior to role-plays. Semi-structured interviews were used to determine participants' personal safety knowledge (adapted from Saslawsky & Wurtele, 1986; Tutty, 1994). Although additional measures were taken, results indicated that participants in the experimental group significantly improved knowledge of safety concepts ($p < 0.001$) and maintained scores ($p < 0.001$ and $p < 0.01$ for separate groups) at 15-week follow-up, while the comparison group showed no improvements. Unfortunately limited descriptions of the program, role-plays, various scenarios, and interview questions were provided. Results indicated programs including instructional programs that involve CAI and instructional role play are effective in assisting learners develop knowledge and skills related to targeted, specific topics. Findings of this study could be expanded by examining effects of CAI and instructional role play within a leisure context.

Bosworth, Espelage, and DuBay (1998) utilized an experimental design to examine effects of a 4-week self-guided CAI safety program using a violence prevention package (SMART Talk) (5 x wk, 40 min sessions) on (a) knowledge (e.g., definitions of situations that may trigger anger), (b) self-knowledge (e.g., personal behavior in conflict situation), (c) prosocial behaviors (e.g., helping others avoid fights and problem-solve), (d) confidence (e.g., ability to manage anger and nonviolently control anger), (e) intentions (e.g., use of negotiation and non-violent strategies for conflict resolution), (f) trouble behavior (e.g. frequency of "trouble" behavior at home, school, and community in last 30 days), and (g) computer use (e.g., perceptions of program) of 98 seventh graders (55% female, 90% White, 6% Black, 3% Hispanic, 1% Other) with diverse socioeconomic status. The “Teen Conflict Survey” was used to collect pre- and post-test data. The “Teen Conflict Survey” contained items from existing surveys (DeJong, Spiro, & Cross, 1992; Resnick, 1992) and some items were developed by the researchers following a review of the literature on health behavior change, anger management, and conflict resolution (Cronbach’s alpha on pre-tests ranged from .64-.87 and post-tests from .70-.85). The intervention involved independent computer use by students during class and after each session. Students completed a questionnaire to determine their satisfaction and perceptions of the CAI program. Comparison of pre- and post-test scores indicated significant increases ($p <$ 0.01) in (a) knowledge (non-significant increases), (b) self-knowledge ($t = -2.64$), (c) pro-social behaviors ($t = -3.14$), and (d) intentions. Although there was a statistically significant decrease in trouble behavior ($t = 2.45$), there was little change (non-significant increases, $t = .12$) in confidence from pre- to post-test. Overall, the students' reported that they learned using SMART Talk and felt it was fun, easy to use, and would recommend it to a friend. Limitations of the study included a small sample size for this type of statistical analysis and little information about

students' violence patterns and history of violence. However, results indicated that use of a self-guided computer program for information presentation was enjoyable and educational; implications of this study include opportunities for replication using single subject research designs to more closely assess individual student learning patterns and potential efficacy of CAI on knowledge and skill acquisition.

Using a single subject multiple probe across subjects design, Langone, Shade, Clees, and Day (1999) examined effects of multimedia instruction on correct selection of cereal boxes of 4 students with moderate/severe intellectual disabilities (2 with Down syndrome, 1 with severe autism, 1with moderate intellectual disabilities, ages 13-15 years) and their ability to generalize learning to community settings. Baseline probes in the original store (using verbal and picture prompts) occurred to determine participants' abilities to identify cereals and utilize CAI program to match-to-sample cereal boxes. Once a participant reached criterion, post-intervention probes occurred in the familiar grocery store and an unfamiliar grocery store. A computerized match-to-sample post-intervention probe also occurred. Participants reached criterion levels for the computerized instruction, albeit 1 participant's phase structure required revision secondary to his degree of autism. A functional relationship was established between the CAI instructional program and generalization to the grocery stores and time required to choose targeted cereals for all participants. The study supports existing literature related to functional skill acquisition through CAI and additionally established a basis for further research investigating (a) effects of CAI simulations alone on the generalization of effects within community-based settings, and (b) effects of multiple opportunities for practice and rehearsal of knowledge and skills.

CAI and Instructor-facilitated Strategies

Research related to CAI and instructor-facilitated strategies indicated that combined instructional strategies are effective methods for teaching functional skills. The studies reviewed provided support for CAI and instructor-facilitate strategies related to (a) social skills (e.g., social problem-solving, social competence, level of social engagement), (b) numeracy skills, and (c) matching skills (e.g., letters, numbers, colors, and shapes).

Using a repeated measures experimental design, Goldsworthy, Barab, and Goldsworthy (2000) compared effects of 2 four-week programs (2 x wk, 30-50 min sessions) on (a) the generalization of social problem-solving skills, (b) social skills, and (c) level of engagement of 59 adolescents (47 males, *M* age = 12.8) diagnosed with attention deficit hyperactivity disorder (ADHD). Participants were randomly assigned to (a) an interactive CAI group (worked in dyads on three instruction modules), (b) a therapist-directed group (received problem-solving training involving didactic training and role-playing exercises), or (c) a control group (discussed issues about adolescents and learned reading skills). Participants were interviewed pre- and post-intervention to determine generalization of social problem-solving skills. The Social Skills Rating System (SSRS) (Gresham & Elliot, 1990) was used to assess social skills and a Likert-type survey (Csikszentmihalyi, 1988) was used to determine engagement level. A 2 x 3 repeated measures ANOVA examined between-group differences. Statistically significant improvements were reported ($p < .05$) in generalization of social problem solving across all groups and between the computer group when compared to both therapy and control groups. No differences for either pre- and post-tests, or between groups were reported for the SSRS and the engagement measure. Although findings indicated improvement in social skills by these adolescents with ADHD, caution is advised because of small sample size for an experimental research design, limited

intervention duration, and possible confounding effects of compensation for per session participation for all participants ($10 gift certificate to media store). This study provides support for future research examining the use of CAI and instructor-facilitated strategies to extend contexts for instruction and evaluation of knowledge and skills associated with social interaction, including examining effects using single subject methodology to more closely evaluate the functional relationship between the intervention and knowledge and skill development.

Nicol and Anderson (2000) used a repeated measures experimental design with MANOVA to compare effects of CAI with traditional teaching during 12-weeks of arithmetic instruction (1 x wk, 60 min sessions) on the numeracy skills of 3 groups of 24 adults (8 per group) (12 females, ages 22 – 47) with learning disabilities. The intervention included arithmetic drills and practice and followed developmental sequences from basic counting to cardinality. Both CAI and teacher-facilitated instruction groups had statistically significant increases ($p < 0.2982$, $p < 0.0028$, $p < 0.0001$) in scores from pre- to post-test; however, the gains for the CAI group were greater than for the teacher-facilitated group. The control group did not show statistically significant increases in numeracy skills during the intervention. Limitations include small group size and potential confounding due to teacher assistance to the CAI group. However, the authors noted that one feature of the CAI program that may have influenced results was that students expressed their enjoyment of the program (e.g., education via entertainment and receiving audio and visual feedback, fantasy elements such as participants becoming sports figures or explorers, scoring options, and the perception of control) and thus were more motivated to use it. Implications for future research include using single subject research designs to more closely examine knowledge and acquisition patterns. This study supports the use of both CAI and instructor-facilitated educational techniques; however, future research addressing an

instructional strategy combining both methods is needed to demonstrate patterns of knowledge acquisition that potentially generalize into skill demonstration.

Using a single subject alternating treatments design, Hitchcock and Noonan (2000) compared effects of a constant time delay (CTD) instructional strategy using CAI and teacher-assisted instruction (TAI) on matching skills (letters, numbers, colors, and shapes) of five preschoolers (3 boys, ages 3-4) diagnosed with early childhood learning impairment characterized by delays in cognitive, language, or adaptive behavior skills. The intervention included teaching targeted skills using 4s CTD via two randomly alternating conditions, CAI (4s delay programmed into computer), and TAI until participants reached established criterion (90% for three consecutive days). Visual inspection of data indicated therapeutic trends for both CAI and TAI for all participants; however, CAI the change in level and trend was more abrupt and more quickly accelerating than the TAI across most skills. Student absences, equipment failure, and premature initiation of follow-up phase for 1 participant created problems with interpretation. Implications for practice include establishing protocols related to effective pairing of CAI with established instructional practices to generate learning. Results lend support for the use of CAI and instructor-facilitated techniques across other contexts and skill sets.

Social Skills Instruction

Research related to social skills instruction indicated that instructor facilitated strategies using learning components such as educational material presentation, modeling, role play, group and individual learning activities were effective methods for delivering instruction. The studies examined effects of interventions on the following behaviors related to social skills: (a) prosocial and antisocial behaviors, (b) cooperative play, (c) social problem-solving (d) communication

(e.g., listening, negotiation, interaction), (e) self-determination, (f) positive affect, (e) leisure skills.

Using a single subject multiple probe across participants design, Colton and Sheridan (1998) examined effects of conjoint behavioral consultation (CBC) and social skills training (SST) on the play behaviors of 3 boys (ages 8-9) with attention deficit hyperactivity disorder. The CBC and SST intervention occurred as co-constructed behavioral strategies by parents and teachers and involved social skills coaching, role play, self-monitoring, a home-school communication system, and verbal positive reinforcement. Researchers used partial interval direct observations in small-group play settings (20 min observations 1-2 x wk) to determine percentage occurrence of targeted social behaviors (positive, negative, aggressive, and isolative). In addition, parents and teachers completed pre/post behavior assessments (Social Skills Rating System, Gresham & Elliott, 1990). There were no observations in a natural setting, but students were asked to self-monitor behavior. Results indicated that cooperative play increased for all 3 participants and was maintained at follow-up for 2 participants; however, there was little change for negative behaviors overall and isolative play was reduced for all 3 participants and maintained at follow up for 2 participants. Parent and teacher behavior SSRS assessments indicated increases in post-test scores and social validity surveys supported the importance of the intervention. Strengths of the study included that parents and teachers co-constructed individualized plans for students and engaged in joint problem-solving. However, since there was no component analysis, it was not clear which aspect of the intervention (CBC or SST) was effective. There were no researcher observations during free play in natural setting, only self-report/self-monitoring measures by participants. In addition, there was variability in baseline and follow-up data and treatment conditions were not identical. However, behavior improvements

during cooperative play and recorded in parent/teacher assessments lend support for social skills interventions that involve adult (e.g., teacher, parent) facilitation, role-play, and verbal feedback for performance of target behaviors.

In a single subject multiple baseline across classes design Sharpe, Brown, and Crider (1995) examined effects of a sportsmanship intervention on the generalization of prosocial behavior from a social skills program implemented during physical education classes to the general education classrooms of 85 third grade students (ages 8-9) in an urban elementary school. The intervention involved presentation of a social skills program (3 x wk, 6 wks, 45 min sessions) that included topics such as "good winners," "good losers," peer respect, enthusiasm, effort, conflict resolution, peer assistance, and organization. Sessions included social skills instruction sessions, team-based learning activities related to the instruction topic, and specific skill feedback to teams during debriefing for points earned and lost during the team-based learning activities. Data were frequency of behaviors of students related to organization, skill engagement, leadership behavior, conflict resolution (independent of teacher), off-task behavior, and total conflicts during physical education classes and within the general education classroom. Findings indicated that the intervention was effective in improving positive behaviors (leadership, independent conflict resolution) and reducing negative behaviors (total conflicts, off-task) during physical education classes and general education classes. The authors suggested the physical education class instruction "generalized" into the regular classroom from the gym setting, but it is not clear if this is due to teacher exposure to material and resulting changes in teacher behavior toward students, or student behavior effects can be attributed to intervention. The study represents a valuable method of presenting a social skills intervention in a recreation

setting and supports future research examining effects of leisure education targeting social interaction in leisure within a school context.

Using a single subject multiple baseline across participants design, Williams and Dattilo (1997) examined effects of leisure education on self-determination, social interaction, and positive affect during the free time of a group of young adults with mild or moderate mental retardation who were employed at a vocational training center. The intervention included a leisure education curriculum (Project TRAIL) related to leisure appreciation, self-determination, and social interaction (3 x wk, 8 wks, 60 min sessions). Data were collected using videotaped behavioral observations of participants during recreation periods to assess specific performance measures related to targeted goals. Findings indicated there was limited support for improved positive affect following leisure education; however, there were no changes in frequency of social interactions or choice making. The primary limitation of the study was not systematically linking the concepts of leisure education during the recreation periods. Although results were limited for self-determination and frequency of social interactions, the authors' recommendations for future interventions can be implemented in instructional delivery, practical application, and subsequent assessment. This study lends support for leisure education interventions that target social interaction in leisure contexts for individuals with social skills deficits.

Using a single subject multiple baseline across skills design Prater, Bruhl, and Serna (1998) examined social skills acquisition via comparison of teacher-directed instruction, student-generated cooperative learning, and structured natural approach of 3 groups of 13 students with intellectual and learning disabilities. The 3 groups were comprised of 4 (4 boys age 13), 4 (3 boys, 1 girl, ages 11-12), and 5 (3 boys, 2 girls, ages 11-12). Teacher-directed instructional program (Class A) involved use of the ASSET Social Skills Program and focused on listening,

problem-solving, and negotiation. The structured natural approach group (Class B) involved use of cooperative learning to focus on same skill set as Class A (teacher-teacher directed instruction), and student-generated learning group (Class C) involved use of "social skill centers" to generate, define and discuss cooperative group rules, including the skill set of the other two classes. Data were collected using a point system and recorded on a score sheet by a trained observer to rate social skills demonstrated during role play. Additional data were collected via social validity surveys administered to school faculty and sociometric ratings of students by other students. Multiple baseline design across skills was used to assess effects of social skills acquisition on Classes A and B due to staggered introduction of skills, but due to introduction of all material at one time for Class C, an AB design was employed. Results indicated that overall, across skills, the teacher-directed instruction class (Class A) exhibited most improvements in targeted social skills, the structured natural approach class (Class B) and the student-generated learning group (Class C) exhibited limited improvements in specific skill areas. Pre- and post-test assessment of students by teachers indicated that Classes A and B improved in skill quality and frequency, and student ratings of themselves and other students were variable, with Classes A and B indicating improvement in quality of listening but not frequency, Class A indicated more frequency in problem-solving with no change in quality; Class B indicated no change in problem-solving, and Class C indicated improvements in both quality and frequency. With regard to negotiation skills, Classes A and B indicated increased frequency, no change in quality and Class C indicted less frequency, no change in quality. Limitations included lack of random group assignment; therefore, improvements potentially can be attributed to pre-treatment differences not accounted for otherwise. Assessing group effect via different designs (i.e., multiple baseline, AB design) may have influenced results; possible future research may employ

alternate research design to strengthen study. Overall, the study supports instructor-facilitated social skill interventions for individuals with social skills deficits and provides a basis for future research using similar instructional strategies.

Using a single subject multiple baseline across skills design, Rutherford, Mathur, and Quinn. (1998) examined effects of cooperative learning and direct instruction (24 sessions, 30 min, 3 x wk) on the social communication skills of 14 female students (ages 12-17) incarcerated in a residential facility following adjudication. Direct instruction involved skill identification and rationale for use of skill, modeling of skills, skill practice, social reinforcement and self-instruction of skills. Cooperative learning involved team-based learning groups with facilitator supervised skill practice and facilitator provided feedback; although learning was implemented via team-based groups, students were individually accountable for skill acquisition. Skills examined included frequency of communication, conversational questions, prosocial comments to others, and positive self-references. Data were collected by trained observers during group problem-solving activities to record frequency of occurrence of skills. Findings indicated increases in means from baseline through intervention and maintained effects during follow-up for groups across all 3 behaviors. Generalization of results is limited due to time constraints and restricted setting; however, initial findings support social skills intervention using modeling, rehearsal, and facilitator-provided feedback for adolescents with social skills deficits.

In a single subject multiple baseline across subjects design, Kamps and colleagues (1992) examined effects of social skills instruction on peer interactions of 3 boys (ages 7-8) with autism in an inclusive first grade classroom to increase peer interactions. Social skills instruction involved training related to interaction initiations, responses, maintaining interaction, conversations, greetings, compliments, taking turns, helping, and including others in interactions.

During free play following training sessions, teachers monitored students' behaviors, provided feedback, and provided a token reward (i.e., star) for demonstration of social interactions addressed in training. Results indicated that frequency and duration of social interactions increased at initiation of intervention and effects were maintained at follow-up. Findings support use of social skills interventions in inclusive settings within small group formats, especially when there are multiple opportunities to practice basic skill.

McKenney and Dattilo (2001) used a single subject multiple baseline across behaviors design to examine effects of an intervention within a sport context (i.e., basketball) on the prosocial and antisocial behavior of 5 adolescent boys (ages 13-17) with disruptive behavior disorders. The intervention involved prosocial behavior instruction units related to encouraging, helping, and conflict resolution (3 x wk, 30 min session, for 5 ½ weeks = 16, 30 minute sessions) that resulted in presentation of approximately one topic unit of instruction per week. Data were collected by a trained observer during observation of 20 min videotaped basketball scrimmages (3 x wk) and targeted on prosocial behaviors (i.e., encouraging, helping, conflict resolution) and antisocial behaviors (i.e., physical and verbal aggression). Findings indicated intervention within a sport context might have had a limited effect on prosocial behaviors of adolescents with behavior disorders, but there was no indication of effect on antisocial behaviors. Initial findings of encouraging and helping were not maintained through intervention and follow-up and the authors speculated on the possible lack of internalization of helping behaviors in addition to limited motivation to continue helping behaviors. Participants viewed their behaviors (through video playback) following scrimmages and receive facilitator feedback related to targeted behaviors. Limitations included lack of replication across behaviors, lack of novel stimuli, and short duration of intervention. Although results of the study were not conclusive for the targeted

behaviors, there is merit in innovative instructional delivery (i.e., via sport context) and instructional feedback.

Using a single subject multiple baseline across settings design, Langland, Lewis-Palmer, and Sugai (1998) examined effects of an 8-week social skills intervention ("Cool Tool") (3 x wk, 15 min sessions) on negative behaviors (i.e., verbal abuse, defiance, severe disruptions, and harassment) of 26 seventh-grade students in two middle school classrooms. Cool Tool, designed to encourage prosocial behaviors across settings, used lesson formats with appropriate and inappropriate examples of behaviors, role-plays, and debriefing. In addition, praise and school-wide reinforcement procedures were utilized to promote appropriate behaviors. For both classrooms negative behaviors decreased; however, covariation occurred in Room 2 as the negative behaviors decreased upon implementation of the intervention in Room 1. The decreased negative behaviors generalized across both academic and non-academic activities. Limitations of the study include lack of replication of results, limited instruction time, and lack of information about possible historical confounding variables. This study supports the use of interactive social skills programs involving examples of target behaviors, role plays, and feedback to increase prosocial behaviors and decrease negative behaviors for children with social skills deficits.

Using a single subject multiple baseline across pairs design, O'Reilly, Lancioni, and Kierans (2000) examined effects of a social skills problem-solving intervention on leisure social skills of 4 adults with moderate mental retardation (2 males, ages = 37-42) residing in a group home. Participants were employed and regularly participated in community leisure activities (e.g., visiting a local bar). Staff indicated that in some settings, participants "exhibited deficits in their ability to interact in a socially appropriate manner…" (p. 251) and participants stated that they wanted to learn social skills that would "help them interact better with people and make

more friends" (p. 252). The intervention involved the therapist teaching social skills via role-play with the participant. If participants performed the skill with error, the role-play was interrupted and modeled correctly by the therapist and the role-play was repeated until it was correctly performed. Participants received verbal praise for skills performed correctly. The intervention occurred in the group home (3 x wk, 60 min sessions), with behavioral assessments occurring in the local bar for each pair 2 x wk. During baseline participants did not perform social skills correctly and upon initiation of the intervention, for participants there was an abrupt change in level and with the exception of 1 participant their data remained stable throughout the intervention. Although follow-up data (weekly 1-4 wks, monthly 4-36 mos) indicated maintenance of social skill acquisition, observer reliability occurred on 28% of observations only in one type of setting (M = 92%, point-by-point). Interviews with participants and staff indicated that effects positively impacted participants' lives. Implications for practice include development of a social skills instructional program that may used in a variety of leisure contexts, that are age-appropriate, and promote personal choice for leisure pursuits. Results indicated that within a leisure context, use of instructional role play can be an effective method of social skill acquisition for individuals with social skills deficits.

Social Learning Theory and Leisure Education

One model that attempts to capture processes that occur within children's social interactions, adjustment, and competence is the Social Information-Processing (SIP) model proposed by Crick and Dodge (1994). The SIP model is based on a variety of theoretical frameworks, among them Social Learning Theory (Bandura, 1977) and Self-Perception Theory (Bem, 1972). The SIP model suggests that children's social adjustment can be addressed using a series of six steps that are influenced by the evaluation and responses of others, thus becoming a

reciprocal cycle of cues and responses. The six steps are: (a) encoding of cues (e.g., internal and external), (b) interpretation of cues (e.g., attributions, evaluations of social goals, self-evaluations), (c) clarification of social goals, (d) response access (e.g., previous knowledge of response) or response construction (e.g., newly formulated response), (e) response decision, and (f) behavioral enactment. The core of the model provides a knowledge database accessed during social processing. Social information-processing offers children opportunities to use behavioral responses accessed from a database of social knowledge and experience during interactions. Crick and Dodge (1994) hypothesized that within a social interaction children selectively attend to external and internal cues, encode the cues, and subsequently interpret the cues. A behavioral response to the cues is based on processing cues using social knowledge in the form of memory, acquired rules, and schemas. The computer-assisted portion of the current investigation has been developed with the goal of increasing participants' social knowledge thereby increasing participants' available knowledge database of response choices to external and internal cues. CAI will give participants opportunities to (a) acquire new or enhance existing social knowledge, (b) practice 5 different types of social response formulations within 5 different leisure contexts for potentially 25 different animated social interaction opportunities within a controlled setting, and (c) receive feedback for response formulation choices. Role plays designed to supplement information presented during CAI can assist participants by giving them opportunities to (a) practice targeted social behaviors repeatedly, (b) receive relevant feedback immediately following response formulation to cues, and (c) rehearse social behaviors in a controlled setting that supports learner efforts and decreases participant vulnerability to negative reactions.

The current investigation examining generalization of social skills is informed by the SIP model, specifically the idea that social skills that are developed as response formulations to a

variety of cues using knowledge, memory, and experience. Particularly relevant to both phases (CAI and I-FRP) of the intervention is Bandura's Social Learning Theory (1971; 1977). Bandura proposed six components related to social learning theory (a) acquisition by direct experience, (b) acquisition through modeling, (c) maintaining through regulatory control, (i.e., stimulus conditions, (d) maintaining through cognitive control (i.e., thoughts, feelings), (e) maintaining through reinforcement control (i.e., consequences), and (f) reciprocal process (i.e., continuous influence of behavioral, personal, and cognitive conditions) (See Appendix N). Bandura (1971) distinguishes between enactive learning (i.e., learning by doing) and vicarious learning (i.e., observational learning). Enactive learning allows individuals to experience consequences related to their behavior that "can be informative, motivating, and reinforcing" (p. 5). However, Bandura implied that learning only by experience may be ineffective and that learning through observations of others may be more powerful. The current investigation research incorporates the component "Acquisition through modeling" (i.e., Observational Learning) as the primary method of providing social skills instruction.

Observational learning is germane within leisure education and Bandura (1971) suggested four processes comprise observational learning including (a) attention, (b) retention, (c) motoric reproduction, and (d) motivation and reinforcement (see Appendix N). The current investigation is a computer-assisted leisure education program related to social skills instruction and the application of observational learning within the specific application for the purpose of improving social skills is illustrated in Appendix N.

Attention involves attending to and recognizing the fundamental elements of a model's behavior; it is not sufficient to merely be exposed. Bandura points out that attention is influenced by the functional value of a behavior as well as interpersonal attraction of the model.

Additionally, he suggested that individuals with whom one associates most often have the greatest influence on behavior due to repeated observations.

Retention is the process of retaining information through observational learning of a model's behavior. For the retention process to be accomplished information must remain in memory in symbolic form; this symbolic form often involves encoding information. Bandura (1971) suggested that the encoded information may be stored using sensory conditioning or verbal encoding. Retention tends to occur more frequently in conjunction with mental or actual rehearsal of acquired information or behaviors.

Motoric reproduction involves the behavioral reproduction of symbolic representations of information. Initially, the encoded symbolic information (i.e., knowledge) may require modeling and practice for it to become a behavior available for reproduction and incorporation into a behavioral repertoire. There may be limitations to reproduction based on physical restrictions that may require adaptation. In addition, some behaviors are not observable by the performer (i.e., swimming, sports) and are reliant upon visual feedback from an external source.

Reinforcement and motivational processes ensure that a behavior either occurs or recurs and are dependent upon positive incentives. "When positive incentives are provided, observational learning, which previously remained unexpressed, is promptly translated into action" (Bandura, 1971, p. 8). Typically, behaviors that are negatively perceived by the performer are not repeated. Additionally, reinforcement and motivation can affect other elements of behavior such as influencing attention, encoding, and rehearsal strategies.

Each of the above listed elements can be integral components of leisure education. Savell (1986) suggested that the use of theoretical frameworks such as social learning theory assists in positioning recreation service delivery within theory-driven practice and suggests professional

may design programs guided by theoretical frameworks to facilitate participant behavior changes.

Social Learning Theory clearly delineates between knowledge and behavior and is especially relevant when addressing social interaction behaviors. Although a leisure education intervention addressing social skills may present information that is intended to increase social *knowledge,* knowledge is only one component of the learning process; a fully realized social interaction incorporates demonstration of behaviors related to acquired knowledge.

Role plays offer individuals opportunities to practice social skills within controlled environments that can lessen participant vulnerability and increase opportunities for practice and feedback (Bourke & van Hasselt, 2001; Fisher & Vander Laan, 2002). It has been used as both an instructional and assessment technique for individuals with a range of targeted goals (e.g., improving social skills, increasing awareness of diversity, enhancing conversational skills, increasing respectful behavior toward others, initiating conversation with peers) in an assortment of settings (e.g., home, school, social/recreational) and within a variety of formats (e.g., role play with family members, teachers, therapists, coaches, counselors) (Bourke & van Hasselt, 2001; Davis, Langone, & Malone, 1996; Fisher & Vander Laan, 2002; Langland, Lewis-Palmer, and Sugai, 1998). As a supportive aspect of the current investigation, role play complements the SIP model by offering participants "safe" opportunities to practice social goals as related to interpretation of and response formulation to cues in addition to receiving feedback specific to their interpretation and response choices. Role play can be chosen as a means of increasing generalization of identified skills; however, research has indicated that often there is not generalization of skills demonstrated during role play to settings different than the training setting (Brown & Odom, 1994). In a review of the literature, Brown and Odom (1994) identified

potential strategies for generalization and maintenance of children's social behavior and among the strategies was incorporating opportunities for diverse training. Diverse training is helpful when considering the current investigation incorporates 2 distinct phases of social skills intervention. Brown and Odom (1994) suggested that "training across several stimulus conditions (e.g., trainers and peers), teaching multiple response exemplars should be helpful in producing generalization of social behaviors" (p. 104).

Kraus and Shank (1992) suggested a variety of techniques may be employed within leisure education to improve social competency and these techniques typically address both cognitive and behavioral skills. Dattilo (1999) recommended that an important focus of leisure education involved specific social interaction training related to communication (i.e., verbal and nonverbal), familiarity with and understanding of social rules, improvement of social competence, and development of friendships. It is within social interaction training that the elements of Social Learning Theory may be applied. Social Learning Theory (Bandura, 1971; 1977) is a broad theory of learning that can be (a) applied to social functioning associated with leisure involvement, (b) appropriate within an intervention, and (c) especially relevant within leisure education. It provides both a theory of learning and recommendations for presentation of the theoretical components and processes.

Bandura's theory of learning supports explication of the processes by which individuals acquire and maintain social behaviors. He stated "people are not just onlooking hosts of internal mechanisms orchestrated by environmental events" and "they are agents of experiences rather than simply undergoers of experiences" (p. 4) and proposed a theory of learning that involves both behavioral and cognitive components and processes; especially those related to functional outcomes associated with specific goals and objectives.

Sneegas (1989) and others have linked goals and objectives for functional improvements for individuals with social skills deficits and provide examples of client goals such as (a) "to demonstrate the ability to initiate and maintain a conversation with a peer," or (b) "to demonstrate the ability to engage in a cooperative task with at least two other peers" (p. 36). Applying social learning theory and accompanying processes to the attainment of the goals provides a logical and systematic theoretical framework within which to provide leisure education.

Conclusion

This chapter examined literature related to the relationships of social interaction within leisure contexts, instructional practices related to CAI, CAI and instructor-facilitated interventions, and social skills instruction. The literature reviewed suggested a strong conceptual framework embedded with learning theory, especially Social Learning Theory (Bandura, 1971; 1977) that may be practically applied in a variety of settings to meet educational goals and objectives. As indicated in the review of the literature, there are numerous examples of social skills interventions using a range of instructional techniques and strategies. The literature reviewed also indicated the techniques and strategies were employed as single components or in conjunction with other components, often without clear effects related to component analysis. The current investigation is unique in that it will attempt to systematically build social skill acquisition on a demonstrated base of social knowledge within a leisure education context. The current investigation will attempt to increase understanding of effects of a leisure education program on (a) social knowledge acquisition via computer-assisted instruction and (b) social skills acquisition via instructor-facilitated role play for pre-kindergarten children with social skills deficits.

CHAPTER III

METHOD

The purpose of this study was to examine effects of a leisure education program on generalization of social skills of children with social skills deficits. A single subject multiple probe across participants design was used that included a training condition (computer and software) and three experimental conditions: (a) baseline probe (computer-assisted instruction [CAI] and instructor-facilitated role play [I-FRP] not related to social skills), (b) intervention (A leisure education intervention package with components of CAI and I-FRP), and (c) follow-up. The study addressed (a) social knowledge, and (b) social skills used within leisure contexts and attempted to answer the following questions.

Research Questions

(1) What are effects of a leisure education intervention package using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) on generalization of social knowledge and skills of Pre-K children with social skills deficits as measured by percentage of target behaviors demonstrated using observations of social interactions during play with one peer?

(2) What are effects of a leisure education intervention package using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) on generalization of social knowledge and skills of Pre-K children with social skills deficits as measured by the percentage of target behaviors demonstrated using observations of social interactions during natural setting classroom play with one or more peers?

Participants

Participants for the study were three 4-year-old children who demonstrated social skills deficits, currently attend pre-kindergarten (Pre-K), and were recommended to participate in the study by the Pre-K teacher. Participation in the study was based on participants meeting the following criteria: (a) recommendation by the Pre-K teacher, (b) meeting standards for target behaviors (Appendix F) by demonstrating observable social skills deficits (e.g., lack of effective skills related to greeting, speech volume, speech pace, using words that demonstrate respect, and comfortable body distance), (c) expressing interest in participation, (d) demonstrating choice-making ability when presented with two options, (e) being between the ages of 4 and 5, (f) giving verbal assent for participation (Appendix A), and (g) granting of informed parental or guardian consent (Appendix B).

Participant Descriptions

Participants included 2 girls and 1 boy who were White (1 girl and the boy Caucasian, the other girl Puerto Rican). The children had either one or no siblings. Although 5 children were initially identified to participate, only 3 completed the study because 2 participants declined to participate in activities associated with the study (i.e., CAI, play with one peer). The following narrative provides detailed information on each participant.

Gabriel. At the beginning of the study, Gabriel was a 4-year-old Caucasian boy with social skills deficits. Gabriel lives at home with his mother, father, and 20-month-old sister. During interviews prior to study initiation, the Pre-K teacher indicated that Gabriel lacked skills related to initiating and maintaining play with peers and frequently played with toys solitarily during classroom center time (semi-structured and unstructured play within the classroom) and on the playground. Gabriel had not been formally assessed for developmental delays prior to the

initiation of the study; however, the Pre-K teacher and the director of the educational center verbally expressed concerns to the researcher about Gabriel's lack of age-appropriate social interaction skills. During field observations prior to data collection the researcher observed that Gabriel initiated interactions with adults (e.g., staff, student interns, other children's parents, researcher) and engaged in self-talk, but had limited interactions with peers. Prior to and during the study, Gabriel repeatedly used words associated with fantasy such as a horse that could fly with "fire shooting out of his feet." He would often approach adults and request "pick me up." He would respond to adults with "Thank you" or "You're Welcome" when appropriate; however, he would also move quickly around the classroom loudly vocalizing "bomb" noises. Often during naptime, Gabriel would be moved to a section of the room where he was away from the other children because of his loud talking and vocalizations. On more than one occasion, the researcher heard other children verbalizing "Yeah, Gabriel" when the teacher(s) would ask him to "use an inside voice" or to "stop a behavior" that could affect the class' overall ability to earn token toy prizes.

Estrella. At the beginning of the study, Estrella was a 4-year-old Puerto-Rican girl with social skills deficits. Estrella lives at home with her mother, father, and 14-month-old brother. During interviews prior to study initiation, the Pre-K teacher indicated that Estrella lacked social skills related to conflict resolution with peers during classroom center time and on the playground. Although Estrella had not been formally assessed for developmental delays in social skills, the Pre-K teacher and director of the educational center verbally expressed concerns to the researcher about Estrella's lack of skills in resolving conflict with peers. During field observations prior to data collection, the researcher observed that Estrella shouted inappropriate statements at peers and cry (e.g., "I hate you! I do not ever want to play with you again!"), stomp

her feet, turn her back on and walk away from peers when they did not follow her lead with play. She grabbed toys away from peers without asking when she wanted to play with the toys, and her behavior was often unpredictable; one moment she was playing cooperatively with a peer(s) and for no observable reason, she shouted loudly at her playmates (e.g., "NO! Do it this way!" "You are not nice! You are bad!"). Prior to and during the study the researcher observed that Estrella tended to play more with boys than girls and did not engage in play activities engaged in by many of her same-age girl peers (e.g., dress-up in adult female clothes and shoes, doll play, family play, female specific dramatic play such as play as a princess, movie star, or brides). Estrella is fluent in Spanish and English. At home, Spanish is the primary language used and when her parents arrived at school in the mornings and the afternoons they (parents and Estrella) conversed in Spanish. Additionally, the researcher observed Estrella and other bilingual children excluding other children because they "could not speak Spanish." Estrella and a bilingual playmate stated to the researcher "You cannot go to Puerto Rico because you cannot speak Spanish." On several occasions the researcher spoke to Estrella and friends using Spanish words and Estrella loudly verbally responded by stating "No! You cannot say that!"

Mallory. At the beginning of this study, Mallory was a 4-year-old Caucasian girl with social skills deficits. Mallory lives at home with her mother and father and does not have siblings. Although during interviews prior to study initiation, the Pre-K teacher did not indicate that Mallory demonstrated social skills deficits, during field observations prior to data collection the researcher observed that Mallory often chose solitary activities (e.g., art, playing with toy animals) when there were options to play with other children. In addition, she generally did not initiate verbal interactions with peers *as Mallory*; rather she pretended to be something other than herself (i.e., an animal, an imaginary person, a princess). When pretending to be an animal she

approached peers as an animal – typically a horse or a puppy. When pretending to be a horse she positioned her head to "nudge" peers to mimic horse behaviors and she positioned her upper body in a manner that suggested she was a horse standing on her hind legs with her front legs in the air; often when she pretended to be a horse, she would whinny and neigh. When pretending to be a puppy, she would crawl on the floor; often she would bark at peers. The researcher observed other children saying "Mallory, I don't want to play with you if you are going to be a horse (or puppy)." Mallory typically wore clothes that were pink or red, typically dresses and tights and often wore pink cowboy boots. Mallory's mother had "glamorous" photographs of Mallory taken with Mallory wearing make-up and "frilly feminine adult wear;" additionally prior to the holiday break Mallory's mother expressed excitement that she and Mallory were going to get their hair "highlighted."

The teacher and director of the preschool were supportive of the inclusion of these 3 students in the leisure education intervention. The teacher stated that the information obtained via observations by the researcher and the intervention were helpful and interesting; additionally she stated that she would like to conduct such observations and interventions if she had time during the school day -- her responsibilities in the classroom precluded her from closely observing individual children's interaction on an ongoing basis. Prior to and during the study, the researcher regularly shared her observations with the teacher and overall, the teacher agreed with the observations and statements regarding the study participants. Generally during data collection (e.g., baseline, intervention, and follow-up) the researcher would spend 4-6 hours per day in the classroom; the children stated to her that she was a "teacher."

Setting

The setting was the Pre-K room of the McPhaul Child Development Center, a unit of the University of Georgia's College of Family and Consumer Sciences that provides care to approximately 110 children ages 8 weeks to five years including children in Head Start and a Pre-K program. The center includes classrooms segregated by age and outside recess areas with age appropriate playground equipment. The study occurred during school hours between 8:00 a.m. and 5:30 p.m. on Monday – Friday during fall and spring semesters.

The setting for sessions (observations of play with one peer, CAI, and I-FRP during baseline probe, intervention, follow-up conditions) was a multipurpose room located within the Pre-K classroom. The multipurpose room is 10 x 12 square feet and is accessible by an entrance within the classroom. The room is constructed of cement block and one wall has a door that can be opened onto the playground and contains a glass window (2 x 3 square feet) with adjustable 2" blinds, a second wall contains an unobscured glass window 4 x 5 square feet that faces the classroom and a door with an unobscured glass window (2 x 3 square feet) that faces the classroom, the third and fourth walls do not contain windows. The multipurpose room is used as an office, a meeting room, and for storage of various teaching materials. The room contains three office desks (two positioned along one wall with no windows and one against the second wall near the door), one Dell desktop computer, monitor, keyboard and mouse, a Hewlett Packard printer, four chairs (two stackable, two rolling office chairs), a refrigerator/freezer unit, 2 sets of stand-alone bookshelves, one area rug (4 x 4 square feet), and attached shelving 2 feet from the ceiling surrounding three of the four walls of the inner perimeter of the room.

Participants accessed the CAI component of the leisure education intervention using a Dell desktop computer located on a wooden desk 30" from the floor, having work area 26" deep

and 40” wide. During CAI, participants sat in a rolling office chair and were encouraged to remain seated in a position that promoted support for their upper torsos at a distance of 4-6” from the desktop area.

“Natural setting” observations were conducted in the classroom during designated “center times” that provided children with semi-structured and unstructured opportunities to engage in various activities [e.g., art, computers, sensory (tactile, visual, olfactory, auditory), reading, dramatic play]. “Center times” occurred three times each day: (a) from 8-8:30 a.m. (arrival until morning group), (b) from either 9:30-10:30 a.m. (fall and spring) or 10:30-11:30 a.m. (winter), and (c) from approximately 1:30-2:05 p.m. (following naptime before “goodbye” group). The children attending the extended day program had center time from approximately 4-5:00 p.m. Estrella and Mallory attended extended day; Gabriel did not and left school at approximately 2:30 p.m. each day. The extended day teacher is a second-year graduate student in the Department of Child and Family Development in the Child Life Specialist program. Each day and often prior to each center time, the teacher and/or extended day teacher explained center choices and assigned assistant teachers or student assistants to semi-structured centers (e.g., designated art projects, games with which children might need assistance, reading books aloud). The school staff supported the provision of primarily child-directed activities and within safety and reason the children had free choice of play materials, use of play materials, and play partners during center times.

Equipment and Materials

The equipment used during the study was a Dell desktop computer containing the CAI software. Data for social knowledge was collected via a computerized version of the SKA (Appendix E). Data for social skills were collected via observations recorded by the researcher

who used a digital video camera (Sony, Model TRV) placed on a tripod (Velbon, Model T-3500). Auditory data were collected by various microphones depending on participants' activities and efforts to minimize intrusiveness of video data collection. Microphones used were (a) a wireless lapel microphone (Samson Wireless) attached to participants' clothing during natural setting data collection (i.e., initial classroom entry and classroom centers with multiple peers), (b) a table-top flat microphone (PZM), and (c) the microphone located within the digital video camera. The researcher repositioned the camera as needed during video data collection (i.e., play with one peer and natural setting classroom play with one or more peers) and moved within approximately 3-6' from participants to allow for accuracy in recording yet maintain sufficient distance to minimize intrusiveness. Social skills generalization data (e.g., verbal and nonverbal behaviors) were collected during videotaped (a) play between a participant and one peer, (b) initial classroom entry by participant (e.g., morning arrival), and (c) natural setting classroom play with one or more peers (e.g., classroom centers). During observation of participants socially interacting during play with one peer, participants and peers played with age-appropriate small plastic and rubber toy animals, small plastic and rubber toy vehicles, puzzles, and a variety of connector toys while seated on the area rug on the floor of the multipurpose room. Observational data of targeted social skills were recorded on the Social Skills Assessment (SSA) (Appendix F) during viewing of the videotaped observations on a monitor (Dell 15" Flat Screen Monitor). Each day following data collection, videotaped data were digitally transferred and compressed using the video camera and Adobe Premier 6.5© software and copied onto a CD for ease of observational coding and viewing for the researcher and secondary observer. Social validity was determined through social validity surveys (Appendix G) administered before initiation of intervention and following completion of

intervention to school staff and family members. In addition, once the intervention was completed, semi-structured interviews (See Appendix H for Interview Guide) with school staff, parents, and participants occurred.

Research Team

The facilitator of the proposed study was the primary researcher who is a doctoral candidate in the university's Department of Recreation and Leisure Studies who had completed several single subject research investigations. The trained secondary observer was a monetarily reimbursed Certified Therapeutic Recreation Specialist (CTRS), with a Master's degree in Recreation and Leisure Studies, who has experience in single subject research and with individuals with various types of disabilities. She currently holds a position with the local Leisure Services Department as a Program Specialist for Special Populations. Her primary role was to act as a secondary observer of targeted verbal and nonverbal behaviors of participants during assessment of social skills generalization.

Research Design

The proposed study incorporated a single subject multiple probe across participants design involving a leisure education intervention package having components of computer-assisted instruction (CAI), and instructor-facilitated role play (I-FRP) This design permits intersubject direct replication of identical conditions over a number of cases and allows behavior changes to potentially be attributed to a specific intervention rather than other extraneous variables (Dattilo, Gast, Loy, & Malley, 2000). A single subject research design was chosen primarily because of its effectiveness in determining individual responses to interventions in therapeutic recreation settings, particularly for individuals with disabilities (Dattilo, et al., 2000).

The multiple probe across participants design was chosen because it allows for "systematic manipulation of independent variables" (Tawny & Gast, 1984, p. 226). It is a pragmatic approach to the combination of research and classroom instruction (Baer, Wolf, & Risley, 1968) and since social knowledge and skills are not functionally reversible, a withdrawal or reversal design would not be appropriate. In this investigation, experimental control was evaluated by introducing the intervention to participants sequentially; therefore, after 1 participant reached knowledge criterion for CAI (3 consecutive scores of at least 90% on the SKA) the next participant began the intervention with CAI. Once a participant reached knowledge criterion via CAI, I-FRP was initiated for that participant and continued until the participant reached skills criteria for targeted verbal and nonverbal behaviors. Initially, criteria for social skills generalization and maintenance was set at three consecutive scores of 90% or above for appropriate behaviors; it was determined that this was an unrealistic criteria because out of 169 videotaped observations (play with one peer = 85; natural setting classroom play with one or more peers = 84) across the 3 participants, in *both* settings across all conditions, 90% or above was reached on only 4 occasions (play with one peer = 3; natural setting classroom play = 1). The criteria was subsequently revised and identified as demonstrating targeted appropriate behaviors in both settings on three or more occasions at a frequency of least 50% higher than baseline probe on the Social Skills Assessment Forms (SSA) (Department of Education Northern Ireland [DENI], 1998; Institute of Education Sciences [ED], 2003; Peterson & Halstead, 1998).

Internal Validity

The following are potential threats to internal validity of single subject designs (a) history, (b) maturation, (c) testing, (d) multi-treatment interference, (e) attrition, (f) variability, and (g) instrumentation. Multiple probe designs attempt to limit effects of history and maturation

by time-lagged introduction of the intervention per participant; that is, any change in baseline probe condition (i.e., covariation evidenced by accelerating trend) will be recorded prior to beginning the intervention; however, the researcher cannot always control for history related to information received in other settings (i.e., TV, radio, home, church). Probe design employs intermittent testing which may potentially limit testing effect. The threat of multi-treatment interference to internal validity was limited because of the research design and nature of the independent variable. Although prior to beginning the study, participants' parents were asked if they anticipated participant absences in excess of three days at any one time, there are circumstances beyond a researcher's control; however, during this study only 1 participant had absences in excess of three days; Estrella traveled out of the country with her family 1 week (5 school days) prior to the 2 week holiday break. To control for attrition, the study initially involved five participants with the hope that all participants would complete the study; however, 2 of the participants declined participation in study activities (e.g., CAI and play with one peer) and the study remained viable with 3 participants to evaluate replication of effects over three tiers. To limit effects of variability, intervention for Gabriel did not begin until baseline probe data were stable (i.e., 3 consecutive data points that exhibit a zero-celerating or contra-therapeutic trend for the SKA and target behaviors). Similarly the intervention did not end until intervention data were stable and all 3 participants reached knowledge (3 consecutive sessions with scores at least 90%) and revised social skills criteria (3 consecutive sessions during intervention with scores at least 50% higher than baseline probe for targeted social interaction behaviors during play with one peer and natural setting classroom play with one or more peers). In addition to participants reaching criteria, the intervention was discontinued due to a 2-week holiday break in the classroom. Instrumentation threats were addressed by using detailed

definitions of dependent variables, systematic training of a secondary observer, and subsequent inter-observer reliability checks, procedural reliability checks, and participant training for software navigation.

Experimental Procedures

The proposed study was conducted over four conditions: software training, baseline probe, intervention, and follow-up. The first condition was determination of participants' computer and software competence via a procedural checklist (Appendix I). Deficits in participants' ability to use the computer or software would have been addressed through a training procedure (Appendix J) specific to the Dell desktop computer and the leisure education software ("New Friendland"); however, all 3 participants demonstrated effective computer competence (i.e., keyboard and mouse manipulation, recognition of letters for name, understood meaning of "press enter key") and therefore did not require computer training. Each participant quickly learned how to navigate within the leisure education software with minimal prompts from the researcher. The second condition was baseline probe, the third included introduction of the intervention having two components (a) computer-assisted instruction (CAI), and (b) instructor-facilitated role play (I-FRP) (researcher and participant). It was anticipated that (a) initiation of the CAI component of the intervention would result in improvements in participants' social *knowledge* scores over baseline probe (e.g., change in level, therapeutic trend, and median of scores) and (b) initiation of the I-FRP component of the intervention would result in improvements in participants' observed social *skills* over baseline probe. It was anticipated that improvement in social *knowledge* (i.e., SKA scores) would be maintained throughout the intervention and follow-up. The fourth and final condition was follow-up that involved probes at 4 and 8 weeks to assess maintenance of knowledge scores and skill demonstration.

Software Training

Prior to data collection, participants attended training sessions designed to teach them correct procedures for software navigation using software similar in format to CAI leisure education software. Prior to baseline probe assessment of social knowledge, participants demonstrated 100% accuracy in using the computer and ability to navigate within the software (Appendix I). During these sessions, the researcher was seated approximately 2-3' behind participants to provide suggestions using verbal prompts for equipment or software operation as needed. Arrangements with school staff was made to ensure that only 1 participant and the researcher were in the multipurpose room during CAI sessions.

Baseline probe

Baseline probe sessions included (a) skills assessment [i.e., videotaped play between a participant and one peer (approximately 5-10 min), (b) knowledge assessment (SKA, approximately 5-10 min), (c) computer-assisted learning activity not related to social skills (approximately 5-10 min), and (d) instructor-facilitated role play not related to social skills (role play with researcher, 5-10 min) (see Appendix K for Task Analyses). Each participant was escorted by the researcher to the multipurpose room to participate in approximately 20 min sessions (3 x wk) that included having a participant engage in (a) play with one peer (videotaped and subsequently scored using SSA) (approximately 5-10 min), (b) computerized administration of the Social Knowledge Assessment (SKA) (approximately 5-10 min) that recorded participants' scores related to social knowledge and (d) engaged in instructor-facilitated role play with the researcher that was not related to social skills (5-10 min).

Prior to a participant arriving in the multipurpose room, the researcher ensured (a) the assessment software was properly loaded onto the computer to be accessed by a participant and

(b) that toys were available for use by participants and peers. Once a participant and a peer entered the multipurpose room and completed the skill assessments (i.e., play with one peer), the peer exited the room and the participant remained with the researcher. The researcher ensured the participant was seated comfortably and within accurate viewing distance (6-8 inches) of the computer monitor and the researcher instructed the participant to complete the SKA assessment. Although the researcher attended each session with each participant, participants guided computer sessions independently and the researcher answered questions related to computer operation or software navigation. None of the participants demonstrated incorrect use of the computer nor did participants verbally state an inability to recall how to use the computer or software; during all conditions of the study participants demonstrated 100% accuracy for compute and software use.

To control for covariation (accelerating trend during baseline probe indicating increase in knowledge and/or skills prior to initiation of intervention), participants engaged in computer-assisted learning activities and instructor-facilitated role-play activities individually. Following I-FRP with the researcher, sessions ended and participants were escorted to the classroom.

Leisure Education Intervention Package

Computer Assisted Instruction (CAI) component. Once the first participant (Gabriel) exhibited stable SKA and SSA scores (3 consecutive sessions with either a zero-celerating or contra-therapeutic trend with stability demonstrated) during baseline probe, CAI was initiated with Gabriel. Once Gabriel reached knowledge criterion (3 consecutive sessions with scores of at least 90% on SKA), the second participant (Estrella) began intervention. Once Estrella reached knowledge criterion, the third participant (Mallory) began intervention. The CAI component of

the leisure education intervention package consisted of a 5-10 min computer learning activity during 20 min sessions (3 x wk) that occurred until participants reached criterion for SKA.

Intervention sessions were similar to baseline probe with the exception of initiation of computer-assisted learning activity related to social skills and included (a) skills assessment (play with one peer approximately 5 min), (b) knowledge assessment (SKA, approximately 5 min), (c) computer-assisted learning activity *related to* social skills (5-10 min) and (d) instructor-facilitated role play *not related to* social skills (role play with researcher, 5 min). The leisure education software consisted of various interactive scenarios associated with social interactions in leisure. The program was narrated by "Friendly," a yellow Labrador retriever, as friends Chris, Jamilah, and Jamie were presented with opportunities for social skills instruction designed to promote appropriate social interaction. The information was presented with narration of "movies" and animated illustration of specific social interactions.

The leisure education software was presented in five modules associated with different aspects of effective social interaction and friendship skills. Objectives were to: (a) identify verbal and nonverbal actions used in greeting friends, (b) use verbal statements that demonstrate respect toward friends when talking with friend, (c) use comfortable body distance when talking with a friend, (d) use volumes when speaking that are easy to hear when talking with a friend (e) use pace when speaking that is easy to understand when talking with a friend. Once participants received instruction related to a specific social skill, they had the opportunity to "practice" the skill by choosing a social response in five virtual leisure settings (i.e., gymnasium, swimming pool, library, computer room, playground). Virtual "practice" sessions were programmed to assess participants' number of correct responses, number of attempts to choose correct response per item, and time spent on each item. Participants chose a response from a set of two options,

one of which was the correct response. Each option was presented in the form of a movie that was introduced by Friendly and contained examples of social interactions within a leisure setting by either Chris and Jamie or Chris and Jamilah. If participants chose the correct response, they received auditory and visual positive feedback embedded within the software (i.e., a screen-centered, animated movie of Friendly stating, "Great job choosing the movie that shows Chris and Jamie using voices that are easy to hear.") and progressed to the next movie. If participants chose the incorrect response they received auditory and visual feedback (i.e., a screen-centered, animated movie of Friendly stating, "Hey, that was a nice try, but you chose the movie that showed Chris and Jamie using voices that are too loud.") and were then presented with the same movie for an additional opportunity to receive the information and make a correct response.

If participants chose the correct response on the first attempt on 3 consecutive occasions, they received positive feedback from Friendly and were returned to the main menu. If participants made incorrect and correct choices in various response patterns, they proceeded through each of the five movies. On each item, if participants failed to choose the correct response on two consecutive occasions, they progressed to the next item. There were multiple exemplars of each type of social interaction presented; in this study participants did not move to the next module until completing a previous module with at least 90% accuracy.

Instructor-facilitated role play. (I-FRP between researcher and participant) If Gabriel, Estrella, and Mallory reached social knowledge criterion (3 consecutive sessions with scores of at least 90% on the SKA) during the CAI component of the leisure education intervention, but did *not* reach criteria for social skills 3 consecutive sessions during intervention with scores at least 50% higher than baseline probe for targeted social interaction behaviors during play with one peer and natural setting classroom play with one or more peers, the I-FRP phase was

initiated. I-FRP provided Gabriel, Estrella, and Mallory with feedback related to targeted social interaction behaviors during intervention sessions with the researcher. The researcher provided verbal feedback as to whether behaviors demonstrated by participants during role play were similar to target behaviors depicted in CAI. During I-FRP sessions, following SSA and SKA probes, a participant and researcher practiced the interactions depicted in CAI. Participants received specific, relevant feedback (e.g., verbal reinforcement or correction) related to their social interaction behaviors during I-FRP with researcher. For example, the researcher stated "Pretend I am your friend on the playground and I greet you, show me what would you do and say." Based on the CAI program, the correct responses were: (a) make eye contact with friend ("Eye"), (b) smile at friend ("Smile"), and (c) say "Hi." When participants greeted the researcher using this response pattern or a close approximation of this response (e.g., "hello," rather than "hi") the researcher provided positive verbal feedback (i.e., "Good job using what you learned about greeting friends on the playground"). If a participant stated "I don't know" or did not demonstrate the targeted social skill the researcher prompted the participant to recollect what occurred during the computer lesson by asking questions such as "What did Chris and friends do and say when they saw one another on the playground?" If after the first verbal prompt, the participant did not demonstrate the targeted social skill, the researcher demonstrated the targeted behavior and asked the participant to model that behavior. Although the I-FRP sessions included instruction options to occur if needed after a second verbal prompt following researcher demonstration of a targeted behavior, none of the participants required a second demonstration or repeated viewing of the CAI module. This process was repeated using various leisure situations as examples for 5-10 min. Once I-FRP with the researcher ended (i.e., either after demonstration

of correct social interactions, or 10 min), then sessions were complete and the researcher escorted participants to the classroom or playground with the other students.

Follow-up. During follow-up probes at 4- and 8-weeks post intervention, (a) the SKA was administered to Gabriel, Estrella, and Mallory (2 probes for each participant; 1 at 4 wks, 1 at 8 wks), (b) Gabriel, Estrella, and Mallory's social interaction behaviors during play with one peer were examined (5 probes for Gabriel and Mallory, 6 probes for Estrella), and (c) Gabriel, Estrella, and Mallory's social interaction behaviors during natural setting classroom play with one or more peers (e.g., classroom centers,) (5 probes for Gabriel, 6 probes for Estrella, and 2 probes for Mallory) were examined.

Data Collection

Two primary methods of data collection occurred to assess (a) social knowledge and (b) generalization of knowledge to social skills demonstrated during play with one peer and natural setting classroom play with one or more peers. Data collection for social knowledge occurred via an assessment embedded within the computer-based leisure education software. Data collection for social skills entailed visual and auditory analysis of videotaped observations of social interactions during (a) play between participant and one peer, and (b) natural setting classroom play with one or more peers (e.g., initial classroom entry, classroom centers) In addition, data were collected via social validity surveys and researcher field notes.

Existence of a functional relationship between intervention components and changes in social skills was determined by reaching criteria for both social knowledge and skills. Reaching criterion for social *knowledge* was defined as 3 consecutive sessions with scores of at least 90% for the SKA. Reaching criteria for social *skills* was defined as 3 consecutive sessions during intervention with scores at least 50% higher than probe for targeted social interaction behaviors

during play with one peer and play in the natural setting classroom with one or more peers. Three consecutive intervention sessions with scores of at least 50% higher than median probe scores for targeted social interaction behaviors during play between participant and one peer and play in the natural setting classroom between a participant and one or more peers was scored using the SSA observation form. Instructor-facilitated role play sessions between participants and researcher were designed to be instructional and were not used to determine degree of generalization of knowledge to skills. Play sessions involving participants and one peer and natural setting classroom play with one or more peers were designed to assess generalization of knowledge from CAI and I-FRP with an instructor (i.e., the researcher) to social interaction skills with peers in a 1:1 setting in addition to a natural classroom setting.

Effects of the intervention on participants' social skills during play with one peer were assessed by observational probes for targeted social interaction behaviors (i.e., greetings, volume, pace, body distance, respectful words) at the beginning of each session. Assessment of play with one peer preceded administration of the SKA, CAI, and I-FRP sessions. The researcher videotaped participants as they socially interacted during play with one peer and subsequently examined the videotapes at the end of each day's sessions. During each condition, videotapes were viewed by the researcher to determine percentage of correct targeted social interaction behaviors (i.e., greetings, volume, pace, body distance, respectful words) to assess changes (Number of Occurrences of Targeted Behaviors between Participant and Peer(s)/Total number of 10 sec intervals observed x 100 = % Score). For example, if a participant was observed for 5 min (30-10 sec intervals) interacting appropriately with a peer (not self, not teacher, not researcher) during 20 intervals (using partial interval recording) the percentage score was calculated as follows: 20 behavior occurrences/30 intervals x 100 = 67%.

Social knowledge. The primary measure of social knowledge was percentage of correct responses on the SKA, designed to assess participants' knowledge of aspects of effective social interaction skills (e.g. greetings, volume, pace, body distance, respectful words). Baseline probe and intervention data were collected on Gabriel, Estrella, and Mallory in the multipurpose room using a Dell desktop computer. The SKA was administered to participants via the computer during baseline probe, intervention, and follow-up to examine participants' social knowledge. Each participant had 10 min to complete the SKA.

The SKA was a 10-item computerized assessment used to determine participants' social knowledge within leisure contexts. The SKA required participants to choose between two "movies" which were animated depictions of social interactions between friends. One movie depicted an appropriate social interaction behavior and the other depicted an inappropriate social behavior. For example, in one movie, two friends greeted one another using a series of verbal and nonverbal initiation behaviors (i.e., make eye contact, smile, and say "hi") and in the other movie, they moved past one another without greeting. The participant was prompted to choose the movie that was a better representation of how friends greet one another. The SKA took between 5-10 min to complete.

Social Skills. The primary measure of social skills was percentage of target behaviors demonstrated using the SSA observation form, designed to assess participants' social skills during play with one peer and natural setting classroom play with one or more peers. Generalization of social *knowledge* to social *skills* as demonstrated by participants exhibiting target behaviors during play with one peer and during natural setting classroom play with one or more peers was determined by percentage of targeted social interactions on the SSA ((Number of Occurrences of Targeted Behaviors between Participant and Peer(s) /Total number of 10 sec

intervals observed x 100 = % Score). Videotaped observational probes for targeted behaviors occurred during play with one peer and natural setting classroom play with one or more peers to assess participants' baseline probe social skills

Target behaviors during play between participants and peers are comprised of (a) appropriate and inappropriate verbal and nonverbal behaviors. A broad spectrum of social interaction behaviors and social skill definitions has been identified by researchers (Goldstein, Kaczmarek, Pennington, & Shafer, 1992; Quinn, Sherman, Sheldon, Quinn, and Harchik, 1992; Rutherford, Mathur, & Quinn, 1998; Strain & Kohler, 1995) and for the purposes of this proposed investigation, social skills were characterized by definitions related to origin of behavior.

Participants' behaviors during play with one peer and natural setting classroom play with one or more peers were identified as verbalization occurrences and can be further delineated as either initiations or responses; however the primary dependent measures assessed during this study were appropriate verbalizations during play between a participant and one peer or during play in the natural setting classroom between a participant and one or more peers. During play between a participant and one peer, there was no direction by the researcher as to how the participant and peer should interact, nor did the researcher facilitate play between the participant and one peer. The following definitions are of appropriate and inappropriate behaviors assessed as primary behavior measures in the study.

An *initiation* was defined as a behavior in which participants took initiative in directing a verbal or nonverbal, appropriate or inappropriate behavior toward a peer; the origin of behavior is with the participant. A *response* was defined as a behavior in which participants reacted to peers by using a verbal or nonverbal, appropriate or inappropriate behavior toward peers; origin

of behavior is with peers. For example, the researcher may have asked a participant to demonstrate how to ask a peer to join him/her in play in the computer room using a voice that is easy to hear (appropriate verbal) (e.g., "Let's pretend that 'Participant' and 'Peer' are talking in the computer room. 'Participant' show me what volume you would use to talk with your friend in the computer room so that it is easy for your friend to hear you.") In this case, origin of behavior would be with the participant (i.e., participant initiation).

In another example, the researcher may have asked the participant to demonstrate how to respond to a peer when the peer asks them to play basketball in the gym using words that are not respectful (inappropriate verbal) (e.g., "Let's pretend that 'Participant' and 'Peer' are playing basketball in the gym. 'Participant' show me how you would respond using words that are not respectful when 'Peer' asks you to play with him/her). In this case, the origin of behavior would be with the peer (i.e., participant response). Examples of initiations and responses are provided.

Appropriate verbal initiations include greeting peer (e.g., making eye contact, smiling, saying "Hi"), making positive statement toward peer or asking question (e.g., "Hi how are you today?"), asking peer to join an ongoing activity (e.g., "Would you like to play with me?") or making positive or neutral statement to peer related to an activity (e.g., "Yes, I'd like to play with you.," "I'm feeling great today, how are you?"). Appropriate nonverbal initiations include using comfortable body distance when speaking with peer (e.g., body distance not too close or too far).

Inappropriate verbal initiations include greeting peer using derogatory names, directing peer to not join an activity (e.g., "Go away I do not want to play with you!"), making negative statements about peer, making negative statements related to an ongoing activity (e.g., "Only babies play that!" "That is a dumb game!"). Inappropriate nonverbal initiations include using

uncomfortable body distance (e.g., either too close or too far), using a speech volume that is not easy to hear (e.g., either too loud or too quiet), using a speech pace that is not easy to understand (e.g., either too fast or too slow), making inappropriate physical initiation toward peer (e.g., hitting, kicking, spitting, pinching, tripping, pushing) and destructive actions toward peer's play materials (e.g., knocks play materials over, knocks play materials off surfaces, kicks sand structures).

Appropriate verbal responses include responding to peer's greeting, using peer's name during response, responding to peer's invitations to join ongoing activity (e.g., "Yes I'd like to play with you"), making positive or neutral response to peer related to ongoing activity (e.g., "Yes, I like playing this game, too"). Appropriate nonverbal responses include responding using comfortable body distance when responding to peer (e.g., neither too close nor too far).

Inappropriate verbal responses include responding to greeting by peer by using derogatory name toward peer, responding in derogatory manner when invited by peer to join activity, responding to peer using negative statement about peer (e.g., "I don't want to play with you because you are too slow" "We don't want her to play because she is stupid"), responding with negative statement related to ongoing activity (e.g., "That is a dumb game"). Inappropriate nonverbal responses include responding to peer with antisocial physical behavior (e.g., hitting, kicking, spitting, pinching, tripping, pushing), responding with destructive actions towards peer's play materials (e.g., knocking play materials over, knocking play materials off surfaces, kicking sand structures), responding using speech volume that is not easy to hear (e.g., too loud or too quiet), and responding using speech pace that is not easy to understand (e.g., too fast or too slow).

Video and Audio taping Procedures. Recording procedures were the same for baseline probe, leisure education intervention, and follow-up probe conditions. Video recordings of participants' social interactions during play with one peer (5-10 min, 3-4 x wk) per participant occurred in addition to video recordings of participants' social interaction during natural setting classroom play with one or more peers (5-20 min, 4-5 x wk) per participant. At the end of each day, following all participant sessions, recordings were examined and data were recorded using the SSA observation form to assess generalization of social skills.

Observer accuracy. Prior to the training of the secondary observer, the researcher reviewed the training tapes repeatedly and established a standard. The standard was used to train the secondary observer and during the training sessions there was at least a 90% agreement rate with the standard. During the training sessions the researcher provided (a) identification of participants and peers to observer, (b) written definitions of target behaviors, and (c) written instructions of observation procedures.

Observer reliability. For each participant, the researcher observed each of the videotaped sessions during baseline probe, intervention, and follow-up. The secondary observer reviewed at least 20% of sessions per condition per participant to determine inter-observer reliability. Reliability checks on at least 20% of sessions were used to assess occurrence and non-occurrence agreement (Tawney & Gast, 1984). If the agreement rate between the researcher and secondary observer had fallen below the 90% rate, the researcher would have retrained the secondary observer using the previously established training procedures and proceeded with observational data collection when inter-observer agreement reached 90% agreement; however, this did not occur and retraining was not necessary. The researcher randomly selected sessions for reliability checks during baseline probe, intervention, and follow-up probe conditions. For Gabriel, 3

reliability checks were selected from baseline probe (1 for play with one peer, 2 for natural setting play), 8 checks were selected from intervention, (4 for play with one peer, 4 for natural setting play) and 4 checks from follow-up (2 for play with one peer, and 2 for natural setting play). For Estrella, 5 reliability checks were selected from baseline probe (2 for play with one peer, 3 for natural setting play), 4 checks were selected from intervention, (2 for play with one peer, 2 for natural setting play), and 4 checks from follow-up (2 for play with one peer, 2 for natural setting play) For Mallory, 4 reliability checks were selected from baseline probe (2 for play with one peer, 2 for natural setting play), 4 checks were selected from intervention, (2 for play with one peer, 2 for natural setting play), and 2 checks from follow-up (1 for play with one peer, 1 for natural setting play). Reliability checks occurred on 22% or 38 of the 169 sessions (22% of total sessions for all 3 participants).

The researcher identified the reliability session by placing the session number on the secondary observer's SSA observation form. The secondary observer then independently viewed each of the sessions and recorded the total frequency of the targeted social interactions during both play with one peer and during natural setting classroom play with one or more peers.

Following observations by the researcher and secondary observer, the researcher calculated three reliability coefficients including point-by-point, occurrence, and non-occurrence agreement. A point-by-point agreement technique was used to assess reliability (Tawney & Gast, 1984). According to Tawney & Gast (1984), a point-by-point agreement reliability check is defined as "evaluating the agreements of observations when an occurrence and non-occurrence result." The following formula was used to calculate a reliability percentage: [Agreements/ (Agreements + Disagreements)] x 100 = Percent of Agreement. Point-by-point agreement between the researcher and secondary observer exceeded a 90% threshold for inter-observer

agreement. Overall point-by-point inter-observer agreement across all dependent measures, conditions, settings, and participants was *M* = 98%, Median = 100% (range 91-100%).

Because this study measured dependent measures with varying frequencies across settings and participants, occurrence and nonoccurrence reliability was also calculated. Tawney & Gast (1984) suggested the use of an occurrence reliability percentage when an interval recording system is used and when the target behavior is reported to have occurred in less than 75% of the intervals. To calculate occurrence agreement, the researcher used only those intervals in which one or both observers recorded an occurrence. Tawney and Gast (1984) also suggested the use of a nonoccurrence reliability percentage when the targeted behavior is reported to have occurred in more than 75% of the intervals. To calculate nonoccurrence agreement the researcher used only those intervals in which one or both observers recorded a nonoccurrence.

If occurrence and nonoccurrence reliability results fell below 80% agreement, the researcher reviewed the videotapes of occurrences in which the observer disagreed to determine the reason for disagreement. On only one occasion did nonoccurrence reliability percentage fall below the 80% threshold. Overall, *occurrence* agreement across all dependent measures, conditions, settings, and participants was *M* = 97%, Median = 100% (range 80-100%). Overall, *nonoccurrence* agreement across all dependent measures, conditions, settings, and participants was *M* = 93%, Median = 100% (range 67-100%).

Procedural reliability. The researcher created procedural reliability checklists (Appendix L) for (a) computer and software training sessions, (b) baseline probe, intervention, and follow-up assessment sessions for social knowledge and skills (c) baseline probe CAI and I-FRP sessions (not related to social skills), (d) baseline probe, intervention, and follow-up videotaping procedures for play with one peer (e) intervention CAI and I-FRP sessions (related to social

skills) and (f) baseline probe, intervention, and follow-up videotaping procedures for social interaction during natural setting classroom play between participants and one or more peers. Based on recommendations by Wolery and Holcombe (1993) procedural reliability checks occurred on 20% of sessions. In this study, a procedural reliability check occurred every fifth session within each condition to ensure procedural fidelity. The researcher used a videotape review method of procedural reliability. During computer and software training condition, the researcher reviewed the videotape and assessed the degree to which training protocol was followed per the procedural checklist. Evaluation of procedural fidelity was calculated using the number of correct procedural steps divided by the number of correct plus incorrect procedural steps. This occurred for each of the protocols. Overall procedural reliability was 93% (range = 84-100%) If procedural reliability had fallen below 80% the researcher would have reviewed the procedures with her major professor to reorient her to the proper procedures as outlined by the lists and corrected any problems as indicated.

Social Validity

Cooper, Heron, and Heward (1987) asked the question, “Will an increase or decrease in the measured dimensions of this behavior result in an improvement in the subject’s life, either directly, or indirectly?” (p. 249). Wolf (1978) and others have recommended that the social significance of a study should be determined along three dimensions: (a) social validity of goals, (b) social appropriateness of procedures, and (c) social importance of effects.

In this study, social validity of goals was determined by a panel of seven experts comprised of professionals in elementary education, school counseling, special education, instructional technology, therapeutic recreation, and leisure service provision who reviewed the leisure education software and provided comments and recommendations as necessary. In

addition, social validity of goals was determined prior to initiation of the study by (a) reviewing literature related to computer-assisted social skills instruction, (b) observing pre-kindergarten-aged children with similar characteristics, and (c) interviewing participants' teachers and parents using an interview guide (Appendix H).

Social appropriateness of procedures was assessed using surveys to 3 staff and the 3 participants' parents prior to initiating the intervention. Items in the seven-item, 5-point Likert-type social appropriateness survey with ratings from 1 (*strongly disagree*) to 5 (*strongly agree*) include statements such as "It is important for children to behave in socially acceptable ways" and "Children can benefit from a social skills training program designed to teach them how to interact appropriately with others."

Social importance of effects was determined based on surveys in addition to face-to-face interviews using an interview guide with participants, staff, and family members. Example items from the family-member version of the 7-item 5-point Likert-type survey include "The social skills training program was very helpful for my child" and "My child's behavior during social interactions has improved since his/her participation in the CAI leisure education program. During interviews, participants will be asked questions such as "What did you like best about the computer program?" and "What did you learn from the social skills program?" and "What would you change about the computer program?"

Data Analysis

Visual inspection of data plotted on three separate graphs (a) Percentage Correct on Social Knowledge Assessment (SKA), (b) Percentage of Appropriate Behaviors During Play with One Peer, and (c) Percentage of Appropriate Behaviors During Natural Setting Classroom Play with One or More Peers as well as basic statistical computations of central tendency (e.g.,

mean, median) occurred to provide *within* and *between* condition comparisons. In addition to data collected on participant social knowledge and skills, data collected during semi-structured interviews and via pre/post intervention social validity surveys of family members and teachers were examined.

The graphic display used for visual analysis in this study was a simple line graph; its purposes were to (a) organize data during data collection, and (b) communicate information related to effects of the intervention (Tawney & Gast, 1984). The graphic display allowed the researcher to examine data using *within condition analyses* that included (a) length of time (number of sessions, days), (b) level (change), and (c) trend (direction, data paths within trend). Statistical within conditional analyses (e.g., median, mean) occurred to determine level change, level stability, and possibly trend direction and trend stability using the split-middle method; however, it should be noted that there are not guidelines established for the use of split-middle analysis with multiple probe designs. Split middle analysis is typically used in continuous data collection designs (i.e., multiple baseline) rather than intermittent data collection. In addition, the following *between condition analyses* were examined through visual analysis: (a) number of variables that changed between adjacent conditions, (b) change in level (absolute, relative), (c) change in trend direction and stability. Statistical analyses occurred by calculating condition medians and means and reporting the range of scores as well as calculating percentage of overlap (Tawney & Gast, 1984).

Within condition analyses. The graphic display allowed the researcher to examine data using within condition analysis. Condition length of time (i.e., number of sessions, days) was determined by the number of plotted data points (i.e., percentage scores) indicating number of participant sessions. Level within condition was examined to determine change (i.e., stable or

variable). When visual analysis indicated stability in a condition, the researcher initiated the next condition (i.e., baseline probe to intervention); when visual analysis indicated variability of data within a condition, the researcher considered standard protocol of postponing changing conditions until data were stable for at least 3 consecutive data points. The researcher followed the protocol unless there were other reasons (i.e., limited length of time for intervention prior to 2-week holiday break) to disregard postponement of changing of condition

If stability or variability were not easily determined through visual inspection of the graphic display, variability of data (i.e., range of data point values) was assessed using statistical calculations recommended by Tawney and Gast (1984) ". . . if 80-90% of the data points of a condition fall within a 15% range of the mean level of all data point values of a condition, applied researchers will consider the data stable" (p. 161). In this study, the researcher used both calculations of the median and the mean. The median was be determined by sorting the scores in ascending order (i.e., 1, 2, 3, 4) and subsequently finding the mid-point of the numbers (i.e., between 2 and 3 = 2.5). The mean was calculated by summing the scores and dividing the total sum by the number of scores. *Absolute level change* within a condition was calculated by (a) identifying the first and last data point values, (b) subtracting the largest point value from the smallest point value, and (c) determining whether the difference in level was in a "therapeutic" or "contratherapeutic" direction (i.e., either improving or decaying); the level change confirmed whether condition change was indicated. In addition, *relative level change* compared the medians and means of the first and last halves of the data series (Tawney & Gast, 1984). The graphic display allowed visual inspection of trend and trend stability using a minimum of 3 data points; however, data variability influenced the number of data points required to determine trend and stability.

Trend direction (slope) was referred to as (a) accelerating or therapeutic trend (i.e., when percentage scores increased over sessions), (b) decelerating or contratherapeutic trend (i.e., when percentage scores decreased over sessions). Steeper slopes in trend were more easily visually detected.

In this study, if trend was not easily visually detected (e.g., high variability in data) by using the *free-hand method* (i.e., connect data points to visually inspect trend), statistical analysis was employed using the *split-middle method* to more reliably estimate trend. For continuous data collection (i.e. multiple baseline) split-middle estimates are based on determining a quarter-intersect line between mid-rates and mid-dates of the first and second halves of a condition that permits half of all data points within a condition to fall above the split-middle line and half of all data points to fall below the split-middle line. In addition to trend, *trend stability* was examined using a predetermined range of acceptability along the trend line; as with level stability the trend will be considered stable if 80-90% of data points fall within 15% of the median (Tawney & Gast, 1984).

Between condition analyses. The graphic display allowed the researcher to examine data using between condition analyses. Number of variables that changed between conditions was one per condition. Visual analysis of graphic display assessed change in level between adjacent conditions. It was anticipated that an abrupt, positive change in participant's behavior might have occurred upon initiation of the intervention that was maintained for 3 consecutive data points to suggest intervention efficacy. However, data that reflected no level change and no change in trend between conditions, suggested that the intervention may be functionally equivalent across conditions.

Graphic display indicated change in trend direction and stability between conditions; similarly with level, the researcher examined the data to determine if the trend was accelerating, decelerating, or zero-celerating. In addition, the researcher determined whether trend onset was immediate or delayed. It was anticipated that an immediate accelerating trend might have occurred upon initiation of intervention. A delayed onset of trend change indicated limited intervention effects. Between condition statistical calculations of medians and means, reporting the range of scores and percentage of overlap occurred. Percentage of overlap was calculated by (a) determining the range of data points in condition A (i.e., baseline probe), (b) determining the range of data points in condition B (i.e., intervention Phase I), (c) counting the number of data points in condition B that fall within the range of condition A, and (d) dividing the number of data points of condition B that fall within the range of condition A by the total number of data points in B, and multiplying by 100.

CHAPTER IV

RESULTS

The purpose of this study was to examine effects of a leisure education intervention on the social knowledge and skills of Pre-Kindergarten (Pre-K) children with social skills deficits using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP). A single subject multiple probe across participants design was used to assess the impact of the leisure education intervention on social knowledge and skills.

Using guidelines established by Tawney and Gast (1984) graphed data were visually analyzed to examine social knowledge scores and demonstrated social skills during (a) play with one peer and (b) natural setting classroom play with one or more peers. Level stability, level changes, trend direction, and trend stability were assessed. A minimum of three observations was conducted to assess trend stability during baseline probe and intervention conditions. Level was considered stable in baseline probe and intervention conditions if 80% of the data points fell within 20% of the median level of all data points within the conditions. Level changes were identified if a difference in the last data point of the baseline probe condition and the first point in the intervention condition were observed using visual analysis. Visual analysis and calculations of split-middle were also used to determine the trend direction (accelerating, decelerating, or zero-celerating).

Results are presented from scores on the Social Knowledge Assessment (SKA) and from observations of targeted appropriate and inappropriate behaviors by the 3 participants during (a) play with one peer and (b) natural setting classroom play with one or more peers during baseline

probe, intervention, and follow-up conditions. In addition, participant and classroom observations from the researcher's journal are presented. Results of social validity questionnaires completed by family members and staff and information acquired through informal interviews of family members, staff, and participants are presented for additional information related social validity of the leisure education intervention.

Social Knowledge

One anticipated result of the current investigation was that Pre-K children who participated in a leisure education intervention using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) would generalize social knowledge to social skills used during (a) play with one peer and (b) natural setting classroom play with one or more peers. To establish that participants had acquired the social knowledge presented through the leisure education intervention, participant social knowledge was assessed using a computerized version of the Social Knowledge Assessment (SKA). Reaching criterion for social knowledge was defined as three consecutive sessions with scores of at least 90%. All 3 participants reached criterion for social knowledge and results were replicated across participants. Participant data for baseline probe, intervention, and follow-up conditions are detailed in individual sections below and graphically displayed in Figure 4.1.

Gabriel

Gabriel exhibited variable scores on the SKA that were zero-celerating during six baseline probes prior to the CAI phase of the intervention with a median probe score of 60%, M = 58 % (range = 40-70%). Once the CAI phase of the intervention began, there was an

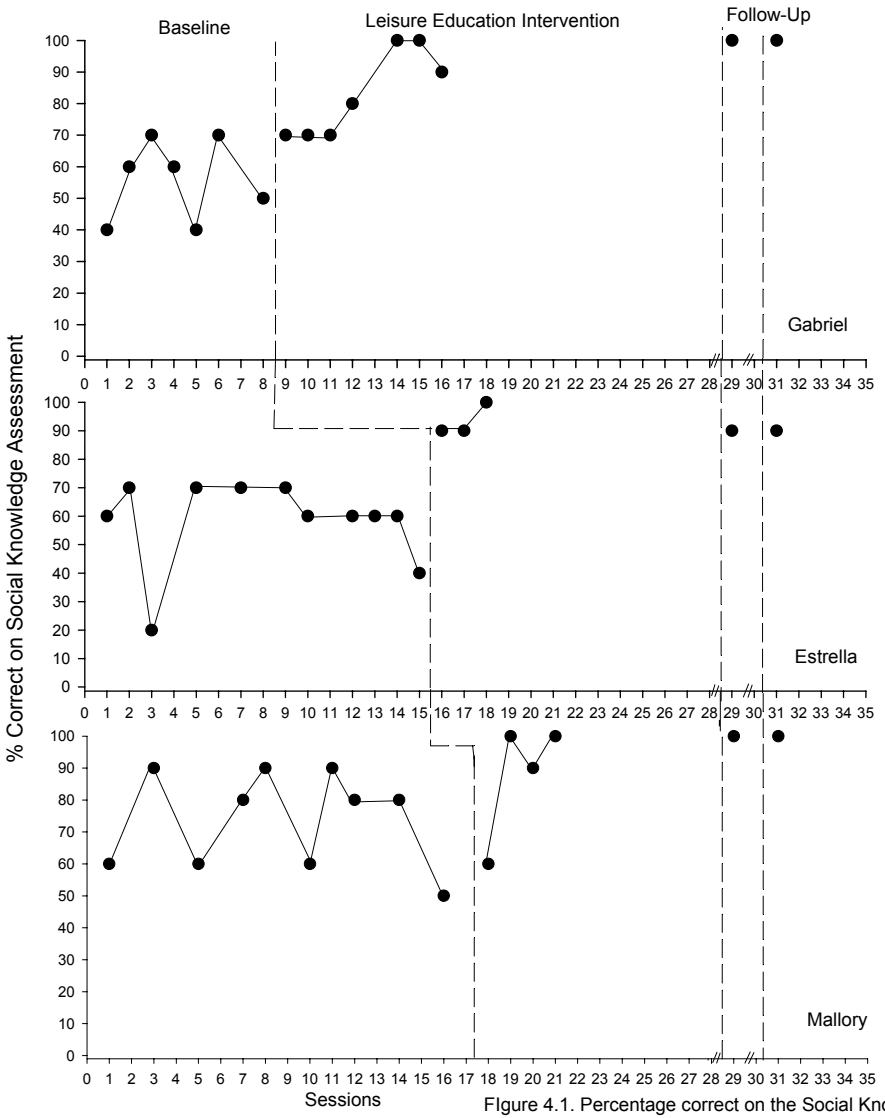

FIgure 4.1. Percentage correct on the Social Knowledge Assessment

immediate level change with a gradually accelerating and stable trend over seven intervention probes to reach criteria with last three data points of 100%, 100%, and 90%. Gabriel's median intervention score was 80%, *M* = 83% (range = 70-100%). Gabriel's follow-up scores were maintained at 100% at 4- and 8-week intervals post-intervention.

Estrella

Estrella exhibited variable and zero-celerating scores on the SKA during 11 baseline probes prior to the CAI phase of the intervention with a median probe score of 60%, *M* = 58 % (range = 20-70%). Once the CAI phase of the intervention began, there was an abrupt level change with a stable and accelerating trend over three intervention probes to reach criterion of 90%, 90%, and 100%. Estrella's median intervention score was 90%, *M* = 93% (range = 90-100%). Estrella's follow-up scores were maintained at 90% at 4- and 8-week intervals post-intervention.

Mallory

Mallory exhibited variable and zero-celerating scores on the SKA during 10 baseline probes prior to the CAI phase of the intervention with a median probe score of 80%, *M* = 74% (range = 50-90%). Once the CAI phase of the intervention began there was not an abrupt level change; however, following the first data point there was a rapidly accelerating, stable trend over four intervention probes to reach criterion of 100%, 90%, and 100%. Mallory's median intervention score was 95%, *M* = 88% (range = 60-100%). Mallory's follow-up scores were maintained at 100% at 4- and 8-week intervals post-intervention.

Multiple Probe Across Participants

During baseline probe condition prior to initiation of the CAI phase of the intervention, trends were variable and zero-celerating with participants' median SKA scores ranging between

60-80% (*M* range =58–74%) with the highest score across participants being 90%. Once the CAI phase of the intervention began, each participant's scores accelerated with medians ranging from 80-95% (*M* range = 83–93%) with highest scores reaching 100% for Gabriel, Estrella, and Mallory. 4-and 8-week follow-up probes indicated that scores were maintained at 100% for Gabriel and Mallory and 90% for Estrella. These results suggested that there was replication of intervention effects across participants for social knowledge as measured by percentage correct on the SKA.

Social Skills

Play with One Peer

Another anticipated result was that Pre-K children who participated in a leisure education intervention using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) would generalize social knowledge and skills demonstrated during the CAI and I-FRP phases of the intervention to social skills used during play with one peer. Participants' percentage scores for appropriate behavior during play with one peer were determined by dividing the total occurrences of appropriate behavior during 10 sec intervals by the number of 10 sec intervals within an observation period (e.g., 10 min observation = 60 intervals). For example, if a participant was observed for 10 min a score of 100% would be equivalent to at least one appropriate interaction per interval for 60 intervals (60 occurrence/60 intervals). Gabriel and Estrella reached criterion for appropriate behavior (social skills) during play with one peer; Mallory approached criterion but did not reach it. Data were highly variable and results were not replicated across participants. Participant data for baseline probe, the CAI and I-FRP phases of the intervention, and follow-up conditions are detailed in individual sections below, graphically displayed in Figure 4.2, and summarized in Table 4.2

Gabriel

Gabriel's scores for appropriate behavior during play with one peer were variable with a decelerating trend during six baseline probes prior to the CAI phase of the intervention with a median probe score of 16%, *M* = 23% (range = 6-50%). Once the CAI phase of the intervention began, there was an abrupt change in level for the first data point to 100% with the following three points moving to 40%, 31%, and 44% respectively. Overall for the CAI phase of the intervention, data were variable and indicated an accelerating trend over four probes. Once the I-FRP phase of the intervention began, there was an abrupt change in level with scores changing from variable to stable and gradually accelerating over 14 probes. Gabriel's overall (CAI and I-FRP) median intervention score was 58%, *M* = 59% (range = 31-100%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 32% (6 data points). Four-week follow-up probes indicated that Gabriel's scores increased to a median of 75%, *M* = 76% (range 64-88%) over two sessions. Eight-week follow-up probes reflected that Gabriel's scores were maintained at a median of 75%, *M* = 70% (range 47-88%) over three sessions. Gabriel’s data indicate an increase in frequency of social skills (appropriate behavior) during play with one peer following participation in the overall leisure education intervention (CAI and I-FRP).

Estrella

Estrella's scores for appropriate behavior during play with one peer were variable with an accelerating trend during 12 baseline probes prior to the CAI phase of the intervention with a median probe score of 39%, *M* = 40% (range = 39-92%). Once the CAI phase of the intervention began, insufficient data were collected to determine effects of the CAI intervention (1 data point

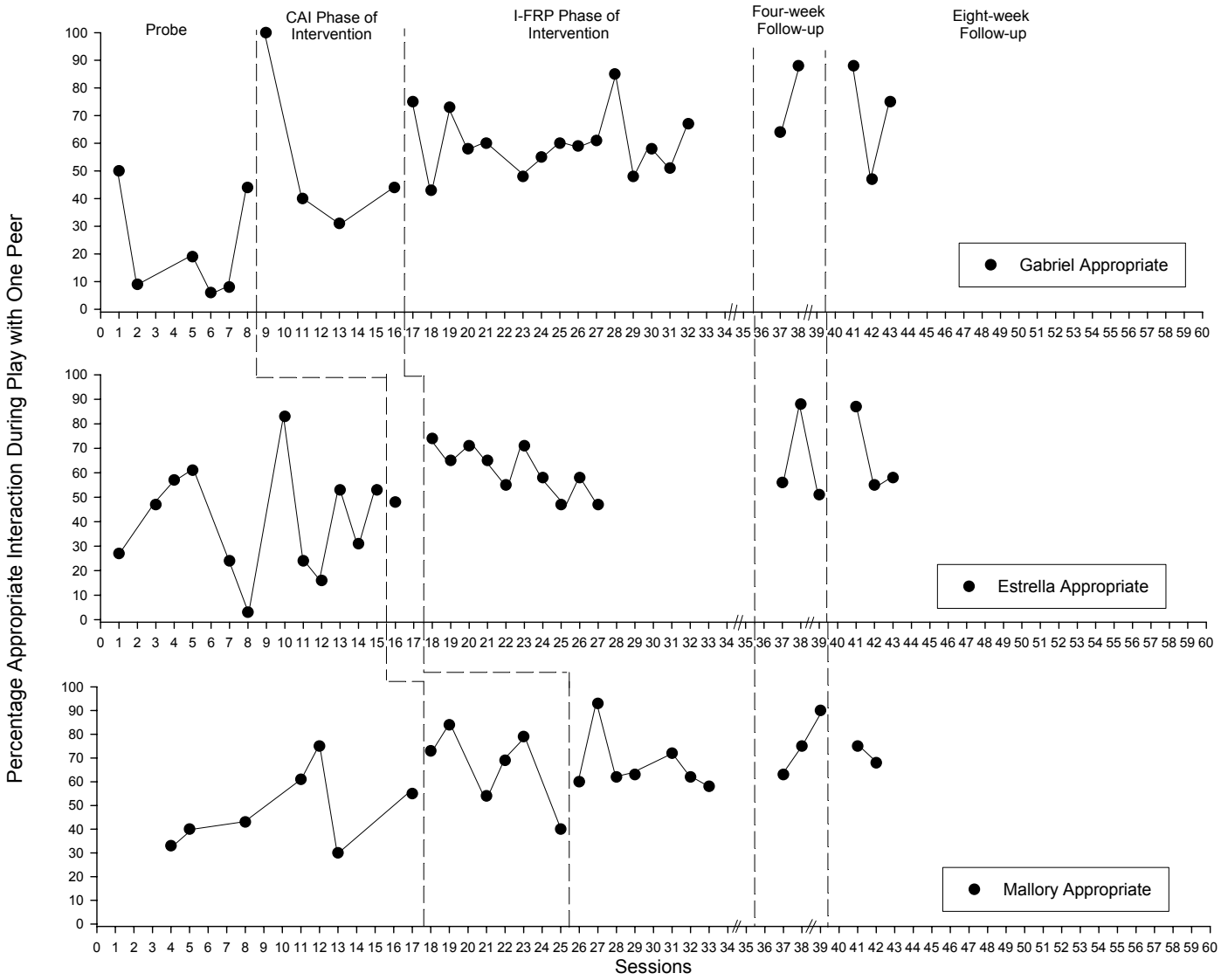

Figure 4.2. Frequency of appropriate behaviors occurring during play with one peer.

Table 4.2. Summary of Appropriate Behavior Scores during Play with one Peer

Name	Condition	# of Data Points	Range	Mean	Median and Split Middle Calculations	Trend* (within condition)	Level (20% of median)
Gabriel	Baseline Probe	6	6-50	22.67	16 Split Middle 1st half = 19 2nd half = 8	Decelerating	12.8-19.2 (1 pt) 17% of data pts w/in 20% range Variable
Gabriel	Intervention (CAI and I-FRP)	19	31-100	58.74	58 Split Middle 1st half = 53 2nd half = 59	Accelerating	46.4-69.6 (11 pts) 58% of data pts w/in 20% range Variable
	% Overlap (between)	(6 pts) 32%					
Estrella	Baseline Probe	12	3-83	39.92	39 Split Middle 1st half = 37 2nd half = 42	Accelerating	31.2-46.8 (1pt) 8% of data pts w/in 20% range Variable
Estrella	Intervention (CAI and I-FRP)	11	47-74	59.91	58 Split Middle 1st half = 65 2nd half = 58	Decelerating	46.4-69.6 (8 pts) 73% of data pts w/in 20% range Variable
	% Overlap (between)	(11 pts) 100%					
Mallory	Baseline Probe	7	33-75	48.14	43 Split Middle 1st half = 42 2nd half = 55	Accelerating	34.4-51.6 (2 pts) 29% of data pts w/in 20% range Variable
Mallory	Intervention (CAI and I-FRP)	13	40-93	66.85	63 Split Middle 1st half = 71 2nd half = 62	Decelerating	50.4-75.6 (9 pts) 69% of data pts w/in 20% range Variable
	% Overlap (between)	(10 pts) 77%					

* Across all 3 participants and within conditions *trends* demonstrated high variability

at 48%) on behavior during play with one peer; however, because Estrella met criterion for social knowledge (3 consecutive scores of at least 90%), the I-FRP phase of the intervention was initiated. Once the I-FRP phase of the intervention began, data indicated a decelerating trend as well as a change from variable to stable over 10 probes. Estrella's overall (CAI and I-FRP) median intervention score was 58%, *M* = 60% (range = 47-74%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 100% (11 data points). Four-week follow-up probes reflected that Estrella's scores were maintained at a median of 58%, *M* = 67% (range 51-88%) over three sessions. Eight-week follow-up probes indicated that Estrella's scores were maintained at a median of 71%, *M* = 71% (range 55-87%) over three sessions. Estrella's data do not indicate a change in frequency of social skills (appropriate behavior) during play with one peer following participation in the overall leisure education intervention (CAI and I-FRP).

Mallory

Mallory's scores for appropriate behavior during play with one peer were variable with an accelerating trend during seven baseline probes prior to the CAI phase of the intervention with a median probe score of 43%, *M* = 48% (range = 33-75%). Once the CAI phase of the intervention began there was an abrupt increase in level that was not maintained over the following data points and that subsequently demonstrated a gradually decelerating and variable trend over six probes. Once the I-FRP phase of the intervention began, data were zero-celerating and variable over six probes. Mallory's overall (CAI and I-FRP) median intervention score was 63%, *M* = 67% (range = 40-93%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 77% (10 data points). Four-week follow-up probes indicated that Mallory's scores increased to a median of 76%, *M* = 75% (range 63-90%) over three sessions.

Eight-week follow-up probes reflected that Mallory's scores were maintained at a median of 72%, *M* = 72% (range 68-75%) over two sessions. Mallory's data do not indicate a change in frequency of social skills (appropriate behavior) during play with one peer following participation in the overall leisure education intervention (CAI and I-FRP).

Multiple Probe Across Participants

Across participants, during baseline probe condition prior to initiation of the CAI phase of the intervention median scores for appropriate behavior during play with one peer ranged from 16-43% (*M* range = 23-48%). Visual inspection of baseline probe data indicated a decelerating trend for Gabriel and accelerating trends for Estrella and Mallory. Upon initiation of the CAI phase of the intervention, there was an abrupt change in level for both Gabriel and Mallory that was not maintained for either participant; there was no level change for Estrella. Across participants during the CAI phase of the intervention, trends were zero-celerating to decelerating. Upon initiation of the I-FRP phase of the intervention, each participant demonstrated an abrupt change in level that was not maintained. During the I-FRP phase of the intervention, Gabriel demonstrated a gradually accelerating variable trend; Estrella and Mallory's data were decelerating to zero-celerating and variable. Overall participant medians for appropriate behavior during the intervention (CAI and I-FRP) ranged from 58-63% (*M* range = 59-67%). Four-week follow-up probes indicated that Gabriel and Mallory increased their median scores at a range of 75-76% (*M* = 75-76%) and Estrella maintained her median at 58% (*M* = 67%). Eight-week follow-up probes indicated that Gabriel and Mallory maintained their increases (from 4-week follow-up probes) with medians of 72-75% (*M* = 72-76%) and Estrella increased her median to 71% (*M* = 71%). Across participants, data supported the following results related to reaching criterion for appropriate behaviors (social skills) during play with one peer: (a) Gabriel and

Estrella reached criterion with Gabriel's median intervention score (58%) being 300% above baseline probe (16%) and Estrella's median intervention score (58%) being 50% above baseline probe (39%); (b) Mallory approached criterion with a 46% increase from baseline probe (43%) to intervention (63%) but did not reach criterion.

Because of variability and effects of variability as potential for error in visual analysis, split-middle calculations of median [calculation of medians (mid-rate) of 1st and 2nd halves of condition (mid-date) and drawing of trend line] were used to determine trends within conditions across all participants (see Table 4.2). Although Gabriel's results may have suggested some behavior changes due to the effects of the overall intervention, results were not replicated across Estrella and Mallory and demonstrated limited to no effects of the overall intervention across participants during play with one peer.

Natural Setting Classroom Play with One or More Peers

A third anticipated result was that Pre-K children who participated in a leisure education intervention using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP) would generalize social knowledge and skills demonstrated during the CAI and I-FRP phases of the intervention to social skills used during natural setting classroom play with one or more peers. Participants' percentage scores for appropriate behavior (social skills) during natural setting classroom play with one or more peers were determined by dividing the total occurrences of appropriate behavior during 10 sec intervals by the number of 10 sec intervals within an observation period (e.g., 10 min observation = 60 intervals). For example, if a participant was observed for 10 min a score of 100% would be equivalent to at least one appropriate interaction per interval for 60 intervals (60 occurrences/60 intervals). All 3 participants reached criterion for appropriate behavior (social skills) during natural setting classroom play with one or more peers;

however data were highly variable and results were not replicated across participants Participant data for baseline probe, the CAI and I-FRP phases of the intervention, and follow-up conditions are detailed in individual sections below, graphically displayed in Figure 4.3, and summarized in Table 4.3

Gabriel

Gabriel's scores for appropriate behavior during natural setting classroom play with one or more peers were stable with a decelerating trend over eight baseline probes prior to the CAI phase of the intervention with a median baseline score of 3.5%, *M* = 6% (range = 2-26%). Once the CAI phase of the intervention began, there was not an abrupt change; however, there was a variable and gradually accelerating trend over five probes prior to initiation of the I-FRP phase of the intervention. Once the I-FRP phase of the intervention began, the gradually accelerating and variable trend continued over 13 probes. Gabriel's overall (CAI and I-FRP) median intervention score was 29%, *M* = 31% (range = 0-66%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 28% (5 data points). Four-week follow-up probes indicated that Gabriel's scores increased to a median of 63%, *M* = 61% (range 54-67%) over three sessions. Eight-week follow-up probes reflected that Gabriel's scores were maintained at a median of 61%, *M* = 61% (range 55-67%) over two sessions. Gabriel's data indicate an increase in frequency of social skills (appropriate behavior) during natural setting classroom play with one or more peers following participation in the overall leisure education intervention (CAI and I-FRP).

Estrella

Estrella's scores for appropriate behavior during natural setting classroom play with one or more peers were variable with a decelerating trend over 13 probes prior to the CAI phase of

the intervention with a median probe score of 28%, *M* = 27% (range = 0-56%). Once the CAI phase of the intervention began there was an immediate, abrupt increase in level that was not maintained; insufficient data were collected (2 points) during the CAI phase of the intervention to determine effects of CAI on appropriate behaviors in natural setting classroom play with one or more peers. Upon initiation of the I-FRP phase of the intervention, there was an abrupt decrease in level that was followed by an abrupt increase in level to become a zero-celerating and variable trend over seven probes. Estrella's overall (CAI and I-FRP) median intervention score was 44%, *M* = 40% (range = 6-52%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 100% (9 data points). Four-week follow-up probes indicated that Estrella's scores increased to a median of 70%, *M* = 58% (range 26-77%) over three sessions. Eight-week follow-up probes reflected that Estrella's scores were maintained at a median of 58%, *M* = 62% (range 56-71%) over three sessions. Estrella's data do not indicate a change in frequency of social skills (appropriate behavior) during natural setting classroom play with one or more peers following participation in the overall leisure education intervention (CAI and I-FRP).

Mallory

Mallory's scores for appropriate behavior during natural setting classroom play with one or more peers were variable with a zero-celerating trend over 11 baseline probes prior to initiation of the CAI phase of the intervention with a median probe score of 7%, *M* = 11% (range = 0-42%). Once the CAI phase of the intervention began, there was not an abrupt change in level; however, there was a gradually accelerating trend over five probes that did not continue to accelerate upon initiation of the I-FRP phase of the intervention as indicated over four variable and zero-celerating probes. Mallory's overall (CAI and I-FRP) median intervention score was

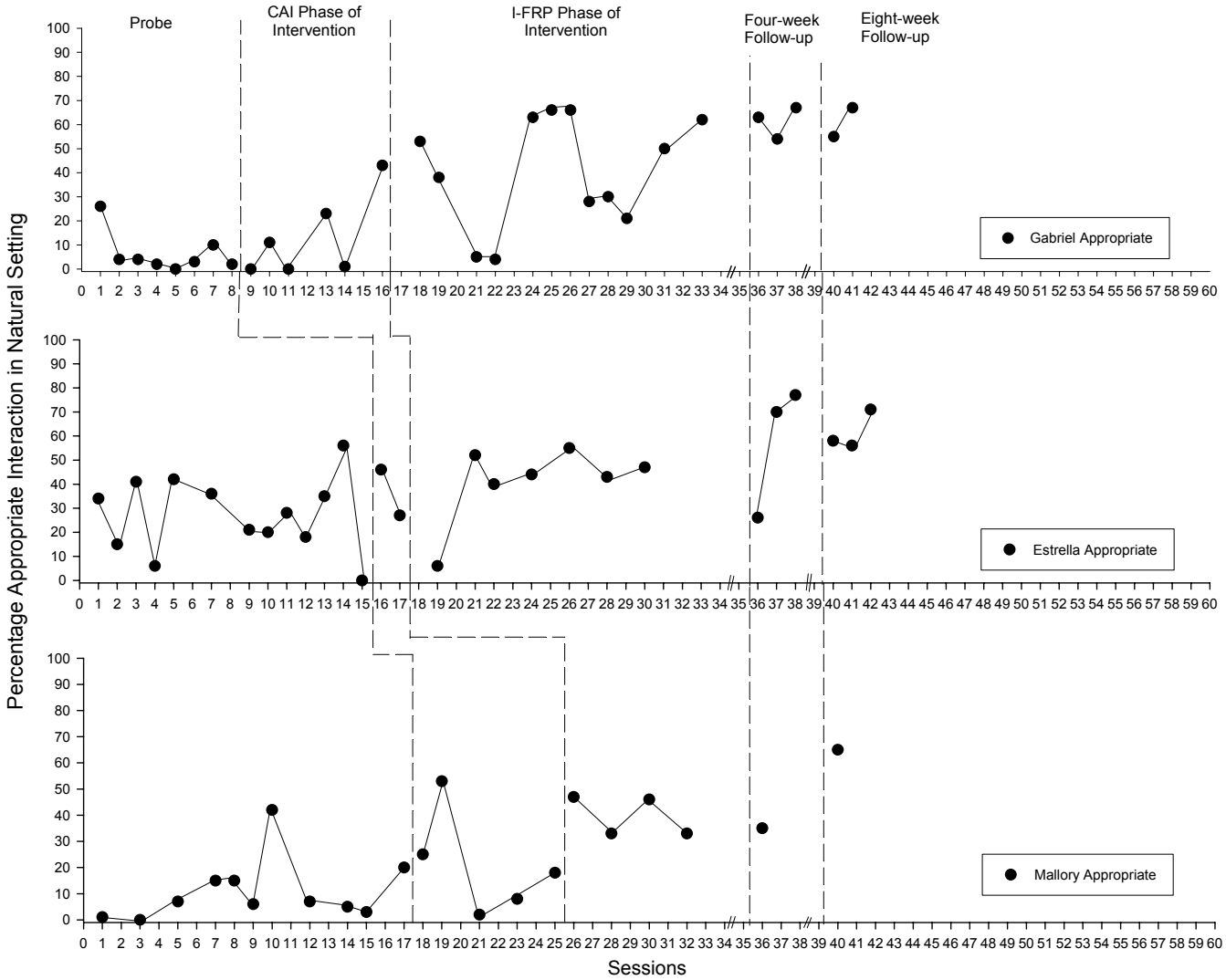

Figure 4.3. Frequency of appropriate behaviors occurring during natural setting classroom play with one or more peers.

Table 4.3. Summary of Appropriate Behavior Scores during Natural Setting Classroom Play

Name	Condition	# of Data Points	Range	Mean	Median	Trend (within condition)	Level (20%)
Gabriel	Baseline Probe	8	2-26	6.38	3.50 Split Middle 1st half = 4 2nd half = 2.5	Decelerating and Stable	2.8-4.2 (3 pts) 38% of data pts w/in 20% range Variable
Gabriel	Intervention (CAI and I-FRP)	18	0-66	31.33	29 Split Middle 1st half = 11 2nd half = 50	Accelerating and Variable	23.2-34.8 (3 pts) 17% of data pts w/in 20% range Variable
	% Overlap (between)	(5 pts) 28%					
Estrella	Baseline Probe	13	0-56	27.08	28 Split Middle 1st half = 34 2nd half = 24	Decelerating and Variable	22.4-33.6 (2 pts) 15% of data pts w/in 20% range Variable
Estrella	Intervention (CAI and I-FRP)	9	6-52	40	44 Split Middle 1st half = 40 2nd half = 45.5	Zero-celerating and Variable	35.2-52.8 (6 pts) 67% of data pts w/in 20% range Variable
	% Overlap (between)	(9 pts) 100%					
Mallory	Baseline Probe	11	0-42	11	7 Split Middle 1st half = 7.0 2nd half = 6.5	Zero-celerating and Variable	5.6-8.4 (3 pts) 27% of data pts w/in 20% range Variable
Mallory	Intervention (CAI and I-FRP)	9	2-53	29.44	33 Split Middle 1st half = 18 2nd half = 39.5	Accelerating and Variable	26.4-39.6 (2 pts) 22% of data pts w/in 20% range Variable
	% Overlap (between)	(6 pts) 67%					

33%, *M* = 29% (range = 2-53%). Percentage of overlap between baseline probe and intervention (CAI and I-FRP) conditions was 67% (6 data points). A 4-week follow-up probe reflected that Mallory's score was maintained at 35% over one probe. An 8-week follow-up probe indicated that Mallory's score increased to 65% over one probe. Mallory's data indicate a slight increase in frequency of social skills (appropriate behavior) during natural setting classroom play with one or more peers following participation in the overall leisure education intervention (CAI and I-FRP).

Multiple Probe Across Participants

During baseline probe condition prior to initiation of the CAI phase of the intervention, median scores for appropriate behavior during natural setting classroom play with one or more peers ranged from 3.5-28% (*M* range = 6-27%). Visual inspection of baseline probe data indicated a decelerating, stable trend for Gabriel, a decelerating, variable trend for Estrella, and a zero-celerating, variable trend for Mallory. Upon initiation of the CAI phase of the intervention Gabriel and Mallory did not exhibit abrupt level changes; however, Estrella demonstrated an abrupt level change that was not maintained over two data points. During the CAI phase of the intervention, Gabriel and Mallory demonstrated gradually accelerating and variable trends over four and five data points respectively; there was insufficient data collected during the CAI phase of the intervention to determine trend or stability for Estrella. Upon initiation of the I-FRP phase of the intervention, Gabriel demonstrated a gradually accelerating, variable trend over 13 points, Estrella a zero-celerating, variable trend over seven points, and Mallory a zero-celerating, variable trend over four points. Overall (CAI and I-FRP) participant medians for appropriate behavior ranged from 29-44% (*M* range = 31-40%). Four-week follow-up probes indicated that Gabriel and Estrella increased their median scores at a range of 63-70% (*M* = 58-61%) and

Mallory maintained her median at 35%. Eight-week follow-up probes indicated that Gabriel and Estrella maintained their increases (from 4-week follow-up probes) at 58-61% (*M* = 61-62%) and Mallory increased her median to 65%. Across participants, data supported Gabriel, Estrella, and Mallory reaching criterion for appropriate behaviors (social skills) during natural setting classroom play with one or more peers. Gabriel's median intervention score (29%) reached 800% above baseline probe (3.5%), Estrella's median intervention score (44%) was 58% above baseline probe (28%), and Mallory's median intervention score (33%) was 400% above baseline probe (7%).

Because of variability and effects of variability as potential for error in visual analysis, split-middle calculations of median [calculations of medians (mid-rate) of 1st and 2nd halves of condition (mid-date) and drawing of trend line] were used to determine trends within conditions across all participants (see Table 4.3). Although Gabriel and Mallory's results may have suggested some behavior changes that may have been due to effects of the overall intervention, results were not replicated across Estrella; nor were they replicated uniformly across Gabriel and Mallory. Therefore, overall results demonstrated limited to no effects of intervention across participants during natural setting classroom play with one or more peers.

Observations from Researcher's Journal

The researcher recorded observations in a journal throughout all conditions of the study to assist in understanding participants' behaviors that may not have been obvious when examining the videotapes. The journal was used to assist in understanding the contexts of play with one peer and natural setting classroom play with one or more peers. The following observations were noted in the journal.

Early in the school year and prior to participating in the leisure education intervention, Gabriel typically played alone or would invite an adult (e.g., teacher, assistant teacher, student, parent, researcher) to play with him or request that the adult "pick him up." When playing alone he tended to choose toys that made sounds or had "voices" (e.g., fire engine that would "speak" the words "9-1-1 Emergency" and had a siren, toys with engines, musical toys, a toy camera that whirred and clicked); when playing alone he also tended to move quickly around the room with toys that represented airplanes or bombs and he would loudly make engine or exploding noises. The teacher and teacher assistants often prompted Gabriel to "stop running" in the room and to "use walking feet" and to "use an inside voice." Conversely, without prompting Gabriel frequently stated to peers and adults "Thank you," "You're welcome," and "Please." At the beginning of the study, when talking with others Gabriel typically referred to himself in the third person (i.e., "Gabriel would like to play with the toy horse"); occurrences of this behavior tended to lessen by the end of the 15-week study. He also frequently explained pretend situations to other children; for example a toy horse could fly because it had fire coming out of its feet.

Estrella frequently interacted with other children in her class and the children often requested to play with her; however, her emotional outbursts of anger tended to be problematic in relation to other children and they would make statements to the teacher or teacher assistants such as "Estrella hurt my feelings" or "Estrella made me sad when she told me to go away." On several occasions, Estrella commented to peers "I hate you and I don't want to play with you anymore – ever, ever!" or "You are bad!" During these comments Estrella often increased the volume and pitch of her voice and made negative facial expressions and sometimes she would cry. Estrella is bilingual and had several friends in the class who were also bilingual and whose families spent time together outside of school. At times, Estrella and her friends would converse

in Spanish and tell other children that they could not play with them because the other children could not speak Spanish. However, Estrella shared toys with peers without prompting from adults. On one occasion following naptime, the teacher rewarded the children who consistently behaved during nap with a visit from the "nap fairy." One little boy did not get a reward from the nap fairy and Estrella gave him her toy watch.

Mallory's style of play on the playground was in sharp contrast to her play in the classroom. Mallory tended to play with boys on the playground as a horse and was often observed with a group of 4-5 boys "galloping" along behind her, chasing her. Often during these chases, no words were exchanged except in a horse-language only translated by the players. When she played with girls she often pretended to be a princess or a homemaker or a puppy. On one occasion a peer said "Mallory, I'm not going to play with you if you are going to be a puppy." On another occasion Mallory attempted to lick a peer like a dog would and the peer attempted to elude the licking by moving her body and said "Oooh, don't lick me puppy!" During occasions of play with one peer in the multipurpose room, Mallory's preferred toy was a plastic, translucent pink horse. On several occasions Mallory refused to play with a peer when asked to share the horse. Mallory often hugged the teacher and teacher assistant and said "I love you." She also invited peers to her home.

A common behavior of the 3 participants was the lack of stating traditional greetings. Often adults (i.e., staff, parents, researcher) greeted children by saying "Hi" or "Hello" or "Hey" but the children did not initiate greetings with adults or peers with "Hi" or similar words; they would sometimes respond with "hi" but just as often would make a statement relevant to what they were engaged in at the time. For example, the researcher might say "Hi Gabriel" and Gabriel would respond, "Do you want to play Chutes and Ladders with me?" or "Can I go play

on the computer?" Interestingly, they would initiate saying goodbye when someone left the classroom or playground.

Participants were purposefully observed at different times of day to determine whether time of day had any impact on behavior, especially since there was high variability in data across participants. Data were examined with sessions separated into morning (before lunch) and afternoon (after lunch and nap) and indicated no trend or pattern of behaviors related to time of day data collection.

During the middle of the second month of intervention and data collection, the McPhaul Center experienced an influenza outbreak that affected administration, teacher, and student attendance. It was during this time that Gabriel, Estrella, and Mallory demonstrated very low scores of appropriate behavior during natural setting play with one or more peers. During sessions 21 and 22 Gabriel's' scores were 5% and 4% respectively; during session 19 Estrella's score was 6%, and during session 21 Mallory's score was 2%. Each of these scores was immediately preceded by scores that were 27% or above and immediately followed by scores that were 8% (Mallory) and 52% or above (Gabriel and Estrella). The lead teacher and one assistant teacher each were absent during the same week (5 days); at least 3-7 students were out on various days of this week. Student and assistant teacher absences extended over a 2-week period. During this time, the class was led by an assistant teacher, college students from several departments, and various substitute teachers. It should be noted that Gabriel and Estrella each were absent 2 days following their lower scores and Mallory was not absent during this time.

The Pre-K classroom environment was dynamic and there were ongoing "special" events such as field trips (e.g., pumpkin farm, Halloween costume wearing while trick-or-treating, a park) and various culturally diverse holiday recognitions and celebrations (e.g., decorating the

classroom for holidays, preparations for holidays, celebrating holidays). Additionally, there were ongoing visitors to the classroom such as a fireman who drove his fire truck and brought his Dalmatian, a tow-truck driver who drove his tow-truck. There were ever-changing classroom topics such as nutrition, safety, and health that were addressed during "group" sessions and incorporated into classroom centers (i.e., art projects, toys that related to current classroom topics, books available to listen on tape, sensory table with objects related to current classroom topics, costumes related current classroom topics).

The lead teacher was very adept at making use of "teachable moments" during school hours. For example, if there was a fire drill she would explain why fire drills occur when there really isn't a fire and allow the children to ask questions. If a child was going on a trip, she would use a globe or map to show the other children where the location of the trip was in relation to Athens, Georgia. Additionally, she would incorporate letter sounds, letter recognition, numbers and number recognition, counting, dates, days, months and years into questions the children would pose. For example, if a child was playing with blocks she might ask "How many blocks do you have there?" and "What letter does the word 'block' begin with?" During group time she might ask "What month comes after January?" or "If today is Monday, what day is tomorrow?" or "If today is the 5th, what day is tomorrow?" If an individual child or children had difficulty figuring out the response, she would enlist the child/children and friends to assist in arriving at the correct response. She created a supportive, nurturing, positive, and safe environment for the children to learn at their own pace; additionally she was consistent across students with behavioral boundaries, limits, and positive or negative consequences.

Social Validity

Surveys were administered to examine the social validity of the study's goals, appropriateness of procedures, and social importance of effects. Generally, the seven member panel of professionals, 3 staff, and 3 parents were supportive of the goals of the study. Out of a possible 35 points (based on 7-item, 5 point Likert-type survey) median of staff scores for pre-intervention social appropriateness of procedures was 29 ($M = 29$). Median of parent scores for pre-intervention social appropriateness of procedures was 31 ($M = 31$).Median of staff scores for post-intervention social importance of effects was 35 ($M = 35$). Median of parent scores for post-intervention social importance of effects was 33 ($M = 34$). Three parents completed a questionnaire to assess validity of the outcomes in addition to semi-structured interviews about the program. Additionally, staff and participants were interviewed. Overall, the parents and staff expressed that they had noticed changes in the participants during the course of the study and agreed that having social skills and developing friendships were important. The teacher commented "I liked that the children had a chance to play together one-on-one. It gave them a chance to get to know one another in a more quiet area than in the classroom." Additionally the teacher stated "I can see such a difference in Gabriel since the start of the social skills program and now – he has more friends and is very sweet." A parent said "I know my child has enjoyed working with you – I wish I had had a chance to see the social skills program while it was occurring."

Two of the participants were also interviewed and made the following statements to these questions (a) What did you like best about the program? Responses: "Basketball ones (movies)" and "Talking nice to the friends"; (b) What did you NOT like about the computer program? Responses: "One at the end (too close or too far body distance)" and "Talking mean to them

(friends)" and (c) What did you learn from the social skills program? Response: "Talk to them (friends) nice." Additionally, participants stated that they enjoyed playing on the computer and playing with friends one-on-one in the multipurpose room.

Summary

This study was conducted to examine effects of a leisure education intervention package consisting of two phases (CAI and I-FRP) on the generalization of social knowledge and social skills of pre-kindergarten children during play with one peer and during natural setting classroom play with one or more peers. Visual inspection of graphed data related to social knowledge showed replication of effects across all 3 participants indicating intervention efficacy related to social knowledge. Visual inspection of the graphed behaviors (skills) showed that Gabriel demonstrated a higher frequency of appropriate social interactions following introduction of the initial CAI phase of the leisure education intervention and maintained frequency of social interaction behaviors in both settings (play with one peer and natural setting classroom play with one or more peers) up to 8- weeks post-intervention. However, there was no replication of effects for Estrella and Mallory in either setting. In addition, there was no observable trend indicating change in frequency related to greetings (upon classroom entry or activity transition) or inappropriate behaviors (e.g., excessive volume, verbal aggression).

CHAPTER V

DISCUSSION

The purpose of this study was to examine effects of a leisure education program on generalization of social skills of children with social skills deficits. A single subject multiple probe across participants design was used that included the following conditions: (a) baseline probe (computer-assisted instruction [CAI] and instructor-facilitated role play [I-FRP] not related to social skills), (b) intervention (A leisure education intervention package with components of CAI and I-FRP), and (c) follow-up. The study addressed social knowledge and social skills used within leisure contexts. The primary method of data collection was behavioral observations of participants' social interaction behaviors during play with one peer and natural setting classroom play with one or more peers. Additional data were collected related to social knowledge using a computerized assessment (SKA) and social validity through the researcher's journal, pre- and post- family and staff questionnaires, and interviews of family, staff and participants.

This chapter is divided into five sections: (1) summary of results, (b) discussion and implications for research, (c) recommendations for practice, (d) limitations and recommendations for research, and (e) conclusion. The summary of results section reviews findings presented in the previous chapter. The discussion and implications for research sections addresses the relationship between the current study and extant literature related to social interaction behaviors of children with social skills deficits. The subsequent section is comprised of recommendations for practice based on study findings. Limitations specific to this study and recommendations for

future research are presented in the fourth section; the fifth and final section of this chapter is the conclusion.

Summary of Results

Across participants, following participation in the leisure education intervention, there was replication of effects for social knowledge indicating intervention efficacy related to that dependent measure; however, for social skills, there was no replication of effects across participants indicating lack of efficacy of intervention related to social skills. Although median scores for social skills increased following implementation of intervention for knowledge and behaviors, data were highly variable for all 3 participants and visual analysis of the graphed data did not support efficacy of the intervention. Specific median scores for social skills were as follows: (a) Gabriel's median scores for appropriate behavior during play with one peer increased 42 percentage points (from 16-58%) from baseline probe to intervention and during natural setting classroom play with one or more peers Gabriel's median scores for appropriate behavior increased 26 percentage points (from 3.5-29%) from baseline probe to intervention, (b) Estrella's median scores for appropriate play with one peer increased 29 percentage points (from 30-58%) and during natural setting classroom play with one or more peers Estrella's increased 16 percentage points (from 28-44%), and (c) Mallory's median scores for appropriate play with one peer increased 20 percentage points (from 43 to 63%) and during natural setting classroom play with one or more peers Mallory's increase was 26 percentage points (7-33%).

Initially, criteria for social skills generalization and maintenance was set at three consecutive scores of 90% for appropriate behaviors; it was determined that this was an unrealistic criteria because out of 169 videotaped observations (play with one peer = 85; natural setting classroom play with one or more peers = 84) across the 3 participants, in *both* settings

across all conditions, 90% or above was reached only on 4 occasions (play with one peer = 3; natural setting classroom play = 1). A pragmatic change in criteria occurred due to the unrealistic nature of the initial criteria and as indicated by a review of the literature (DENI, 1998; ED, 2003; Peterson & Hallstead, 1998). The criteria was subsequently revised and identified as demonstrating targeted appropriate behaviors in both settings on three or more occasions at a frequency of least 50% higher than baseline probe.

Each of the participants reached knowledge criterion on the SKA (three consecutive scores of at least 90%) during the CAI phase of the intervention and maintained their scores at 4 and 8- week follow-up probes. For appropriate social skills demonstrated during observations of play with one peer, Gabriel and Estrella reached criterion. Gabriel's median intervention score (58%) was 300% above baseline probe (16%) and Estrella's median intervention score (58%) was 50% above baseline probe (39%). Mallory approached criterion with a 46% increase from baseline probe (43%) to intervention (63%) but did not reach criterion. Visual inspection of data indicated variability across conditions and participants and although Gabriel's results may have suggested some skill changes due to effects of the overall intervention, his results were not replicated across Estrella and Mallory. The lack of replication across all 3 participants indicated limited to no effects of the overall intervention across participants during play with one peer. Gabriel, Estrella, and Mallory reached criterion for appropriate social skills demonstrated during natural setting classroom play with one or more peers. Gabriel's median intervention score (29%) reached 800% above baseline probe (3.5%), Estrella's median intervention score (44%) was 58% above baseline probe (28%), and Mallory's median intervention score (33%) was 400% above baseline probe (7%). Visual inspection of probe data indicated that although Gabriel and Mallory's results may have suggested some behavior changes that may have been due to effects

of the overall intervention, results were not replicated across Estrella; nor were they replicated uniformly across Gabriel and Mallory. Therefore, the lack of replication across all 3 participants demonstrated limited to no effects of intervention across participants during natural setting classroom play with one or more peers.

The intervention was discontinued due to (a) participants reaching criteria, and (b) a 2-week holiday break in the Pre-K classroom, and (c) Estrella traveling out of the country 1-week prior to the 2-week holiday. For targeted appropriate behaviors during both settings, even though participants (a) increased medians from baseline probe condition to intervention (CAI and I-FRP), (b) increased and/or maintained appropriate behavior scores during 4- and 8-week follow-up probes, and (c) reached criteria for knowledge and skills (with the exception of Mallory's skills during play with one peer) data did not indicate intervention efficacy. Overall, visual inspection of the graphed behaviors (skills) showed that Gabriel demonstrated a higher frequency of appropriate social interactions following introduction of the initial CAI phase of the leisure education intervention and maintained frequency of social interaction behaviors in both settings (play with one peer and natural setting classroom play with one or more peers) up to 8- weeks post-intervention. However, there was no replication of effects for Estrella and Mallory in either or both settings. Additionally, there was no observable trend indicating change in frequency related to greetings (upon classroom entry or activity transition) or inappropriate behaviors (e.g., excessive volume, verbal aggression).

Discussion and Implications for Research

Using a leisure education intervention package comprised of computer assisted instruction (CAI) and instructor-facilitated role play (I-FRP) did not appear to be an effective education strategy for teaching generalization of social interaction skills as well as maintenance

of skills used during leisure for Pre-K children as demonstrated by variable data and lack of replication across participants in this study. However, the data demonstrated replication of effects across participants supporting the conclusion that CAI is an effective method of acquiring and maintaining social knowledge.

Social Knowledge. The literature contained several examples of the use of CAI alone as an effective method for delivering instruction to promote knowledge acquisition and maintenance related to (a) social skills (Margalit, 1995), (b) literacy skills (e.g., spelling and reading) (Lee, et al., 2000; Lynch, et al. 2000.; van Daal & Reitsma, 2000), and (c) community living skills (e.g., personal safety, violence prevention, grocery shopping) (Bosworth, et al., 1998; Langone, et al., 1999). Although results of this study replicated findings that CAI can improve knowledge related to a specific knowledge area, it extended previous studies by adding assessment components related to generalization and maintenance of participants' social knowledge to targeted behaviors during play with one peer and during natural setting classroom play with one or more peers. Even though this study may have extended previous studies by assessing generalization and maintenance of knowledge related to specific behaviors, data from this study did not support that CAI alone is a powerful enough intervention to affect behaviors across participants in one or more settings. Although Gabriel may have demonstrated some changes in targeted behaviors upon introduction of the CAI phase of the intervention, there was no replication of effects across Estrella and Mallory's targeted behaviors during play with one peer or during natural setting classroom play with one or more peers.

Social interaction during play with one peer. Several studies have focused on social interaction behaviors during small group interaction (Colton & Sheridan, 1998; Kamps, et al., 1992; Prater, et al., 1998; Rutherford, et al., 1998) and have suggested overall that appropriate

social interaction within small groups increases following social skills instruction. The small groups used in this study were composed of the participant and a peer who played in a multipurpose room separated from the other children, teachers, and regular classroom. The sessions occurred prior to participant leisure education sessions. The small group play sessions were the only times during a typical classroom day that a participant and peer could play with one another in a setting away from the other children. There was no reward or positive reinforcement offered to either participants or peers to participate in these play sessions, nor was there researcher direction on how or what to play. The researcher did facilitate "classroom rule following" during the play sessions by making suggestions to prevent situations that may cause harm to the children (e.g., "Please don't hit your friend with the toy – you might hurt her). Both participants and peers consistently verbally expressed interest in going into the multipurpose room.

Mixed findings have been reported in the literature about effects of small group settings. While some researchers have identified small groups as a limitation (Rutherford, et al., 1998); others have reported that small groups promote social interactions (Colton & Sheridan, 1998; Prater, et al., 1998; Kamps, et al., 1992), especially related to knowledge and skill acquisition, generalization, and maintenance for individuals with disabilities and skill deficits. Other studies examining children's play in small group settings have focused on interactions associated with the effects of gender (Fabes, Martin, & Hanish, 2003), interaction stability, interaction rate and length, and behavior reciprocity (Phelps, 2003). Additionally, there is evidence in play therapy literature that small groups (2-3 participants) are often more effective than group play therapy (more than 3 participants) in maintaining appropriate behaviors in some settings (Rennie, 2003). There are limited findings specifically related to the efficacy of interventions on the behaviors of

preschool children; many of these findings are related to group dynamics and group composition within play therapy and inclusion of children with disabilities (Kim, et al., 2003) and these limited findings support the use of small groups in these settings. Results of this study did not support previous findings that improvements in social interaction behaviors are more evident in small group settings than in larger group settings. Although this study extended previous research by using behavioral observation and subsequent close analysis of preschoolers' generalization of targeted behaviors in two contexts: (a) play with one peer in a small play room with no other children present, and (b) play with one or more peers in a natural classroom containing other preschoolers, and compared the behaviors between the two contexts, results did not support intervention efficacy across participants.

Social interaction during natural setting classroom play. Young children's play has been studied in natural classroom settings to determine various relationships between variables such as development, types of play (i.e., solitary play, parallel play, social play, object play, constructive play, child-directed, adult-initiated), gender, play materials, and social interaction (Hännikäinen, 2001; Mendez, Fantuzzo, & Cicchetti, 2002; Robinson, Anderson, Porter, Hart, & Wouden-Miller, 2003; Rubin, e al, 1998). A series of studies by Fantuzzo, et al. (1995; 1996; 1998) examined peer play of children attending Head Start related to school-readiness (i.e., attention, motivation, engagement). Findings from these studies suggested that collaborative and interactive play between peers was highly correlated with school-readiness and disruptive play was correlated with noncompliance, greater tendency for "disrupters" to play alone, and general disengagement from classroom activities. Although the series of studies did not specifically examine social interaction as a separate component and did not provide a behavioral intervention, their findings are complementary and support the use of natural setting classroom

play as a context to examine children's social competence in natural settings. Other contexts involving older participants (older children and adults) provided information about social interaction behaviors of older children in the classroom (Goldsworthy, et al., 2000; Langland et al., 1998; Sharpe, et al., 1995) and older children and adults in leisure settings (McKenney & Dattilo, O'Reilly, et al., 2000; Williams & Dattilo, 1997) as well as efficacy of interventions on social interaction behaviors.

The natural setting for this study involved indoor "classroom centers" where activities were child-directed (e.g., art, dramatic play, reading loft, building blocks, games, a large variety of toys). The researcher chose random center times to videotape participants during natural setting classroom play with one or more peers; although time of day may have been considered an additional variable when considering participants' behaviors, the data did not support that time of day affected participants' behavior patterns across participant or contexts. The researcher purposefully refrained from interaction with participants and peers during observations, nor did she provide reinforcement or verbal praise for demonstration of appropriate social interaction behaviors during natural setting classroom play. Not implementing a behavior management strategy within a natural setting nor providing feedback immediately following targeted behaviors is similar to methods employed in several studies in the literature (McKenney & Dattilo, 2001; O'Reilly, et al. 2000; Rutherford, et al., 1998; Sharpe, et al., 1995; Williams & Dattilo, 1997).

Results from this study did not indicate that participants generalized appropriate social interaction behaviors from the leisure education intervention to the natural setting classroom context. Although results of this study did not support generalization of social interaction behaviors across contexts, the study complements previous findings about social interaction

behaviors of children during natural setting play (e.g., Hännikäinen, 2001; Mendez, et al., 2002; Robinson, et al., 2003; Rubin, et al., 1998) by incorporating specific observational procedures to assess preschool children who had social skills deficits, not clinically diagnosed disabilities or developmental delays. Additionally, previous research does not address leisure education interventions for typically developing young children with social skills deficits nor does it address efficacy of leisure education on different types of play settings within preschool classrooms. This study replicates research from a line of research by Dattilo, et al. related to leisure education interventions focusing on social knowledge and extends research related to the process and methods used to examine social skills demonstrated within leisure settings; previous research by Dattilo, et al. did not examine demonstration of social skills behaviors in natural settings (i.e., unstructured games, child-directed play), nor did it examine generalization from a rehearsal session (i.e., I-FRP) to a natural setting. The design of the current study and method of behavioral coding allowed for (a) a systematic and efficient technique of assessing behaviors recorded on video, (b) high rates of inter-observer reliability, and (c) close comparison of intervention effects between two settings (i.e. play with one peer and natural setting classroom play with one or more peers).

Recommendations for Practice

Overall, results across participants did not support that the leisure education intervention used in this study (CAI and I-FRP) increased targeted appropriate social interaction behaviors during participants' play with one peer and natural setting classroom play with one or more peers; however, data did support that the CAI phase of the intervention increased participants' social knowledge and this knowledge was maintained up to 8-weeks post intervention. This

section reviews findings and presents strategies that may promote acquisition and generalization of social interaction skills of young children with social skills deficits.

The use of computers within learning environments can be a powerful tool (Rieber, 1991), especially through the use of animated programs that allow users to experience multiple practice occasions and incidental learning opportunities supplemented through intrinsic motivation. Interactivity via CAI programs is intended to engage mental processes, enhance performance, productivity, and allow individuals to become active participants in the learning process (Jih & Reeves, 1992). In this study, participants reached criterion for social knowledge (3 consecutive sessions of at least 90%) and maintained scores at 8- weeks post-intervention and therefore, participants demonstrated social knowledge prior to limited demonstration of social skills. Within the Social Information Processing (SIP) model proposed by Crick and Dodge (1994) the acquisition of knowledge is critical in processing various cues and responses within a social interaction. It may be helpful for practitioners to consider CAI as a basis for knowledge acquisition when implementing leisure education interventions targeting knowledge related to social skills.

Previous research has supported that another learning tool helpful in developing social skills is rehearsal and practice of desired behaviors. Rehearsal of desired behaviors in a learning environment allows for the provision of feedback and reinforcement within a safe, controlled setting that supports learner efforts and decreases participant vulnerability to negative reactions. Educational strategies employing rehearsal and feedback have their roots in learning theories including SIP (Crick & Dodge, 1994) and Social Learning (Bandura, 1971; 1977) and distinguish between enactive learning (i.e., learning by doing) and vicarious learning (i.e., observational learning). Bandura suggested that enactive learning allows individuals to

experience consequences related to their behavior that "can be informative, motivating, and reinforcing" (1971, p. 5). However, he also implied that it is not enough to learn by doing; often observations of others may be more effective. Although this study was informed by the SIP model and Social Learning Theory proposed by Bandura (1971, 1977), results did not support the transfer of knowledge and generalization of social skills demonstrated during role play to behaviors by the participants during play with one peer and during natural setting classroom play with one or more peers. In this study, a combination of social skills modeling by the researcher, participant social skills rehearsal during role play with the researcher, and subsequent specific social skills feedback to participants by the researcher provided both enactive and vicarious learning experiences for the participant. Perhaps it was not enough to observe, rehearse, and receive feedback about social skills' performance with and by an adult in a "practice setting" (role play). Data did not support intervention efficacy across participants; however, it may be helpful for practitioners to include opportunities for rehearsal (via role play) with feedback for clients and participants who want to improve social or other skills in combination with other methods of instruction and reinforcement.

During this study, some of the effects associated with appropriate social interaction behaviors were more evident during play sessions involving play with one peer than during natural setting classroom play with one or more peers. Overall, participants were more verbally interactive with peers during play with one peer. Perhaps participants involved in play with one peer in a quiet room with one toy may have felt less threatened and less overwhelmed than in a loud room containing 19 other children and myriad choices of play materials. In addition, research supports small group settings (Colton & Sheridan, 1998; Prater, et al., 1998; Kamps, et al., 1992), especially related to knowledge and skill acquisition, generalization, and maintenance

for individuals with disabilities and those with skill deficits. Practitioners may consider the use of small groups when facilitating and implementing social activities, especially for individuals who are in the process of acquiring and improving social skills.

The method used in this study to observe and systematically record partial-interval (10 sec) occurrences of target behaviors (see Appendix F) was efficient and demonstrated a high rate of inter-observer reliability. The coding method facilitated through the use of the Social Skills Assessment (SSA) observation form was enhanced by clear definitions of targeted behaviors, simple identification of targeted behaviors following observer training, and a specific system of indicating type of behavior characterized by accurate and detailed definitions. The form provided easy access to information such as participant name, date, time of day, start and end time of observation, location, observer, condition, setting, and peers involved with participants during an observation session. In addition, the form provided spaces for summary data such as total intervals observed, total occurrences of targeted behaviors, and percentage of behavior occurrences during a specific interval.

Data were collected using a digital video camera and recorded on digital video tape. During the study, each day following data collection, data were compressed and transferred to a CD; this also provided an efficient method of viewing observations via computerized media programs (e.g., Windows Media Player™, Quick Time™, Real Player™). Using a computer [versus a video cassette recorder (VCR)] to view data was helpful in that there (a) were reduced occurrences of interval errors between the primary and secondary observers due to increased accuracy of "pinpointing" beginning and ending of intervals using counters embedded within media software, (b) was increased efficiency in reviewing data when necessary; using the mouse to move a pointer along a continuum to the minute and second the observer wanted to review

was preferable to rewinding, then forwarding a video cassette tape, and (c) was increased security related to lost data by backing up original data as an outcome of tape compression and transfer to a CD. Previous research has employed use of video cameras and viewing of data using equipment such as a VCR; as the use of technology becomes more widespread and its availability more broad, perhaps practitioners and researchers alike can benefit from incorporating the use of digital media for data collection and analysis.

Limitations and Recommendations for Research

Results for social knowledge indicated that participants increased and maintained knowledge up to 8-weeks post-intervention; additionally, visual inspection of data related to social knowledge showed replication of effects across all 3 participants indicating intervention efficacy related to social knowledge. Results for social skills indicated that even though (a) participants increased medians in frequency of social skills following participation in the leisure education intervention, (b) participants reached social skills criterion (with the exception of Mallory during play with one peer), and (c) Gabriel's graphed behaviors (skills) demonstrated a higher frequency of appropriate social interactions following introduction of the initial CAI phase of the leisure education intervention and maintained frequency of social interaction behaviors in both settings up to 8-weeks post-intervention; visual inspection of graphed data did not indicate replication of effects across Estrella or Mallory in either setting. Effects of the leisure education intervention were limited to knowledge and to some degree appropriate behaviors for Gabriel. For all 3 participants, there was little or no change in inappropriate and greeting behaviors across participants. Caution is advised when considering the impact of findings on appropriate and inappropriate social interactions in various settings. Data for appropriate social interaction behaviors were variable, especially during natural setting

classroom play. Reinforcement in the form of verbal praise occurred during role play and modeling sessions during the leisure education intervention; however, there was no reinforcement for appropriate behaviors nor consequences for inappropriate behaviors exhibited by participants during observations, except for teacher-directed prompts and redirection that were applied to all students in the classroom as needed to maintain a safe environment. Further research may employ strategies designed to strengthen adherence to appropriate interactions and decrease occurrence of inappropriate interactions including peer assistance, peer-assisted instruction (i.e., peer reinforcement of appropriate behaviors), video review and feedback of behaviors in natural settings, and instruction in a group format. Research examining effects of CAI used in conjunction with reinforcement procedures for positive social behaviors on social interactions of children with social skills deficits may be useful.

Humble Theories Related to the Current Investigation

Literature related to design experiments in educational research addresses processes of learning; inherent in aspects of design experiments as a methodology is the pursuit of theory development that is not necessarily focused on seeking empirical support or replication of evidence corroborating previously developed theories (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003). Within design experiments is the generation of "humble theories"; theories that speculatively examine what works, what doesn't work, and questions what may be happening within a practical learning environment (Cobb, et al., 2003; Sloane & Gorard, 2003). In the following section the researcher "humbly" speculates on explanations for four observations (out of a myriad) of ongoing behavior that she found particularly intriguing within the context of the Pre-K classroom. It should be noted that there may or may not be theoretical frameworks

supporting or explaining these observations; the purpose of this section is to informally theorize on what may have been occurring during the investigation.

For Gabriel and to a very limited degree, for Mallory, during intervention and follow-up conditions, there appeared to be gradually accelerating trends of social interaction, especially within the context of natural setting play with one or more peers. The researcher identified two possible explanations for this. First, the information presented through the CAI phase of the intervention was presented in modules (individually per topic – greeting, volume of speech, pace of speech, respectful content, and body distance); however, social skills were measured comprehensively (the occurrence of *all* behaviors were examined during each observation). The disparity between examination of participants' overall social skills without participants having the benefit of all the information may have contributed to the gradual demonstration of social skills as participants were exposed to and demonstrated mastery of the information presented during CAI. Second, one might expect that the performance of appropriate behaviors (social skills) may potentially lead to additional opportunities for interaction with peers. In other words, the more adept participants became at interacting with other children in the classroom, the more the other children wanted to interact with them; the increased interaction would be reflected in gradually accelerating social interaction scores.

Another speculation is the potential helpfulness of providing instruction to the class as a whole, or at least to a group of children; the children in this classroom were very successful "imitators" of one another and often the researcher overheard one student repeating verbatim something another child had said previously. Conversely, when participants or other children in the classroom performed a new behavior it was quickly reinforced or extinguished by peers. For example, the researcher spent an I-FRP session working with Gabriel on greetings (e.g., saying

hi or hello when one enters a room). Gabriel entered the classroom with the researcher following behind him. The first individual he encountered was the teacher. The researcher prompted Gabriel by saying "Gabriel, what do we say when we first see someone?" He glanced at the researcher, smiled and ran up to the teacher and said "Hi, Miss Mary!" Miss Mary said "Hi Gabriel!" and hugged him; she also told him how proud of him she was that he was learning how to greet friends. Next, Gabriel approached a peer and unprompted stated "Hi, Alex!" Alex did not verbally respond but looked at Gabriel incredulously. Alex looked at Gabriel, looked at the researcher, looked back at Gabriel, and walked away. Following that one traditional greeting, the researcher did not observe traditional greetings between peers. The researcher identified two possible explanations for this. First, perhaps there is a developmental consideration in that children who are 4 years old do not use convention in greeting; rather a physical approach and verbal statement to another may be considered "initiations" (e.g., "Look at my new toy!" or "Miss Mary!") toward others rather than using a greeting preface (e.g., "Hi Alex, look at my new toy!" or "Hi Miss Mary"). Second, perhaps peers offer a "natural community of reinforcement" and behaviors that are not recognized and valued by others are discontinued; the researcher speculated that if the whole classroom had been given information about greeting and received positive verbal reinforcement from the teacher, potentially some of the children would have begun to use traditional greetings toward others. Perhaps the developmental element of "modeling" others' behaviors could have been incorporated into the classroom learning environment as a natural reinforcer.

Notably, the difference in contexts – play with one peer versus natural setting play with one or more peers – provided extreme contrasts in environment for participants and peers. As stated in a previous section, play with one peer was different than any other activity in which the

children engaged during a regular school day. Typically, classroom centers times were child-directed, loud, and (in this researcher's opinion) chaotic. Although data on paper may not have reflected the contrasts in settings, the researcher observed that several of the girls and relatively quiet children (who may or may not have been participants) chose to undertake solitary activities (i.e., art, puzzles, playing at sensory table, playing on classroom computers) during center time rather than participate in large group activities. Observation of all the students in the entire classroom during center time was beyond the scope of the current investigation; however, the researcher observed children who had been labeled "quiet" and "shy" within a large group become "talkative" and "outgoing" during one on one situations occurring during participant play with one peer. Perhaps the children perceived that the small group was somehow safer and less threatening than the ever-changing groups of children moving from center to center during designated center times.

Finally, perhaps the data did not support evidence of strong effects of the intervention because the participants did not have clinically diagnosed disabilities or severe behavior problems. Overall, the class as a whole was a socially appropriate class and children with social skills deficits (participants and non-participants) were sometimes not readily evident. The children that were identified to participate in the study had limited social skill deficits; perhaps their deficits were not extreme or limiting enough to create perpetual isolation. However, their deficits were pronounced enough to be systematically observed and of concern to the Pre-K teacher and school director. In a follow-up interview the teacher commented, "Gabriel, Estrella, and Mallory are doing so well with the other children – maybe they didn't have severe behavior problems at the beginning of the year and maybe they have matured, but I think that by participating in the social skills program they were able to gain that 'extra push' they needed to

learn how to better interact with others. I wish that some of the other students had had the opportunity to participate." Individuals possess a gamut of skills and abilities, especially related to interpersonal relationships; being able to provide an opportunity for individuals to gain that "extra push" is the core of education.

Conclusion

The purpose of this study was to examine effects of a leisure education intervention on the social knowledge and skills of Pre-K children with social skills deficits using computer-assisted instruction (CAI) and instructor-facilitated role play (I-FRP). A single subject multiple probe across subjects design was used to assess the impact of the leisure education intervention on social knowledge and skills. For social knowledge, following probe scores of 60-80% initiation of leisure education intervention resulted in an immediate level change and accelerating trend to 90-100% with follow-up scores maintained at 4- and 8-week intervals for all 3 participants. For social skills during play with one peer, Gabriel and Estrella reached criterion for appropriate social skills; Mallory approached criterion but did not reach it. Data were highly variable and results were not replicated across participants. For social skills during natural setting classroom play with one or more peers, all 3 participants reached criterion for appropriate social skills during natural setting classroom play with one or more peers; however, data were highly variable and results were not replicated across participants. Follow-up probes at 4- and 8-weeks post-intervention showed that scores achieved with the intervention were maintained and in some cases increased. Considering that participants, family members and staff expressed that the leisure education intervention package (CAI and I-FRP) was socially valid and findings of this study and previous research have demonstrated positive effects of leisure education, there is

support for further refinement and evaluation of leisure education intervention packages designed to enhance social interaction skills of children with social skills deficits.

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APPENDIX A

CHILD ASSENT SCRIPT

(For Participant and Peer Helper)

Participant Assent Script

We want to see if you would be willing to help us with a research project about computer learning games, and ways that kids act when they play games with their friends. We will ask you to play different learning games on the computer, show us ways you play together with your friends while you practice with me (Lynne Cory), and then we will ask you and a friend to pretend ways you play games together. When you are pretending with your friends, we will be using a video recorder to videotape you.

If you decide to do the project with us, your answers will be kept just between you and me. Your videotape will be used only for this project. You can also decide to stop at any time or can choose not to answer questions that you don't want to answer. Do you have any questions? Would you be willing to do this project with us?

Lynne Cory_____ _____
Name of Researcher Date
Telephone: 770-725-2583
Email: LynneC95@aol.com

_____ _____
Child's name Date When Read Aloud

Additional questions or problems regarding your rights as a research participant should be addressed to Chris A. Joseph, Ph.D., Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, GA 30602-7411; Telephone (706) 542-3199; Email Address IRB@uga.edu

Peer Helper Assent Script

We want to see if you would be willing to help us with a research project about computer learning games, and ways that kids act when they play games with their friends. We will ask you to help a friend pretend ways you play games together. When you are pretending with your friends, we will be using a video recorder to videotape you.

If you decide to do the project with us, your videotape will be used only for this project. You can decide to stop at any time. Any day that you do not want to take part in the pretend play with your friend and me, you can say no.

Do you have any questions? Would you be willing to do this project with us?

Lynne Cory _____ _____
Name of Researcher **Date**
Telephone: 770-725-2583
Email: LynneC95@aol.com

_____ _____
Child's name Date When Read Aloud

Additional questions or problems regarding your rights as a research participant should be addressed to Chris A. Joseph, Ph.D., Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, GA 30602-7411; Telephone (706) 542-3199; Email Address IRB@uga.edu

APPENDIX B

PARENTAL PERMISSION FORM

(For Participants and Peer Helpers)

PARENTAL PERMISSION FORM

I agree to allow my child _____ to take part in a research study titled "Effects of a Leisure Education Program on Generalization of Social Skills of Children with Social Skills Deficits" that will examine effects of a social skills learning project on children's social interaction. The project is being conducted by Lynne Cory, University of Georgia, Department of Recreation and Leisure Studies (home. 770-725-2583) under the direction of Dr. John Dattilo, Department of Recreation and Leisure Studies (706-542-5064), jdattilo@uga.edu. I do not have to allow my child to take part in this study; my child can stop taking part at any time without giving any reason, and without penalty. I can have information related to my child returned to me, removed from the research records or destroyed.

The following points have been explained:

1. The reason for this research is to learn how (a) a social skills computer learning game, and (b) practicing social skills can affect children's social interactions.

2. The benefits I can expect from my child's involvement in the project include learning or improving social interaction skills such as (a) greeting, (b) using respectful words, (c) using comfortable body distance, (d) speaking at a volume that is easy to hear, and (e) speaking at a pace that is easy to understand. There are no incentives provided for participation such as money, toys, or prizes.

3. The basic procedures are these:
    - My child will participate in a social skills learning activity using an educational computer game about social skills and then will practice the social skills with Lynne Cory three times per week (approximately 20 min sessions) for about 10-12 weeks. The sessions will be spread over play time, center time, and after school so as not to interfere with the scheduled curriculum in Ms. Sibley's Pre K classroom at McPhaul Center. (approximately 1 hour per week for approx 10-12 weeks)

    - Lynne Cory will observe, videotape, and audiotape my child during each social skill learning activity session (approximately 5 min), and once per week during either play time, center time, or after school for 30-45 min.

    - Occasionally, Lynne Cory will ask me and my child questions that allow her to determine how I and my child feel about the social skills learning program. Sometimes the questions will be presented using a short questionnaire (7 questions) or through a brief interview. If I do not want to fill out the questionnaire(s) or participate in the interview I may refuse at any time without giving any reason and without penalty. Also, if I do not want my child to participate in the interview, I may refuse to grant permission at any time without giving any reason and without penalty.

- My child can refuse to participate at any time without penalty. Specifically, even if I have given permission, if my child does not want to participate on any given day, they may choose not to participate without penalty.

4. No discomforts or stresses are expected.

5. No risks are expected.

6. Results of my child's participation will be confidential and will not be released in any way that would allow someone to recognize my child unless otherwise required by law. My child will be assigned a different name for data display and reporting purposes to keep his/her identity hidden. Video and audio tapes will be made of my child during the study. These recordings will be used only for purposes of this study. All recordings will be stored in a locked, secure location by Lynne Cory and destroyed as of 12/2004.

7. Lynne Cory (770-725-2583), Dr. John Dattilo (706-542-5064), or McPhaul's Director, Becky Olson (706-542-4921) will answer any additional questions about the research, now or during the course of the project.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to allow my child to participate in this study. I have been given a copy of this form.

Lynne Cory		
Name of Researcher	Signature	Date
Telephone: 770-725-2583		
Email: LynneC95@aol.com		

Name of Parent or Guardian	Signature	Date

Additional questions or problems regarding your child's rights as a research participant should be addressed to Chris A. Joseph, Ph.D., Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, GA 30602-7411; Telephone (706) 542-3199; Email Address IRB@uga.edu

PARENTAL PERMISSION FORM

I agree to allow my child _____ to **assist classmates** who are participating in a research study titled "Effects of a Leisure Education Program on Generalization of Social Skills of Children with Social Skills Deficits" that will examine effects of a social skills learning project on children's social interaction. The project is being conducted by Lynne Cory (University of Georgia, Department of Recreation and Leisure Studies h. 770-725-2583) under the direction of Dr. John Dattilo, Department of Recreation and Leisure Studies (706-542-5064), jdattilo@uga.edu. I do not have to allow my child to assist classmates, my child can stop assisting classmates at any time without giving any reason, and without penalty. I can have information related to my child returned to me, removed from the research records or destroyed.

The following points have been explained:

1. The reason for this research is to learn how (a) a social skills computer learning game, and (b) practicing social skills can affect children's social interactions.

2. No direct benefits are foreseen by my child's assistance to a classmate; however, there may be indirect benefits of assisting a classmate participating in the project including learning or improving social interaction skills such as (a) greeting, (b) using respectful words, (c) using comfortable body distance, (d) speaking at a volume that is easy to hear, and (e) speaking at a pace that is easy to understand. There are no incentives provided for participation such as money, toys, or prizes.

3. The basic procedures are these:

    - My child will assist a classmate in demonstrating a pretend social skills situation for approximately 5 min no more than two times per week for about 10-12 weeks. The sessions will be spread over play time, center time, and after school so as not to interfere with the scheduled curriculum in Ms. Sibley's Pre K classroom at McPhaul Center (10-20 min per week for 10-12 weeks).

    - Lynne Cory will observe, videotape, and audiotape my child and a classmate during each pretend social skill situation (approximately 5 min). Additionally, my child may incidentally be included in videotape of a classmate during play time, center time, or after school.

    - My child can refuse to participate at any time without penalty. Specifically, even if I have given permission, if my child does not want to participate on any given day, they may choose not to participate without penalty.

4. No discomforts or stresses are expected.

5. No risks are expected.

6. Results of my child's participation will be confidential and will not be released in any way that would allow someone to recognize my child unless otherwise required by law. My child will be assigned a different name for data display and reporting purposes to keep his/her identity hidden. Video and audio tapes will be made of my child during the study. These recordings will be used only for purposes of this study. All recordings will be stored in a locked, secure location by Lynne Cory and destroyed as of 12/2004.

7. Lynne Cory (770-725-2583), Dr. John Dattilo (706-542-5064), or McPhaul's Director, Becky Olson (706-542-4921) will answer any additional questions about the research, now or during the course of the project.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to allow my child to assist a classmate participating in this study. I have been given a copy of this form.

Lynne Cory	_____	_____
Name of Researcher	Signature	Date
Telephone: 770-725-2583		
Email: LynneC95@aol.com		

_____	_____	_____
Name of Parent or Guardian	Signature	Date

Additional questions or problems regarding your child's rights as a research participant should be addressed to Chris A. Joseph, Ph.D., Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, GA 30602-7411; Telephone (706) 542-3199; Email Address IRB@uga.edu

APPENDIX C

STAFF CONSENT FORM

STAFF CONSENT FORM

I agree to complete surveys and participate in semi-structured interviews related to a research study titled "Effects of a Leisure Education Program on Generalization of Social Skills of Children with Social Skills Deficits" that will examine effects of a social skills learning project on children's social interaction. The project is being conducted by Lynne Cory, University of Georgia, Department of Recreation and Leisure Studies (home 770-725-2583) under the direction of Dr. John Dattilo, Department of Recreation and Leisure Studies (706-542-5064), jdattilo@uga.edu. I do not have to participate in any way, do not have to complete surveys, or participate in interview(s). If I do agree to participate, I can stop or refuse to participate at any time without giving any reason, and without penalty. I can have information related to me returned to me, removed from the research records or destroyed.

The following points have been explained:

1. The reason for this research is to learn how (a) a social skills computer learning game, and (b) practicing social skills can affect children's social interactions.

2. No direct benefits are foreseen by my participation

3. The basic procedures are these:

4. I will be given a brief survey (7 questions) about the project to complete before the project begins and after the project ends. I will also be interviewed after the project ends to obtain my opinion about the project. The interview will consist of 9 questions such as "What did you think about the social skills program?" and "What do you think the children learned about social skills from the program?" and "What would you change about the program?"

5. Lynne Cory will observe, videotape, and audiotape children in the classroom and I may be incidentally included in videotape of children during center time, or after school.

6. I can refuse to participate at any time without penalty.

7. No discomforts or stresses are expected.

8. No risks are expected.

9. Results of my participation will be confidential and will not be released in any way that would allow someone to recognize unless otherwise required by law. I will be assigned a different name for data display and reporting purposes to keep my identity hidden. Any incidental video recordings of me will be used only for purposes of this study. All recordings will be stored in a locked, secure location by Lynne Cory and destroyed as of December 31, 2004.

10. Lynne Cory (770-725-2583), Dr. John Dattilo (706-542-5064), or McPhaul's Director, Becky Olson (706-542-4921) will answer any additional questions about the research, now or during the course of the project.

I understand the procedures described above. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given a copy of this form.

Lynne Cory		
Name of Researcher	Signature	Date

Telephone: 770-725-2583
Email: LynneC95@aol.com

Name of Staff	Signature	Date

Additional questions or problems regarding your rights as a research participant should be addressed to Chris A. Joseph, Ph.D. Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-3199; E-Mail Address IRB@uga.edu

APPENDIX D

LETTER TO PARENTS FROM RESEARCHER

September 10, 2003

Dear Parents,

I am writing to let you know about an opportunity for several (4-5) students in Ms. Terry Sibley's PreKindergarten class to participate in a program about social skills used during playtime with friends. My name is Lynne Cory and I'm a doctoral student in the Department of Recreation and Leisure Studies at UGA. The social skills program involves both instruction and research as part of my dissertation project. The *instructional portion* of the project presents social skills information to children using a computer game and then allows the children to practice social skills with me using role play and pretend play situations. The *research portion* of the project involves looking at changes in children's social knowledge scores as they progress through the computer game as well as looking at possible behavior changes during interaction with friends (after the children and I practice social skills together during role play).

The basic procedures of the project are these:

1. Children will participate in a social skills learning activity using a computer and then will practice the social skills with me during role play sessions three times per week (20 min sessions) for about 10-12 weeks. The learning activity (computer and role play sessions) will take place out of the main classroom in the PreKindergarten office/multipurpose room. The sessions will be spread out over center time and extended day so as not to interfere with the scheduled curriculum at the McPhaul Center.

2. Children will be videotaped during center time or extended day with friends before, during, and after the training sessions begin. The videotaping procedures are designed not to interrupt center time or extended day.

3. Children who are not receiving social skills instruction can be involved by helping friends who are involved in the project. The children who are helpers will also be videotaped.

4. Once the project is complete, children who are involved in the project will receive a copy of the social skills software and parents will receive feedback as to their child's progress during the project.

5. Once the project is complete, children who are not involved will have access to the social skills software on the school computer.

Thank you in advance for considering allowing your child to participate. I am happy to answer any questions or provide more information. Please feel free to call me at home (770-725-2583) or at school (706-542-5064). If you are interested in signing-up your child for this project, please complete the attached permission forms. The forms are color-coded: Please complete the **BLUE** permission form if you would like your child to receive the social skills instruction. Please sign the **GREEN** permission form if you do not want your child to receive instruction, but do not mind if your child is involved as a helper. Once I receive a signed permission form for your child, I can begin the project.

Again, thank you for your consideration and I look forward to hearing from you soon!

Best regards,

Lynne Cory
Doctoral Student, Department of Recreation and Leisure Studies

APPENDIX E

SOCIAL KNOWLEDGE ASSESSMENT

Items on the Social Knowledge Assessment (SKA)

(Highlighted items indicate correct response)

1. Ok, let's watch two movies of Chris and Jamilah greet each other in the library. Choose the movie that shows how friends talk with one another.

a. First Movie: Friends move past one another without interaction
b. Second Movie: Friends greet one another Chris: "Hi"
Jamilah: "Hi"

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

2. Ok, let's watch two movies of Chris and Jamilah greet each other at the swimming pool. Choose the movie that shows how friends talk with one another.

a. First Movie: Friends move past one another without interaction
b. Second Movie: Friends greet one another. Chris: "Hi"
Jamilah: "Hi"

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

3. Ok, let's watch two movies of Chris and Jamie talking at the gym. Choose the movie that shows how friends talk with one another.

a. Chris: "How are you?" (Volume is at appropriate conversation level)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

b. Chris: "How are you?" (Volume is at very loud level)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

4. Ok, let's watch two movies of Chris and Jamie talking at the swimming pool. Choose the movie that shows how friends talk with one another.

a. Chris: whisper, whisper
Jamie: "What did you say?"
Chris: whisper, whisper
Jamie:"Huh?"

b. Chris: “How are you?”
Jamie: “I feel good today. How are you?”
Chris: “I’m great. Would you like to play with me?

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

5. Ok, let’s watch two movies of Chris and Jamie talking in the computer room. Choose the movie that shows how friends talk with one another.

a. Chris: “How are you?”
Jamie: “I feel good today. How are you?”
Chris: “I’m great. Would you like to play with me?

b. Chris: “H i h o w a r e y o u?” (very slowly)
Jamie: “I ‘ m f i n e h o w a r e y o u ?”

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

6. Ok, let’s watch two movies of Chris and Jamie talking in the library. Choose the movie that shows how friends talk with one another.

a. Chris: “How are you?”
Jamie: “I feel good today. How are you?”
Chris: “I’m great. Would you like to play with me?

b. Chris: *“How are you?”* (Very rapidly)
Jamie: *“I feel good today. How are you?”*
Chris: *“I’m great. Would you like to play with me?”*

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

7. Ok, let’s watch two movies of Chris and Jamie talking at the swimming pool. Choose the movie that shows how friends talk with one another.

a. Chris: “How are you?”
Jamie: “I feel good today. How are you?”
Chris: “I’m great. Would you like to play with me?

b. Chris: “Get out of the water, I want to swim alone”
Jamie: “No, I want to swim, too. You are selfish.”

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

8. Ok, let's watch two movies of Chris and Jamie talking on the playground. Choose the movie that shows how friends talk with one another.

a. Chris: "Go away and do not play with me!"
Jamie: "I do not want to play with you anyway!"

b. Chris: "How are you?"
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

9. Ok, let's watch two movies of Chris and Jamie talking at the swimming pool. Choose the movie that shows how friends talk with one another.

a. Chris: "How are you?" (Comfortable body distance)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

b. Chris: "How are you?" (Body distance too far)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

10. Ok, let's watch two movies of Chris and Jamie talking in the gym. Choose the movie that shows how friends talk with one another.

a. Chris: "How are you?" (Body distance too close)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

b. Chris: "How are you?" (Comfortable body distance)
Jamie: "I feel good today. How are you?"
Chris: "I'm great. Would you like to play with me?

Instruction after movie clips: Now that you have watched both movies choose the movie that shows how friends talk with one another.

APPENDIX F

SOCIAL SKILLS ASSESSMENT OBSERVATION FORM

Social Skills Assessment (SSA) Observation and Scoring Form

Participant Pseudonym: _____**Date of Observation (Per Video Stamp)**: _____**Date of Viewing**: _____

Start time of Observation (Per Video Stamp): _____ **End Time of Observation (Per Video Stamp)**: _____

Location of Observation: _____ **Observer:** _____

Condition: Initial Assessment / Probe / Phase I (CAI) / Phase II (RPI) / Follow-up **Setting:** Interactive Play / Natural Setting

Peer involved in Interactive Play _____ **Activity**: _____

Peer(s) Involved in Natural Setting: _____

Social Interaction Totals and Scores

Total: Greeting Occurrence (√) = _____ **Total: Verbalization Occurrence (√) =** _____ **Total: Intervals Observed =** _____

Interaction / Total Verbalization Occurrence

Greeting: Occurrence _____/_____ **x 100 =** _____**%** **Greeting Score =** _____**%**

Compatible Interaction (Ok) _____/ _____ **x 100 =** _____**%** **Comp. Int. Score =** _____**%**

Volume: Too Loud (L) _____/ _____ **x 100 =** _____**%** **Too Loud Score =** _____**%**

Volume: Too Quiet (Q) _____/ _____ **x 100 =** _____**%** **Too Quiet Score =** _____**%**

Pace: Too Fast (F) _____/ _____ **x 100 =** _____**%** **Too Fast Score =** _____**%**

Verbal Aggression: Occurrence (A) _____/ _____ **x 100 =** _____**%** **Verb. Agg. Score =** _____**%**

Body Distance: Too close (C) (verbal) _____/ _____ **x 100 =** _____**%** **(Verbal) Too Close Score =** _____**%**

Body Distance: Too close (C) (non-verbal) _____**(Interaction)/** _____ **(Intervals) x 100% =** _____**(Non-Verb)Too CloseScore =** _____**%**

Other Remarks/ Notes / Observations: _____
_____
_____

Target Behavior	Behavioral Definitions
Greeting	Participant and peer greet one another by looking at one another, smiling, and saying hi (or hello, or other greeting phrase) **Other examples of greeting**: Participant may verbally state "Hi" "Hello" "How are you?," "Hey" "What's up?" "What are you doing?" or verbally states peer's name
Verbalization	Participant makes verbal statement to peer that is detectable to peer and/or observer
Compatible Interaction (Ok)	Participant makes verbal statement to peer that promotes continued interaction (i.e., ongoing conversation, game playing, other activity) , reciprocal gestures (i.e., hand holding, hugs, high-fives) or other, positive response (i.e, laughter, smiles)
Speaking at a volume that is too loud. **(L)**	Participant speaks to peer using volume that is **too loud** while making statement; peer may state "you are talking too loud" or "you are yelling"; observer detects participant's verbal statement to be louder than (a) others in group, (b) necessary for context (i.e., yelling at peer across table in during center time) **Other examples of loud volume:** Peer puts hands over ears, peer verbally requests that participant uses "inside voice" or verbally states "be more quiet" or similar statement.
Speaking at volume that is too quiet **(Q)**	Participant speaks to peer using volume that is **too quiet** while making verbal statement; peer may state "I can't hear you" or "you are talking too quietly" or "huh?" or "what?"; observer detects verbal statement to be too quiet (a) to understand (i.e., mumbling) (b) necessary for context (i.e., whispering across table during center time) **Other examples of quiet volume:** Peer uses hand(s) to cup ears in direction of participant, peer verbally requests that participant uses a louder voice, or verbally states "speak up" or similar statement.
Speaking at a pace that is too fast. **(F)**	Participant speaks to peer using pace that is **too fast** while making verbal statement peer may state "I don't understand you" or "You are talking too fast" or "What?" "Huh?"; observer cannot understand participant verbalization because of fast rate of speech **Other examples of fast pace:** Peer states "what?" or "slow down – I can't understand you!" or repeats unintelligible statement by participant and states "Is that what you said?"
Using words that are verbally aggressive when speaking with peer **(A)**	Participant speaks to peer using **verbally aggressive words or phrases** while making verbal statement. **Other examples of verbal aggression:** Participant uses derogatory name toward peer (e.g., "stupid," "dummy") or makes aggressive statement (e.g., "you don't know what you are doing!" "You are a baby!" "You are ugly!"). Participant may state *to researcher* "peer is not playing right" and begin crying. Participant may make statements to researcher or peer that attempt to direct their behavior such as "GIVE me that toy" or "I said throw the ball NOW" "You better NOT LOOK AT ME!"
Using body distance that is too close when speaking /interacting with peer **(C)** *This can be nonverbal behavior as well as verbal	Participant speaks to peer using body distance that is **too close** (e.g., closer than 6" from peer, peer moves head or body gestures in a direction away from participant to create distance, takes steps away from participant) while making verbal statement or while playing game or participating in activity together; observer detects that peer attempts to move away from participant without success (i.e., participant closely "shadows" peer); observer detects that peer is attempting to remove participant's hands or body away from peer's body due to closeness of participant. **Other examples of body distance that is too close:** Peer states "move over" or "hey – you are too close" or "quit touching me" or participant *does not speak* but sits/stands too close to peer(s); peer may attempt to move away from participant (nonverbal interaction)

Instructions**: While viewing the video, (1) check (√) an occurrence of greeting or verbalization in the correct interval, then (2) circle the letter(s) (Ok, L, Q, F, A, C) that best fits the above definitions of behaviors demonstrated by the study participant while interacting with peers (during interactive play, role play, or in natural settings). *Please record the following information on page 1 where indicated*: your name, participant's name, time (start and end time of observation per video stamp), date (per video stamp and date of observation), condition and phase, setting of observation, and peers involved with participant. Also, please record any other relevant observations /remarks related to social interaction at the bottom of on page 1. If there is not enough room, please record notes on a separate page and attach.**

Social Skills Assessment: Observation Data Collection Form

√ = Occurrence L = Loud F = Fast

Ok = Appropriate Verbalization Q = Quiet A = Aggressive C = Close Body Distance

Interval	Greet	Verbalization	Behavior	# of Peers	Interval	Greet	Verbalization	Behavior	# of Peers
00:00-00:10			Ok L Q F A C		05:01-05:10			Ok L Q F A C	
00:11-00:20			Ok L Q F A C		05:11-05:20			Ok L Q F A C	
00:21-00:30			Ok L Q F A C		05:21-05:30			Ok L Q F A C	
00:31-00:40			Ok L Q F A C		05:31-05:40			Ok L Q F A C	
00:41-00:50			Ok L Q F A C		05:41-05:50			Ok L Q F A C	
00:51-00:60			Ok L Q F A C		05:51-06:00			Ok L Q F A C	
01:01-01:10			Ok L Q F A C		06:01-06:10			Ok L Q F A C	
01:11-01:20			Ok L Q F A C		06:11-06:20			Ok L Q F A C	
01:21-01:30			Ok L Q F A C		06:21-06:30			Ok L Q F A C	
01:31-01:40			Ok L Q F A C		06:31-06:40			Ok L Q F A C	
01:41-01:50			Ok L Q F A C		06:41-06:50			Ok L Q F A C	
01:51-02:00			Ok L Q F A C		06:51-07:00			Ok L Q F A C	
02:01-02:10			Ok L Q F A C		07:01-07:10			Ok L Q F A C	
02:11-02:20			Ok L Q F A C		07:11-07:20			Ok L Q F A C	
02:21-02:30			Ok L Q F A C		07:21-07:30			Ok L Q F A C	
02:31-02:40			Ok L Q F A C		07:31-07:40			Ok L Q F A C	
02:41-02:50			Ok L Q F A C		07:41-07:50			Ok L Q F A C	
02:51-03:00			Ok L Q F A C		07:51-08:00			Ok L Q F A C	
03:01-03:10			Ok L Q F A C		08:01-08:10			Ok L Q F A C	
03:11-03:20			Ok L Q F A C		08:11-08:20			Ok L Q F A C	
03:21-03:30			Ok L Q F A C		08:21-08:30			Ok L Q F A C	
03:31-03:40			Ok L Q F A C		08:31-08:40			Ok L Q F A C	
03:41-03:50			Ok L Q F A C		08:41-08:50			Ok L Q F A C	
03:51-04:00			Ok L Q F A C		08:51-09:00			Ok L Q F A C	
04:01-04:10			Ok L Q F A C		09:01-09:10			Ok L Q F A C	
04:11-04:20			Ok L Q F A C		09:11-09:20			Ok L Q F A C	
04:21-04:30			Ok L Q F A C		09:21-09:30			Ok L Q F A C	
04:31-04:40			Ok L Q F A C		09:31-09:40			Ok L Q F A C	
04:41-04:50			Ok L Q F A C		09:41-09:50			Ok L Q F A C	
04:51-05:00			Ok L Q F A C		09:51-10:00			Ok L Q F A C	
Totals					**Totals**				

Social Skills Assessment: Observation Data Collection Form

√ = Occurrence L = Loud F = Fast

Ok = Appropriate Verbalization Q = Quiet A = Aggressive C = Close Body Distance

Interval	Greet	Verbalization	Interaction Behavior	# of Peers	Interval	Greet	Verbalization	Interaction Behavior	# of Peers
10:01-10:10			Ok L Q F A C		15:01-15:10			Ok L Q F A C	
10:11-10:20			Ok L Q F A C		15:11-15:20			Ok L Q F A C	
10:21-10:30			Ok L Q F A C		15:21-15:30			Ok L Q F A C	
10:31-10:40			Ok L Q F A C		15:31-15:40			Ok L Q F A C	
10:41-10:50			Ok L Q F A C		15:41-15:50			Ok L Q F A C	
10:51-11:00			Ok L Q F A C		15:51-16:00			Ok L Q F A C	
11:01-11:10			Ok L Q F A C		16:01-16:10			Ok L Q F A C	
11:11-11:20			Ok L Q F A C		16:11-16:20			Ok L Q F A C	
11:21-11:30			Ok L Q F A C		16:21-16:30			Ok L Q F A C	
11:31-11:40			Ok L Q F A C		16:31-16:40			Ok L Q F A C	
11:41-11:50			Ok L Q F A C		16:41-16:50			Ok L Q F A C	
11:51-12:00			Ok L Q F A C		16:51-17:00			Ok L Q F A C	
12:01-12:10			Ok L Q F A C		17:01-17:10			Ok L Q F A C	
12:11-12:20			Ok L Q F A C		17:11-17:20			Ok L Q F A C	
12:21-12:30			Ok L Q F A C		17:21-17:30			Ok L Q F A C	
12:31-12:40			Ok L Q F A C		17:31-17:40			Ok L Q F A C	
12:41-12:50			Ok L Q F A C		17:41-17:50			Ok L Q F A C	
12:51-13:00			Ok L Q F A C		17:51-18:00			Ok L Q F A C	
13:01-13:10			Ok L Q F A C		18:01-18:10			Ok L Q F A C	
13:11-13:20			Ok L Q F A C		18:11-18:20			Ok L Q F A C	
13:21-13:30			Ok L Q F A C		18:21-18:30			Ok L Q F A C	
13:31-13:40			Ok L Q F A C		18:31-18:40			Ok L Q F A C	
13:41-13:50			Ok L Q F A C		18:41-18:50			Ok L Q F A C	
13:51-14:00			Ok L Q F A C		18:51-19:00			Ok L Q F A C	
14:01-14:10			Ok L Q F A C		19:01-19:10			Ok L Q F A C	
14:11-14:20			Ok L Q F A C		19:11-19:20			Ok L Q F A C	
14:21-14:30			Ok L Q F A C		19:21-19:30			Ok L Q F A C	
14:31-14:40			Ok L Q F A C		19:31-19:40			Ok L Q F A C	
14:41-14:50			Ok L Q F A C		19:41-19:50			Ok L Q F A C	
14:51-15:00			Ok L Q F A C		19:51-20:00			Ok L Q F A C	
Totals					**Totals**				

APPENDIX G

SOCIAL VALIDITY SURVEYS

(Family and Staff, Pre-Post Intervention)

Social Validity of Procedures for Leisure Education Program
(Family and Staff-Pre Intervention)

Date: _____ Participant #: _____

Instructions: Please check the box under the column that best describes your feelings about children learning about social interaction skills through participation in leisure education programs.

Leisure Education Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
1. Some of the time a child spends in recreation activities should be spent on learning social skills.					
2. It is **NOT** important for a child to learn social interaction skills during recreation activities with their friends.					
3. Children can benefit from participating in leisure education programs to teach them about social interaction skills.					
4. It is important for a child to learn social interaction skills during leisure activities					
5. Leisure education is **NOT** an important activity for preparing children for adult life.					
6. Children can benefit from using computer-assisted leisure education programs to learn about social interactions used in recreation activities with their friends.					
7. Children can benefit from participating in role play ("pretend" social situations) during leisure education to teach them about social interaction skills used in recreation activities with their friends.					

Social Validity of Effects for Leisure Education Program
(Family -Post Intervention)

Date: _____ Participant #: _____

Instructions: Please check the box under the column that best describes your feelings about your child's experiences during participation in the leisure education program.

Leisure Education Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
8. My child enjoyed the leisure education program.					
9. The researcher worked well with my child.					
10. I would be willing to have my child learn more about social skills by using similar leisure education programs.					
11. The computer-assisted portion of the leisure education program was **NOT** helpful for my child.					
12. The role-play portion of the leisure education program was **NOT** helpful for my child.					
13. I have noticed changes in my child's social skills since this program began.					
14. My child did **NOT** benefit from the leisure education social skills training program.					

Social Validity of Effects for Leisure Education Program
(Staff -Post Intervention)

Date: _____ Participant #: _____

Instructions: Please check the box under the column that best describes your feelings about the students' experiences during participation in the leisure education program.

Leisure Education Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
15. The students enjoyed the leisure education program.					
16. The researcher worked well with the students.					
17. I would be willing to the students learn more about social skills by using similar leisure education programs.					
18. The computer-assisted portion of the leisure education program was **NOT** helpful for the students.					
19. The role-play portion of the leisure education program was **NOT** helpful for the students.					
20. I have noticed changes in the students' social skills since this program began.					
21. The students did **NOT** benefit from the leisure education social skills training program.					

APPENDIX H

POST-INTERVENTION INTERVIEW GUIDE

(Participants and Parents)

Interview Guide for Participants

1. What did you like best about the computer program?
2. What did you NOT like about the computer program?
3. If you could change the program and make it exactly the way you would want it, what would you change?
4. What did you learn from the social skills program?
5. What did you learn when we (researcher and participant) would pretend we were using our social skills?
6. What did you think about practicing what you learned with your friends?
7. Would you like to learn about other things the same way? Why or Why not?

Interview Guide for Parents

1. What did you think about the computer program?
2. What did you like about the computer program?
3. What did you NOT like about the computer program?
4. Can you tell me what your child liked or did not like about the program? Why or why not?
5. If you could change the program and make it exactly the way you would want it, what would you change?
6. What do you think your child learned from the social skills program?
7. What do you think your child learned when we (researcher and participant) pretended we were using our social skills?
8. What do you think your child learned when practicing social skills with his/her friends?
9. Would you like your child to learn about similar skills the same way? Why or Why not?

APPENDIX I

ASSESSMENT OF COMPUTER AND SOFTWARE COMPETENCE

ASSESSMENT OF COMPUTER AND SOFTWARE COMPETENCE

Participant's Name _____ Date:_____

Participant will:	Demonstrated	Not Demonstrated
1. Sit in chair with head and face oriented toward computer monitor at height and distance that provides comfortable arm and hand position on keyboard and mouse.		
2. Verbally identify and point with finger to "Friendly" folder appearing on monitor.		
3. Use right or left hand to guide mouse to point and click on "Friendly" folder.		
4. Use right or left hand to guide mouse to diamond-shaped Authorware© icon labeled "Friendly" when "Friendly" folder opens,		
5. Use right or left hand to guide mouse to point and click on "Friendly" icon.		
6. Attend to monitor with head and face oriented in the direction of the monitor when "Friendly" game begins		
7. Follow verbal directions stated by "Friendly" when participant is cued to type in name.		
8. Type in name if participant has typing skills; if participant cannot type in name, researcher will assist.		
9. Press "enter" key once name is typed in space indicated.		
10. Indicate choice for game by using right or left hand to guide mouse to point and click on desired option (i.e., Quiz, Greet Friends, Pace Words, Talk Clearly, Be Kind, Give Space) when "Friendly" game begins.		
11. Remain oriented to monitor as game is presenting information.		
12. Follow verbal instructions from game narrator ("Friendly") as game progresses and will guide the mouse to the icons as directed.		
13. Attend to movies and choose either to (a) watch movies again by using the mouse to double click on video icon, or (b) indicate choice by guiding the mouse to the movie participant perceives to be correct, and (c) pointing and clicking on their movie choice.		
14. Continue progression through software to complete objectives as verbally instruction, guiding mouse to point and click to indicate choice.		
15. Wait for instruction from researcher to progress at completion of first objective (or Quiz)		

APPENDIX J

COMPUTER AND SOFTWARE COMPETENCE TRAINING

COMPUTER AND SOFTWARE COMPETENCE TRAINING

Participant's Name _____ Date:_____

Instructor will instruction and demonstrate to participant how to:	Participant Competence Demonstrated	Participant Competence Not Demonstrated
1. Sit in chair with head and face oriented toward computer monitor at height and distance that provides comfortable arm and hand position on keyboard and mouse.		
2. Verbally identify and point with finger to "Friendly" folder appearing on monitor.		
3. Use right or left hand to guide mouse to point and click on "Friendly" folder.		
4. Use right or left hand to guide mouse to diamond-shaped Authorware© icon labeled "Friendly" when "Friendly" folder opens,		
5. Use right or left hand to guide mouse to point and click on "Friendly" icon.		
6. Attend to monitor with head and face oriented in the direction of the monitor when "Friendly" game begins		
7. Follow verbal directions stated by "Friendly" when participant is cued to type in name.		
8. Type in name if participant has typing skills; if participant cannot type in name, researcher will assist.		
9. Press "enter" key once name is typed in space indicated.		
10. Indicate choice for game by using right or left hand to guide mouse to point and click on desired option (i.e., Quiz, Greet Friends, Pace Words, Talk Clearly, Be Kind, Give Space) when "Friendly" game begins.		
11. Remain oriented to monitor as game is presenting information.		
12. Follow verbal instructions from game narrator ("Friendly") as game progresses and will guide the mouse to the icons as directed.		
13. Attend to movies and choose either to (a) watch movies again by using the mouse to double click on video icon, or (b) indicate choice by guiding the mouse to the movie participant perceives to be correct, and (c) pointing and clicking on their movie choice.		
14. Continue progression through software to complete objectives as verbally instruction, guiding mouse to point and click to indicate choice.		
15. Wait for instruction from researcher to progress at completion of first objective (or Quiz)		

APPENDIX K

SOCIAL KNOWLEDGE AND SKILLS

ASSESSMENT AND INSTRUCTION

TASK ANALYSES

Social *Skills* Assessment Play with One Peer -Task Analysis

Researcher will:

1. Enter classroom
2. Briefly confer with teacher to confirm participant attendance, schedule, determine class "climate" (i.e., emotional and physical feelings of students)
3. Set-up equipment in multi-purpose room (i.e., computer, video camera, video-tape, role script, container for participant random choosing of peers, notepaper, pencil)
4. Greet, mingle with, and observe students for 10 min prior to beginning first session
5. Greet participant scheduled for session
6. Present container with peer names to participant so they may choose a peer for assessment. (social skills assessment during play with one peer)
7. Escort participant and peer into multipurpose room, explain what they will be doing during this 5-10 min session
8. Position and focus video camera
9. Present materials for participant and peer to play with during 5 -10 min play.
10. Videotape participant and peer during play
11. After interactive play occurs for 5 -10 min, stop video recorder
12. Thank participant and peer, escort peer back to classroom (if teacher and other students are not in classroom, escort both participant and peer to where other students and teachers are to avoid leaving participant alone and then return to multipurpose room with participant to continue session).

Social Skills Assessment - Greeting Task Analysis

Researcher will:

1. Arrive in classroom prior to students and set up tripod and video recorder.
2. Focus camera on participant as participant enters classroom to record greeting behaviors; videotape participants and peers for up to 5 min (each participant 1 time per week)
3. After 3-5 min, turn off video recorder.

Social *Knowledge* Assessment Task Analysis

Researcher will:

1. Confirm computer is turned-on and set-up for operation of "New Friendland" software.
2. Confirm labeled diskette is in drive "A" to record participant's assessment results.
3. Ask participant to be seated in a chair placed within accurate viewing and hearing distance of the computer.
4. Review purpose of computer program, ask participant if they have any questions.
5. Answer questions about computer or software operation if participant has questions, but do not answer provide answers related to social interaction knowledge and skills.
6. Remind participant to watch and listen to the question and both possible responses prior to selecting a response.
7. Administer computerized assessment.
8. Assist participant in typing name if participant requests assistance.
9. Adjust computer as needed if participant states "I can't see the screen clearly." or "I can't hear the sound well."
10. Physically assist participant if participant does not demonstrate motor skills necessary to manipulate computer equipment (i.e., mouse and keys) or if participant verbally states "I can't get this mouse to move."
11. Observe participant progress through 10 item SKA to complete assessment.
12. Once participant completes SKA, verbally prompt participant to choose one of five social skills modules (i.e., Greet Friends, Be Kind, Talk Clearly, Pace Words, Give Space) depending upon scheduled introduction of each module.

Social *Knowledge* Computer-Assisted Instruction Task Analysis

Researcher will:

1. Observe participant progress through social skills module and assist as needed with computer or software operation once participant has chosen one of the five modules.
2. Verbally state "You can choose the answer that you think is correct – I can't help you" (or similar response) if participant requests assistance with social skills information content.
3. Verbally state "You did a nice job completing the computer program with Friendly, Chris, and their friends. Now, you and I can practice what Friendly, Chris, and their friends just showed us."

Social *Skills* Instructional Role Play Task Analysis

Researcher will:

1. Access script for instructional role play and ask participant if he/she is are ready to begin.
2. Sit or stand near participant and present script scenarios to participant. An example is: "Greg, pretend you are on the playground and want to greet me. Remember, we just watched Chris show us how to greet a friend. Remember, there was a way to greet a friend and a way not to greet a friend. First, show me how you would greet me." Greg hopefully responds by looking at me, smiling at me, and saying "hi." If Greg responds correctly the researcher verbally states "Great job Greg!" If Greg states "I don't know" the researcher will provide a verbal prompt "Remember, Chris stated 'Eye, Smile, Hi' when greeting a friend. Let's try that together. Pretend that I am your friend and you want to greet me." This process will continue through the script until 10 min have passed. However, if after 2 prompts the participant does not correctly respond, we will view the greeting module together to review the information.
3. Complete instructional role play, thank participant, escort participant to classroom (if teacher and other students are not in classroom, escort participant to where other students and teachers are.

APPENDIX L

PROCEDURAL RELIABILITY FORMS

Procedure: **Social Skills Assessment Play With One Peer (SSA)** **Researcher will:**	Performed	Not Performed
1. Enter classroom		
2. Briefly confer with teacher to confirm participant attendance, schedule, determine class "climate" (i.e., emotional and physical feelings of students)		
3. Set-up equipment in multi-purpose room (i.e., computer, video camera, video-tape, materials for play with one peer, container for participant random choosing of peers, notepaper, pencil)		
4. Greet, mingle with, and observe students for 10 min prior to beginning first session		
5. Greet participant scheduled for session		
6. Present container with peer names to participant so they may choose a peer for play session (social skills assessment)		
7. Escort participant and peer into multipurpose room, explain what they will be doing during this 5-10 min session		
8. Position and focus video camera		
9. Present materials for participant and peer to play with during 5 -10 min play session		
10. Videotape participant and peer during play session		
11. Complete play session after no longer than 10 min, turn off video recorder, thank participant and peer, escort peer back to classroom (if teacher and other students are not in classroom, escort both participant and peer to where other students and teachers are to avoid leaving participant alone and then return to multipurpose room with participant to continue session).		

Procedure: **Social Knowledge Assessment (SKA) (Computer-Assisted)** **Researcher will:**	Performed	Not Performed
1. Confirm computer is set-up and "New Friendland" software is operating		
2. Confirm labeled diskette is in drive "A" to record participant's assessment results		
3. Ask participant to be seated in a chair placed within accurate viewing and hearing distance of the computer.		
4. Review purpose of computer program, ask participant if they have any questions.		
5. Answer questions about computer or software operation if participant has questions, but will not answer provide answers related to social interaction knowledge and skills.		
6. Remind participant to watch and listen to the question and both possible responses prior to selecting a response.		
7. Administer computerized assessment.		
8. Assist participant in typing name if participant requests assistance.		
9. Adjust computer as needed if participant states "I can't see the screen clearly." or "I can't hear the sound well."		
10. Physically assist participant if participant does not demonstrate motor skills necessary to manipulate computer equipment (i.e., mouse and keys) or if participant verbally states "I can't get this mouse to move."		
11. Observe participant progress through 10 item SKA to complete assessment.		
12. Once participant completes SKA, verbally prompt participant to choose one of five social skills modules (i.e., Greet Friends, Be Kind, Talk Clearly, Pace Words, Give Space) depending upon scheduled introduction of each module.		

Procedure: **Social Knowledge Computer-Assisted Instruction** **Researcher will:**	Performed	Not Performed
1. Observe participant progress through social skills module and assist as needed with computer or software operation once participant has chosen one of the five modules.		
2. Verbally state "You can choose the answer that you think is correct – I can't help you" (or similar response) if participant requests assistance with social skills information content.		
3. Verbally state "You did a nice job completing the computer program with Friendly, Chris, and their friends. Now, you and I can practice what Friendly, Chris, and their friends just showed us."		

Procedure: **Social Skills Instructional Role Play** **Researcher will:**	Performed	Not Performed
1. Access script for instructional role play and ask participant if he/she is are ready to begin.		
2. Sit or stand near participant and present script scenarios to participant. An example is: "Greg, pretend you are on the playground and want to greet me. Remember, we just watched Chris show us how to greet a friend. Remember, there was a way to greet a friend and a way not to greet a friend. First, show me how you would greet me." Greg hopefully responds by looking at me, smiling at me, and saying "hi." If Greg responds correctly the researcher verbally states "Great job Greg!" If Greg states "I don't know" the researcher will provide a verbal prompt "Remember, Chris stated 'Eye, Smile, Hi' when greeting a friend. Let's try that together. Pretend that I am your friend and you want to greet me." This process will continue through the script until 10 min have passed. However, if after 2 prompts the participant does not correctly respond, we will view the greeting module together to review the information.		
3. Complete instructional role play, thank participant, escort participant to classroom (if teacher and other students are not in classroom, escort participant to where other students and teachers are.		

Procedure: **Social Skills Assessment: Greetings** **Researcher will:**	Performed	Not Performed
1. Arrive in classroom prior to students and set-up tripod and video recorder.		
2. Focus camera on participant as participant enters classroom to record greeting behaviors' videotape participant and peers for up to 5 min (each participant 1 time per week)		
3. After 3-5 min, turn off video recorder.		

APPENDIX M

LISTING OF EXPERTS CONSULTED FOR SOCIAL VALIDITY OF GOALS

Experts Consulted for Social Validity of Goals

Name	Expertise	Agency
Leslie Black, M.Ed., CTRS	Therapeutic Recreation, Leisure Education,	Athens-Clarke County Leisure Services, Program Specialist Special Populations
Lynne Cory, M.Ed, CTRS	Therapeutic Recreation, Leisure Education, Research Methods	University of Georgia, Doctoral Candidate, Department of Recreation and Leisure Studies
John Dattilo, PhD	Therapeutic Recreation, Leisure Education, Research Methods	University of Georgia, Department Head, Department of Recreation and Leisure Studies
Suzanne Elbon, PhD	Instructional Technology, Nutrition, Disability Sports	Centers for Disease Control, Project Manager
David Gast, PhD	Special Education, Research Methods	University of Georgia, Professor, Department of Special Education
Gwynn Powell, PhD	Recreation Administration Leisure Education Children's Education through Recreation	University of Georgia, Assistant Professor, Department of Recreation and Leisure Studies
Joy Thompson, M.S.	Child Psychology	Athens-Clarke County Board of Education, Ogelthorpe Elementary School, School Counselor

School Staff

Name	Expertise	Agency
Rebecca Olson	School Administration, School Inclusion	McPhaul Center, Director
Teresa Sibley	PreKindergarten Education, Kindergarten Education	McPhaul Center, Lead Teacher, PreKindergarten
Caroline Almand	Children's Education, Master's Student in Child Life Specialist Program	McPhaul Center, Lead Teacher, PreKindergarten Extended Day Program

Parents

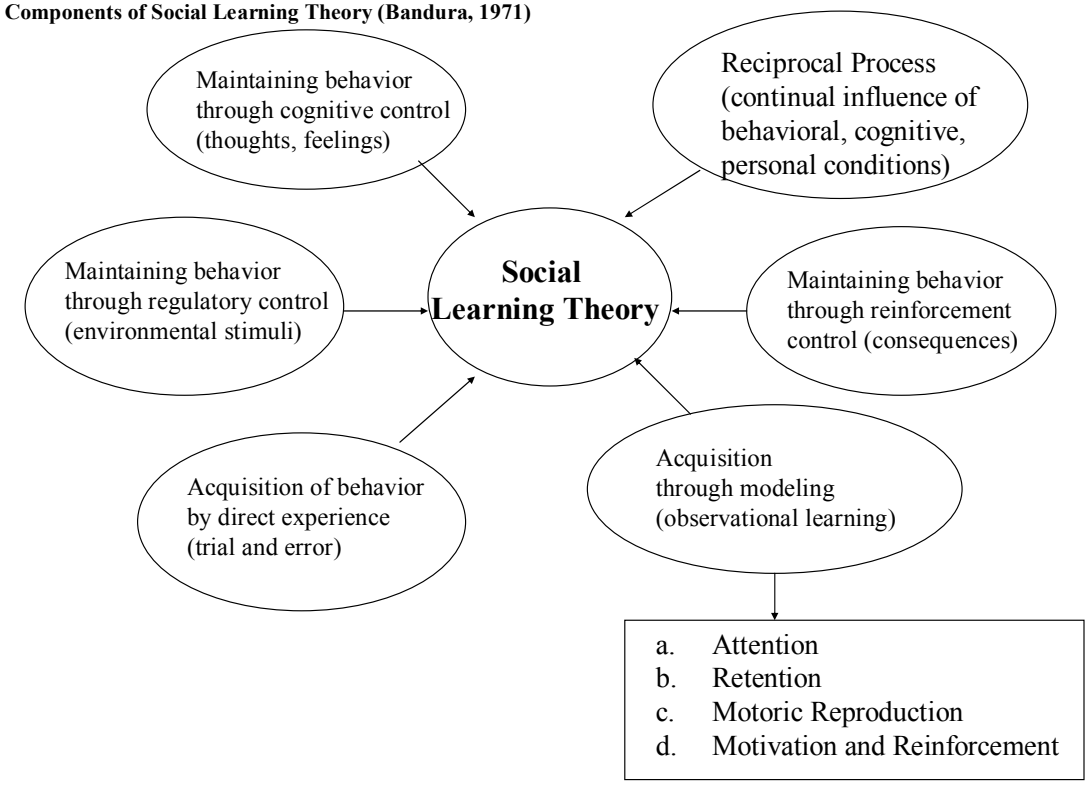
Parents of Gabriel
Parents of Estrella
Parents of Mallory

APPENDIX N

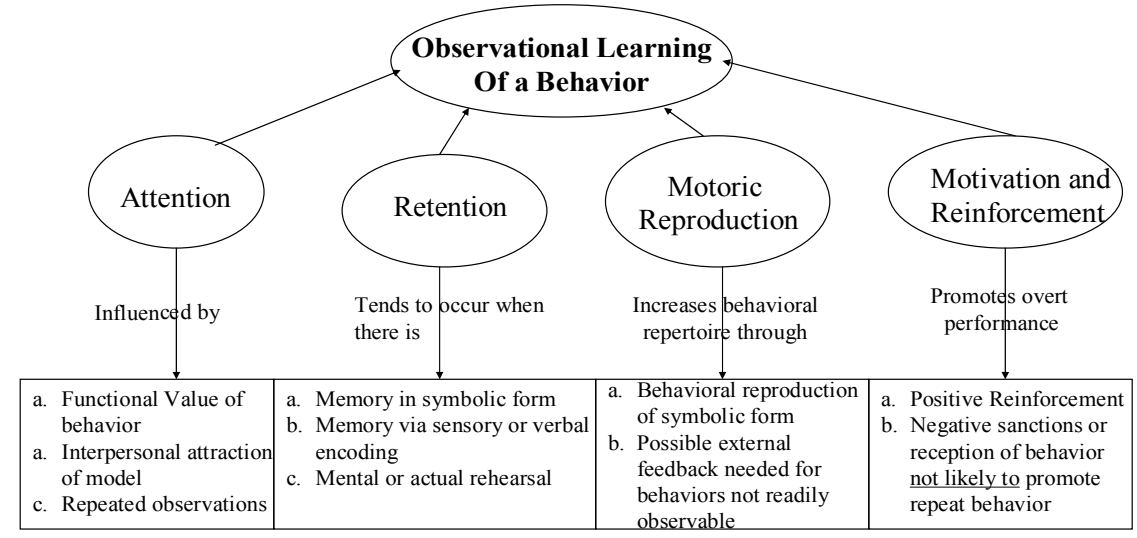
MODEL OF BANDURA'S SOCIAL LEARNING THEORY

APPLIED TO SOCIAL SKILLS TRAINING

Components of Social Learning Theory (Bandura, 1971)

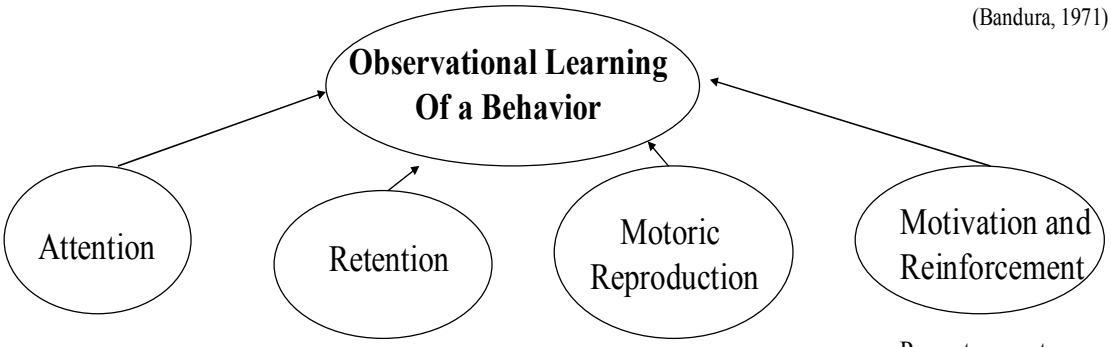


Observational Learning Component of Social Learning Theory (Bandura, 1971)



Guidelines for Social Skills Instruction based on Observational Learning component of Social Learning Theory

(Bandura, 1971)



Influenced by	Tends to occur when there is	Increases behavioral repertoire through	Promotes overt performance
a. Functional Value of behavior a. Interpersonal attraction of model c. Repeated observations	a. Memory in symbolic form b. Memory via sensory or verbal encoding c. Mental or actual rehearsal	a. Behavioral reproduction of symbolic form b. Possible external feedback needed for behaviors not readily observable	a. Positive Reinforcement b. Negative sanctions or reception of behavior <u>not likely to</u> promote repeat behavior

Specific to Proposed Research related to Computer-Assisted Social Skills Program:

Attention
•What are students perceptions of value of social skills?
•Appealing computer program
•Appealing information delivery by instructor
•Opportunities for repeated observations of material

Retention
•Symbolic form includes memory of animated characters
•Sensory encoding includes visual, Auditory, and verbal encoding
•Opportunities for repeated Rehearsals
•Role play can be use for rehearsal

Motoric Reproduction
•Interact with peers after instruction
•Use role play as opportunity for behavior reproduction with feedback

Reinforcement
•Verbal praise for correct responses in computer program
•Verbal praise for prosocial behaviors during interactions